



Providing Safety, Environmental Compliance and Process Efficiency for over 30 Years

■ **Tank Vents**

The Protectoseal Co.

- Conservation Vents
- Emergency Vents
- Manways / Gauge Hatches
- Fiberglass / Thermoplastic
- Steam Jacketed

■ **Rupture Discs and Vents**

Oseco Inc.

- High Performance Discs
- Sanitary / Graphite
- Burst Disc Sensors
- Explosion Vents

■ **Safety Relief Valves**

LESER USA

- API / Compact / Sanitary
- Pilot Operated / Change-Over

Kunkle

Valve Repair - ASME VR

■ **Detonation/Flame Arrestors**

The Protectoseal Co.

- Inline / End of Line
- Group B, C, D Vapors
- UL, FM, USCG Approved

■ **Inert Gas Blanketing Valves**

The Protectoseal Co.

Appalachian Blanketing Systems

Neutronics Inerting Systems

■ **Valves**

Jomar International

- Manual / Actuated Ball Valves

Check-All

- Spring Loaded Check Valves

AVCO

- Specialty Valves /Orifice Plates

■ **Instrumentation**

Neutronics

- Gas Analyzers & Detection

PR Electronics

- Programmable Transmitters

- Signal Isolation / Trip Amplifiers

- Panel Mount Displays

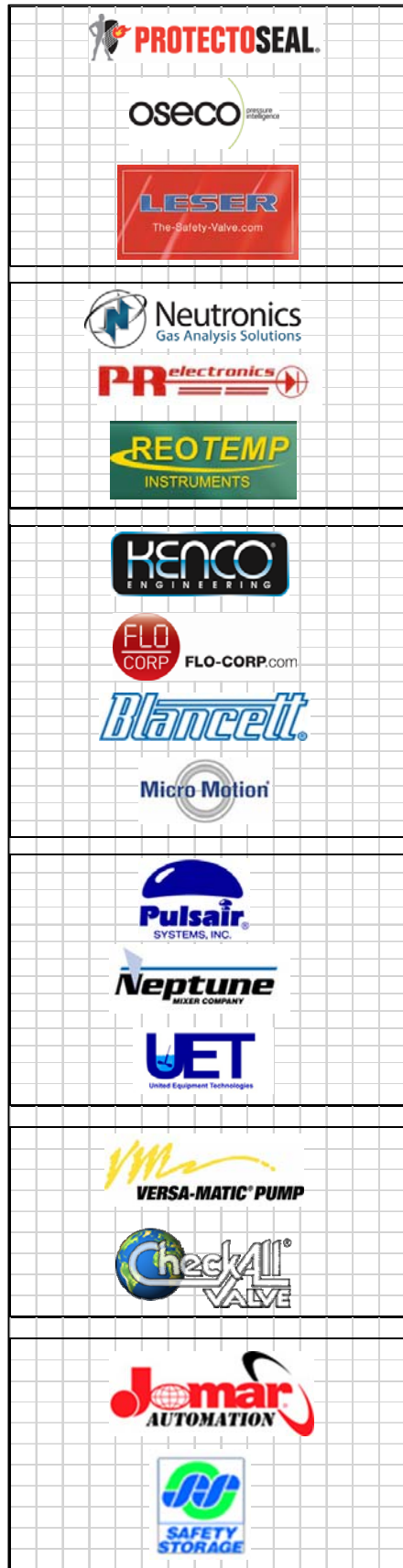
Reo-Temp / Ashcroft

- Pressure Gauges

- Temperature Gauges

- RTD / Thermocouples

- Switches



■ **Level / Flow Instrumentation**

Flo-Corp

- Guided Wave Radar
- Volumetric and PD Flow Meters
- Programmable Displays and Monitoring Systems

Kenco Engineering

- Sight Glass / Flow Indicators
- Magnetic Level Gauges
- Magnetostrictive Transmitters
- Ultrasonic Level Switches & Transmitters
- Thermal Level and Flow Switches

The Protectoseal Co.

- Float Type, Board and Automatic Gauges

Blancett

- Flowmeters / Transducers / Totalizers

Micro Motion Metering Skids

- Custody Transference Measurement

■ **Agitators / Mixers**

Neptune Mixer Co.

- Portable Gear and Direct Drive
- TEFC / EP / VFD / Air

United Equipment Technologies Corp.

- Engineered Gear Driven Mixers / Static Mixers
- TEFC / EP / VFD / Air

Pulsair Systems Inc.

- Non Mechanical Air Mixing Systems
- Tank and Railcar

■ **Pumps**

Neptune Chemical Metering

Aquflow Chemical Metering

Versa-Matic Air Operated Diaphragm

Pumper Parts Universal Diaphragm Parts

MP Centrifugal

Continental Progressive Cavity

ANSI Pumps / Mechanical Seals

■ **Tanks**

UL-142, API-620, API-650, ASME

Carbon Steel, Stainless Steel,

FRP, Polyethylene, Plastic and Thermoplastic

■ **Hazardous Material Storage / Spill Prevention**

Safety Storage, Inc Building

Safety Storage Fire Rated Cabinets

Transenvironmental Spill Containment

CTI In Drum Waste Compactors

CONTROLS & INSTRUMENTATION COMPANY, INC.

7950 West Winds Boulevard
Concord, NC 28027

Tel: 704-786-1700 Fax: 704-786-1753

E-mail: sales@cicpro.com Website: www.cicpro.com

Vapor Control, Liquid Process and Safety Equipment

Formulas

Circumference of Circle	= 3.1416 x dia = 6.2832 x radius
Area of Circle	= .7854 x (dia) ² = 3.1416 x (radius) ²
Area of Sphere	= 3.1416 x (dia) ²
Volume of Sphere	= 0.5236 x (dia) ³
Area of Triangle	= 0.5 x base x height
Area of a Trapezoid	= 0.5 x sum of the two parallel sides x height
Volume of a Pyramid	= area of base x 1/3 height
Volume of a Cone	= 0.2618 x (dia of base) ² x height
Volume of Cylinder	= 0.7854 x height x dia ²
Area of a Square	= base x height
Area of a Rectangle	= base x height
Area of a Parallelogram	= base x height

U.S. STANDARD GAUGE

Gauge	Decimal	Thickness
7	.1875	3/16
8	.1718	11/64
10	.1406	9/64
12	.1093	7/64
14	.0781	5/64

TEMPERATURE CONVERSION

$$(1.8 \times ^\circ\text{C}) + 32 = ^\circ\text{F}$$

$$.555 (^\circ\text{F} - 32) = ^\circ\text{C}$$

VISCOSITY CONVERSION

$$\frac{\text{Centipose} \times 4.63}{\text{sp gr}} = \text{S.S.U.}$$

$$\frac{\text{S.S.U.}}{4.63 \times \text{sp gr}} = \text{Centipose}$$

$$\text{Centistokes} \times 4.63 = \text{S.S.U.}$$

$$\text{S.S.U.} \times 0.206 = \text{Centistokes (CK)}$$

$$\text{Liquid Head in Feet} = \frac{\text{P.S.I.} \times 2.31}{\text{sp gr}}$$

$$\text{Pressure in P.S.I.} = \frac{\text{Head in Feet} \times \text{sp gr}}{2.31}$$

$$\text{Brake hp} = \frac{\text{gpm} \times \text{H (in feet)} \times \text{sp gr}}{3960 \times \text{efficiency}}$$

CONVERSION TABLE

INCHES H ₂ O	OUNCES/ SQ. IN.	INCHES H ₂ O	OUNCES/ SQ. IN.	INCHES H ₂ O	OUNCES/ SQ. IN.
0.5	0.289	6.06	3.5	17.0	9.82
0.865	0.5	6.92	4.0	17.31	10.0
1.0	0.577	7.0	4.04	18.0	10.39
1.3	0.75	7.78	4.5	19.0	10.97
1.5	0.866	8.0	4.62	19.04	11.0
1.73	1.0	8.655	5.0	20.0	11.55
2.0	1.155	9.0	5.2	20.77	12.0
2.5	1.44	9.52	5.5	21.0	12.14
2.59	1.5	10.0	5.77	22.0	12.72
3.0	1.731	10.39	6.0	22.5	13.0
3.46	2.0	11.0	6.35	23.0	13.39
3.5	2.02	12.0	6.93	24.0	13.97
4.0	2.30	12.12	7.0	24.23	14.0
4.33	2.5	13.0	7.51	25.0	14.55
4.5	2.59	13.85	8.0	25.97	15.0
5.0	2.89	14.0	8.09	26.0	15.12
5.9	3.0	15.0	8.66	27.0	15.70
5.5	3.18	15.58	9.0	27.7	1psig
6	3.46	16.0	9.24		

Frequently tank operating limits are expressed in terms of inches of water and valve settings in ounces/sq. in. The above table provides a convenient, common denominator between pressures and may be used whenever conversions are necessary.

Pressure

Ft. of Water x .433	= P.S.I.
P.S.I. x 2.31	= Ft. of Water
Inches Hg x 1.113	= Ft. of Water
Inches Hg x .491	= P.S.I.
Atm. x 14.7	= P.S.I.
Atm. x 33.9	= Ft. of Water
Kg./Sq. Cm. x 14.22	= P.S.I.
Atm. x 760	= mm. Hg
mm. Hg x .039	= Inches Hg

SIZING A TANK BLANKETING SYSTEM

Step 1			+	Step 2	
Mult. Max Pump Out Rate In:	By	To Obtain		Inbreathing	
U.S. GPM	8.021	SCFH		Multiply Tank Capacity in Gallons By:	
U.S. GPH	0.1337	SCFH		0.02382 to obtain inbreathing in SCFH	



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