



Program Version	Creation Date	Country	State/City	Calculator	ROM Version
1.00	11/14/2001	 ARGENTINA	NEUQUEN		HP49-C Revision #1.18
Program Author : Miguel Angel CAPORALINI HERK					
Program Title					
Complete (Mechanical/Electrical) Calculus for Centrifugal Pumps					
Library Number			Checksum (CRC)	Bytes	
L914 – COMCEPUMP			# 6E74h	26,352.0	

I'm writing this program in UsrRPL Language and after create a Library (L914 – COMCEPUMP), wich allow calculate ... **Mechanical and Electrical, for a Centrifugal Pumps, (used in Oil & Gas and Other's Industries):**

0.Mechanical	<u>0.Pump Performance:</u> <u>0.Diameter Change Only</u> <u>0.New Pump Capacity (U.S.GPM)</u> Initial Capacity (U.S. GPM) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>1.New Pump Head (feet)</u> Initial Head (feet) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>2.New Brake HP (bhp)</u> Initial Brake Horsepower (HP) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>1.Speed Change Only</u> <u>0.New Pump Capacity (U.S.GPM)</u> Initial Capacity (U.S. GPM) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>1.New Pump Head (feet)</u> Initial Head (feet) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>2.New Brake HP (bhp)</u> Initial Brake Horsepower (HP) New Impeller Diameter (inches) Initial Impeller Diameter (inches) <u>2.Diameter & Speed Change</u> <u>0.New Pump Capacity (U.S.GPM)</u> Initial Capacity (U.S. GPM) New Impeller Diameter (inches) Initial Impeller Diameter (inches)
	<u>Continuance in page 2</u>

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	<p>New Impeller Speed (RPM) Initial impeller Speed (RPM)</p> <p><u>1.New Pump Head (feet)</u> Initial Head (feet) New Impeller Diameter (inches) Initial Impeller Diameter (inches) New Impeller Speed (RPM) Initial Impeller Speed (RPM)</p> <p><u>2.New Brake HP (bhp)</u> Initial Brake Horsepower (HP) New Impeller Diameter (inches) Initial Impeller Diameter (inches) New Impeller Speed (RPM) Initial Impeller Speed (RPM)</p> <p><u>1.Total Head (feet):</u> Pressure (psi) Specific Gravity</p> <p><u>2.Suction Eye Velocity(feet per second):</u> Pump Capacity (U.S. GPM) Eye Area (inches²)</p> <p><u>3.Peripheral Velocity (feet per second):</u> Impeller Diameter (inches) Impeller speed (RPM)</p> <p><u>4.Velocity Head (feet):</u> Velocity (feet per second)</p> <p><u>5.Water HP (whp):</u> Pump Capacity (U.S. GPM) Total Head (feet) Specific Gravity</p> <p><u>6.Brake HP (bhp):</u> Pump Capacity (U.S. GPM) Total Head (feet) Specific Gravity Pump Efficiency (decimal)</p> <p><u>7.Torque (foot pounds):</u> Brake Horsepower (bhp) Impeller Speed (RPM)</p> <p><u>8.Specific.Speed (RPM):</u> Impeller Speed (RPM) Pump Capacity (U.S. GPM) Head per Stage (feet)</p> <p><u>9.Suction Speed (RPM):</u> Impeller Speed (RPM) Pump Capacity (U.S. GPM) Net Positive Suction Head (feet)</p>
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	<p><u>10. Temperature Raise (° F):</u> Total Head (feet) Pump Efficiency (decimal) Specific Heat</p> <p><u>11. Nominal Working Pressure (psi):</u> Temperature Factor as Maximum Operating Temperature (°F) Hydrostatic Test Pressure (psi)</p> <p><u>12. N.P.S.H.A. (Net Positive Suction Head Available) (feet):</u> Suction Vessel Pressure (psig) Atmospheric Pressure (psia) True Vapor Pressure (psia) Friction Losses (pipes & fittings) (psi) Specific Gravity at Pump Temperature (H₂O = 1.0) Elevation of Liquid Level (feet) Elevation Centerline Pump Suction Flange (feet)</p>
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<p>1.Electrical</p>	<p><u>Amperes (when HP is known):</u> <u>Alternating Current</u> <u>Single Phase</u> Volts Efficiency (%) Power Factor (decimal) Horsepower (HP) <u>Three Phase</u> Volts Efficiency (%) Power Factor (decimal) Horsepower (HP) <u>Direct Current</u> Volts Efficiency (%) Horsepower (HP) <u>Amperes (when KW is known):</u> <u>Alternating Current</u> <u>Single Phase</u> Volts Power Factor (decimal) Kilowatts <u>Three Phase</u> Volts Power Factor (decimal) Kilowatts <u>Direct Current</u> Volts Kilowatts <u>Amperes (when KVA is known):</u> <u>Alternating Current only</u> <u>Single Phase</u> Volts KVA <u>Three Phase</u> Volts KVA <u>HP (Output):</u> <u>Alternating Current</u> <u>Single Phase</u> Volts Efficiency (%) Power Factor (Decimal) Amperes</p>
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	<p><u>Three Phase</u> Volts Efficiency (%) Power Factor (decimal) Amperes <u>Direct Current</u> Volts Amperes Efficiency (%) <u>KW:</u> <u>Alternating Current (only)</u> <u>Single Phase</u> Volt Amperes Power Factor (decimal) <u>Three Phase</u> Volt Amperes Power Factor (decimal) <u>Direct Current</u> Volts Amperes <u>KVA:</u> <u>Alternating Current (only)</u> <u>Single Phase</u> Volts Amperes <u>Three Phase</u> Volts Amperes <u>Motor Torque (ft-lbf):</u> Full Load Horsepower Speed in RPM <u>Motor KW:</u> Horsepower (HP) Efficiency (%) <u>Motor KVA:</u> Horsepower (HP) Efficiency (%) Power Factor (decimal) <u>Power Factor (decimal):</u> <u>Alternating Current (only)</u> <u>Single Phase</u> Kilowatts KVA</p>
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	<u>Three Phase</u> Volts Amperes Kilowatts <u>Reactive KVA (KVA):</u> <u>Alternating Current (only)</u> <u>Single Phase</u> Volts Amperes Power Factor (decimal) <u>Three Phase</u> Volts Amperes Power Factor (decimal) <u>Synchronous Speed (RPM):</u> Frequency (Hz.) Number of Poles
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For Efficiency (%) = Consult to O.E.M. (Original Equipment Manufacturer).

Special Mention :

Thanks for the suggestion from Alan OTTS [aotts@troarch.com], of include the Mechanical and Electrical calculus, in only one program.

For any questions, please contact me :

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