Your Fluid Power Provider for Power Transmission Applications
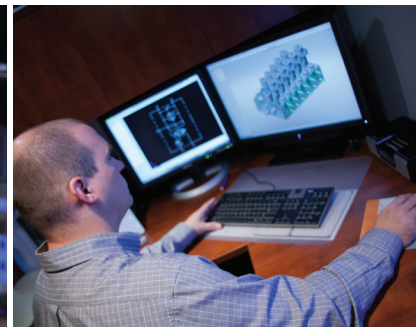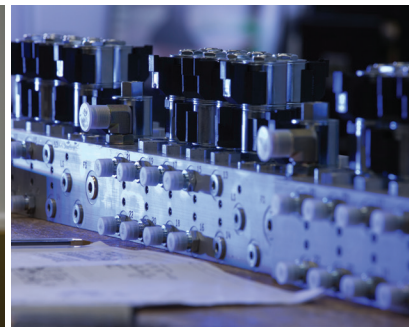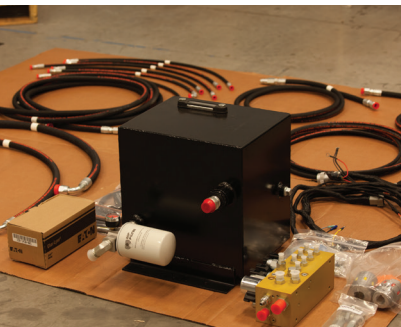
Power Systems, LLC

Engineered Solutions and Service for:

- Airport
- Agriculture
- Construction
- Railroad
- Forestry
- Power Generation
- Specialty Equipment

HYDRAULIC COMPONENTS   •   ENGINEERING   •   SUPERIOR CUSTOMER SERVICE

PS

HEB

An APPLIED® fluid power company

Power Systems, LLC

When you partner with Power Systems, you can expect to receive assistance with **component sizing** and **specification**, **circuit design**, **machine control design** and **implementation**, and **troubleshooting** from our expert staff. Work side by side with our product managers and design engineers during the design process of **hydraulic manifolds**, **electronic controls** and **fluid conveyance products** to arrive at the best solutions for your system needs.

Power Systems has grown to be the **leading value added fluid power distributor** in the Upper-Midwest with four locations to better serve our customers. Founded in 1966 by Harley Bergren, Power Systems is dedicated to serving our customers with their power transmission needs.

The Leader in Engineered Hydraulic Systems to the Mobile OEM Marketplace

Accumulators
Accumulators Inc.

Brakes and Clutches
Mico

Coolers
AKG

Hayden

Couplings
Buckeye

KTR

Magnaloy

Cylinders
Aurelius

Electronic Controls
Eaton

High Country Tek

Hydraforce

Kar-Tech

Nason

OEM Controls

Pepperl + Fuchs

Wachendorf

Filters
MP Filtri

Fairy Arlon / Parker

Flow Ezy

Fittings
Eaton / Aeroquip

Power Systems – Custom

Flow Dividers – Gear
Casappa

Delta

Flow Meters
Lake Monitors

Gauges
Dynamic Fluid

Gear Box
Auburn Gear

Comer Industries

Heco Gear

Hose, Hose Ends & Equipment
Eaton / Aeroquip

Lubrication Systems
Lube Devices

Motors
Casappa

Char-Lynn

Eaton

Eaton / Cessna

Eaton / Duraforce

Eaton / Vickers

Poclain Hydraulics

Ronzio

Voac / Parker

Over Hung Load Adaptors
Zero-Max

Pipe Clamping
Hydra-Zorb Company

Planetary Gear Drives
Auburn Gear

Comer Industries

Power Unit Systems
Delta

Dynex

KTI

Power Systems

Pumps
Casappa

Dynex

Eaton / Vickers

Eaton / Cessna

Eaton / Duraforce

Oilgear

Poclain Hydraulics

Ronzio

Voac / Parker

Quick Disconnects
Eaton / Hansen

Tank & Hydraulic Accessories
Flow Ezy

Lube Devices

MP Filtri

Nason

Valves
Apollo

Brand Hydraulics

Eaton

Eaton / Vickers

Husco International

HydraForce

Poclain Hydraulics

Vonberg

*Not all products are authorized in all locations

Power Systems, LLC

Fluid Power Formulas

CYLINDERS

CYL AREA = DIAMETER^2 x .7854 (IN^2)	Annulus Area or EREA = CYL AREA - ROD AREA(IN^2)
CYL FORCE = PRESSURE x AREA (LBS)	ADJ. GPM ON RET = $\dfrac{\text{CYL AREA x GPM}}{\text{EREA}}$
CYL TIME (SEC) = $\dfrac{\text{AREA x STROKE x 26}}{\text{GPM}}$	CYL SPEED (FT/MIN) = $\dfrac{\text{STROKE x 5}}{\text{TIME(SEC)}}$
CYL SPEED (FT/MIN) = $\dfrac{\text{GPM X 1925}}{\text{AREA}}$	CYL HP = $\dfrac{\text{CYL SPEED x CYL FORCE}}{33{,}000}$
TUBE AREA (IN^2) = $\dfrac{\text{GPM x 3,208}}{\text{OIL VELOCITY}}$	HYD HP = $\dfrac{\text{PSI x GPM}}{1714}$

PNEUMATICS

P1V1 T2 = P2V2TI (Use Absolute Values)	COMP CFM = $\dfrac{\text{AREA x STROKE}}{\text{TIME (SEC) x 28.8}}$
PNEUMATIC HP = $\dfrac{\text{COMPRESSED CFM x PSI}}{229}$	

HYDRAULIC PUMPS & MOTORS

ACTUAL PUMP = $\dfrac{\text{THEO GPM x VOL. EFF.}}{\text{GPM 100}}$	GPM = $\dfrac{\text{RPM x DISP (IN}^2\text{)}}{231}$
ACTUAL TORQUE = $\dfrac{\text{THEO TORQUE x MECH. EFF.}}{100}$	HP OUT = $\dfrac{\text{HP IN x OVERALL EFF.}}{100}$
ACTUAL MOTOR RPM = $\dfrac{\text{THEO RPM x VOL. EFF.}}{100}$	TORQUE (IN-LBS) = $\dfrac{\text{PSI x DISP (IN}^2\text{)}}{6.28}$
OVERALL EFF. = $\dfrac{\text{MECH EFF x VOL. EFF.}}{100}$	TORQUE (IN-LBS) = $\dfrac{\text{HP x 63025}}{\text{RPM}}$

VEHICLE SIZING FORMULAS

RPM = $\dfrac{\text{MPH x 168}}{\text{LR}}$	LR = LOADED RADIUS
	TE = TRACTIVE EFFORT
TORQ = TE x LR	WD = WEIGHT ON DRIVE WHEELS
	ADC = ADHESION COEFFICIENT
WHEEL SLIP = $\dfrac{\text{WD x ADC x LR}}{\text{TORQ}}$	RR = ROLLING RESISTANCE
	GR = GRADE RESISTANCE
TE = RR + GR + DP	OP = DRAW BAR PULL

COMMON USED CONVERSIONS

To Convert	Into	Multiply by
bar	psi	14.5
cm^3	in^3	0.06102
°C	°F	(°C x 1.8) + 32
gallons (US)	liters	3.785
kg	lbs	2.205
kgf/cm^2	psi	14.2
kW	hp	1.341
liters	US gallons	0.2642
mm	Inches	0.03937
N-m	lb-in	8.85
N-m	lb-ft	0.7375
°F	°C	(°F-32)/1.8
hp	kW	0.7457
Inch	mm	25.4
In^3	cm^3	16.39
lb-in	N-m	0.113
lb-ft	N-m	1.356
lbs	kg	0.4535
psi	bar	0.06896
psi	kgf/cm^2	.070307

OTHER FLUID POWER FORMULAS

VELOCITY (Ft./Sec.) = $\dfrac{\text{GPM . 3208}}{\text{Inside d}^2 \text{ (.7854)}}$

AREA OF CIRCLE = d^2 .7854

CIRCUMFERENCE = dπ

BTU/HR. = PSI x 1-1/2

H.P. = PSI x GPM x .00058

1 CU. IN. = 16.39C

°C = $\dfrac{\text{(°F-32)}}{1.8}$

°F = (°C x 9/5) + 32

H.P. (RADIATING CAPACITY) = .001 x A

Contact Us

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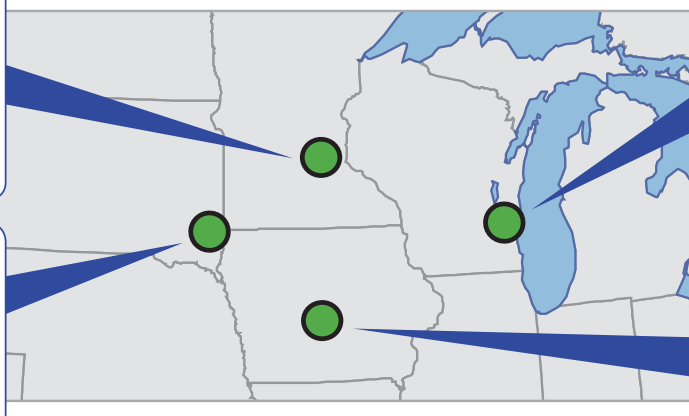P: (952) 361-6800
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PS
H E B
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