

Algunas formas de ayuda

- **Ecuaciones para Bombas y Motores**

$$\text{Caudal (Lts/min)} = \frac{n \text{ (RPM)} \times \text{Cilindrada (cm}^3\text{/rev)}}{1000}$$

$$\text{Caudal (GPM)} = \frac{n \text{ (RPM)} \text{ Cilindrada (in.}^3\text{)}}{231}$$

$$\text{Cilindrada (cm}^3\text{/rev)} = \frac{\text{Caudal (Lts/min)} \times 1000}{N \text{ (RPM)}}$$

$$\text{N}^\circ \text{ De vueltas (RPM)} = \frac{\text{Caudal (Lts/min)} \times 1000}{\text{Cilindrada (cm}^3\text{/rev)}} = \frac{\text{Caudal (GPM)} \times 231}{\text{Cilindrada (in.}^3\text{)}}$$

$$\text{Potencia (HP)} = \frac{\text{Presión (PSI)} \times \text{Caudal (GPM)}}{1714} = \frac{\text{Presión (bar)} \times \text{Caudal (Lts/min)}}{450}$$

$$\text{Potencia (KW)} = \frac{\text{Presión (bar)} \times \text{Caudal (Lts/min)}}{600}$$

$$\text{Presión (PSI)} = \frac{\text{Potencia (HP)} \times 1714}{\text{Caudal (GPM)}}$$

$$\text{Presión (bar)} = \frac{\text{Potencia (HP)} \times 450}{\text{Caudal (Lts/min)}} = \frac{\text{Potencia (KW)} \times 600}{\text{Caudal (Lts/min)}}$$

$$\text{Caudal (GPM)} = \frac{\text{Potencia (HP)} \times 1714}{\text{Presión (PSI)}}$$

$$\text{Caudal (Lts/min)} = \frac{\text{Potencia (HP)} \times 450}{\text{Presión (bar)}} = \frac{\text{Potencia (KW)} \times 600}{\text{Presión (bar)}}$$

$$\text{Torque (daNm)} = \frac{\Delta p \text{ (bar)} \times \text{Cilindrada (cm}^3\text{/rev)}}{628}$$

$$\text{Cilindrada (cm}^3\text{/rev.)} = \frac{\text{Torque (da Nm)} \times 628}{\Delta p \text{ (bar)}}$$

$$\text{Potencia entregada (HP)} = \frac{\text{Torque (kgm)} \times n \text{ (RPM)}}{716,2}$$

$$\text{Torque (kgm)} = \frac{\text{Potencia (HP)} \times 726}{N \text{ (RPM)}}$$

$$\text{N}^\circ \text{ De vuelta (RPM)} = \frac{\text{Potencia (HP)} \times 716,2}{\text{Torque (kgm)}}$$

- **Ecuaciones para Motores de Rueda:**

$$\text{Velocidad (km/hs)} = n \text{ (RPM)} \times \text{Radio bajo carga (mm)} \times 0,000754$$

$$\text{Nº De vueltas (RPM)} = \frac{\text{Velocidad (km/hs)}}{\text{Radio bajo carga (mm)} \times 0,000754}$$

$$\text{Radio bajo carga (mm)} = \frac{\text{Velocidad (km/hs)}}{N \text{ (RPM)} \times 0,000754}$$

- **Ecuaciones para Cilindros Hidráulicos:**

$$\text{Area del pistón (cm}^2\text{)} = \frac{d1^2 \cdot \pi}{400}$$

$$\text{Area del vástago (cm}^2\text{)} = \frac{d2^2 \cdot \pi}{400}$$

$$\text{Area diferencial (cm}^2\text{)} = \frac{(d1^2 - d2^2) \pi}{400}$$

$$\text{Fuerza de empuje (kN)} = \frac{\rho \cdot d1^2 \pi}{40.000}$$

$$\text{Fuerza de tiro (kN)} = \frac{\rho \cdot (d1^2 - d2^2) \pi}{40.000}$$

$$\text{Velocidad (m/seg)} = \frac{\text{caudal (lts/min)} \cdot 10}{\text{Area (cm}^2\text{)} \cdot 60}$$

CONVERSIONES

TORQUE

ft-ibs	ibs-in	da-Nm	Nm	kp-m	kg-m
1	12	.13556	1.356	.1382	.1382
.08333	1	.01130	.1130	.01152	.01152
7.376	88.51	1	10	1.019	1.019
.7376	8.851	.1	1	.102	.102
72.359	86.80	.9806	9.806	1	1

LONGITUD

cm	inch	pies	mtr	km	millas
1	.3937	.03281	.01	.00001	
2.54	1	.08333	.02778		
30.48	12	1	.3048		
100	39.37	3.281	1	.001	
100000	39370	3281	1000	1	.6214
160934	63360	5280	1609	1.609	1

PRESIÓN

kpg	kp/mm ²	psi	bar	kg/cm ²
	1	1422	98.07	100
	.0007031	1	.06895	.07031
100	.0102	14.50	1	10.197
98.07	.01	14.22	.9807	1
1		.1450	.01	.0102

VELOCIDAD

mtr/sec	ft/sec	km/hr	mph	ft/min
1	3.281	3.6	2.237	196.85
.3048	1	1.097	.6818	60
.2778	.9113	1	.6214	54.68
.4470	1.467	1.609	1	88
.00508	.01667	.01829	.01136	1

ENERGÍA

ft-ibs	kg-m	kw-hr	hp-hr	in-ib	Joule
1	.1383			12	1.356
7.233	1			86.80	9.806
		1	1.341		859.9
		.7457	1		641.2
.0833	.01152			1	.113

VOLUMEN

in ³	cm ³	litros	quart	newt	daN	kg (kp)	ibs
1	16.39	.01639	.0173	1	.1	.1020	.224
.06102	1	.0001	.0010	10	1	1.020	2.24
61.02	1000	1	1.05	9.807	.9807	1	2.20
57.75	947	.9463	1	44.482	.4448	.4536	1

FUERZA Y PESO**POTENCIA**

hp	kw	met hp
1	.7457	1.014
1.341	1	1.360
.9863	.7355	1

AREA

in ²	cm ²	mm ²
1	6.452	645.2
.1550	1	.01
.001550	100	1