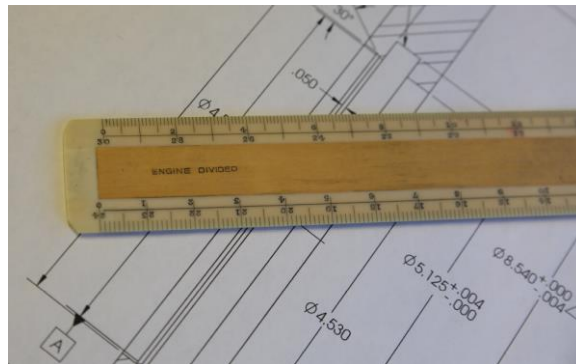


Appendix 1

Unit conversions



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Individual appendices of the Kalsi Seals Handbook are periodically updated. To determine if a newer revision of this appendix exists, please visit www.kalsi.com/seal-handbook.htm.

NOTICE: The information in this chapter is provided under the terms and conditions of the Offer of Sale, Disclaimer, and other notices provided in the front matter of this handbook.

1. Unit conversions encountered when working with rotary seals

This Appendix provides conversion information for measurement units that are commonly encountered when working with rotary shaft seals. For additional conversion information and detailed information on “The International System of Units” (SI), see **The SI Metric System of Units and SPE Metric Standard**, which is available from the Society of Petroleum Engineers.

Table 1
Area Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|---------------------|----------------|--|
| square inch (sq in) | 645.16 | millimeter ² (mm ²) |
| square inch (sq in) | 6.4516 | centimeter ² (cm ²) |
| square inch (sq in) | 0.00064516 | meter ² (m ²) |
| square inch (sq in) | 0.00694444 | square feet |

Table 2
Angle Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|--------------------|----------------|---------------------|
| degrees | 60 | minutes |
| degrees | 3600 | seconds |
| degrees | 0.01745329 | radians |
| radians | 57.29578 | degrees |

Table 3
Flow Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|-------------------------|----------------|-------------------------|
| US gallons/minute (gpm) | 3.785412 | liters/minute |
| US gallons/minute (gpm) | 0.002228 | cubic feet per second |
| liters/minute | 0.2641720 | US gallons/minute (gpm) |

Table 4
Density Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|---------------------------|----------------|---------------------------|
| pounds per US gallon | 0.11983 | gram per cubic centimeter |
| pounds per US gallon | 7.4805195 | pounds per cubic foot |
| gram per cubic centimeter | 8.34541 | pounds per US gallon |

Table 5
Force Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|--------------------|----------------|---------------------|
| pounds force (lbf) | 4.448 | newton (N) |

Table 6
Pressure Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|------------------------------|----------------|-------------------------------|
| atmospheres | 14.70 | pounds per square inch (psi) |
| bar | 100000 | pascal (Pa) |
| bar | 14.50377 | pounds per square inch (psi) |
| pascal (Pa) | 0.0001450377 | pounds per square inch (psi) |
| pounds per square inch (psi) | 6.894757 | kilopascal (kPa) |
| pounds per square inch (psi) | 0.006894757 | megapascal (MPa) ¹ |
| pounds per square inch (psi) | 0.06894757 | bar |
| pounds per square foot | 0.00694444 | pounds per square inch (psi) |

¹ MPa and n/mm^2 are identical.

Table 7
Length Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|-------------------------------|----------------|-------------------------------|
| centimeter (cm) | 0.3937008 | inch (in) |
| foot (ft) | 12 | inch (in) |
| foot (ft) | 0.3048 | meter (m) |
| inch (in) | 25.4 | millimeter (mm) |
| inch (in) | 2.54 | centimeter (cm) |
| inch (in) | 0.0254 | meter (m) |
| kilometer | 0.6213712 | mile, US statute |
| micro-inch (μin) | 0.0254 | micron |
| micro-inch (μin) | 0.0254 | micrometer (μm) |
| micron | 39.37008 | micro-inch (μin) |
| micrometer (μm) | 39.37008 | micro-inch (μin) |
| millimeter (mm) | 0.03937008 | inch (in) |
| meter (m) | 39.37008 | inch (in) |
| meter (m) | 3.280840 | foot (ft) |
| yard (yd) | 0.9144 | meter (m) |
| yard (yd) | 3 | foot |

Table 8
Temperature Conversion Table

| To convert this | To this | Use this formula |
|---|---|--|
| temperature, degree Fahrenheit ($^{\circ}\text{F}$) | temperature, degree Celsius ($^{\circ}\text{C}$) | $^{\circ}\text{C}=(^{\circ}\text{F} - 32)/1.8$ |
| temperature, degree Celsius ($^{\circ}\text{C}$) | temperature, degree Fahrenheit ($^{\circ}\text{F}$) | $^{\circ}\text{F}=1.8^{\circ}\text{C}+32$ |

Table 9
Viscosity Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|--------------------|----------------|---|
| centistoke | 0.000001 | meter ² per second (m^2/s) |

Table 10
Torque Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|---------------------------|-----------------------|----------------------------|
| foot-pound (ft-lb) | 1.355818 | newton-meter (N·m) |
| inch-pound (in-lb) | 0.1129848 | newton-meter (N·m) |
| kilogram-meter | 7.233 | foot-pound (ft-lb) |

Table 11
Rotary Speed Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|---------------------------|-----------------------|----------------------------|
| radians per second | 0.1592 | revolutions per second |
| radians per second | 9.549 | rpm |
| degrees per second | 0.0027778 | revolutions per second |
| degrees per second | 0.1667 | rpm |

Table 12
Velocity Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|-----------------------------|-----------------------|----------------------------|
| feet per minute (ft/minute) | 0.00508 | meter per second (m/s) |
| feet per minute (ft/minute) | 0.3048 | meter per minute |
| feet per minute (ft/minute) | 0.01136 | miles per hour |

Table 13
Volume Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|-----------------------|----------------|--------------------------------------|
| barrel, oil | 42 | gallon, US liquid |
| cubic inch (cu in) | 0.00001638706 | meter ³ (m ³) |
| cubic inch (cu in) | 16.38706 | cubic centimeter (cc) |
| cubic inch (cu in) | 16.38706 | milliliter (ml) |
| cubic inch (cu in) | 0.004329 | gallon, US liquid |
| cubic inch (cu in) | 1/1728 | cubic feet |
| cubic centimeter (cc) | 0.06102376 | cubic inch (cu in) |
| cubic centimeter (cc) | 1 | milliliter (ml) |
| liter | 0.2199692 | gallon, UK liquid |
| liter | 0.2641720 | gallon, US liquid |
| liter | 0.001 | meter ³ (m ³) |
| liter | 61.023 | cubic inch (cu in) |
| milliliter (ml) | 0.06102376 | cubic inch (cu in) |
| gallon, UK liquid | 4.546092 | liter |
| gallon, US liquid | 3.785412 | liter |
| gallon, US liquid | 231 | cubic inch (cu in) |
| gallon, US liquid | 0.003785412 | meter ³ (m ³) |

Table 14
Weight Conversion Table

| Multiply this unit | By this factor | To obtain this unit |
|--------------------|----------------|---------------------|
| pound (lb) | 0.4535924 | kilogram (kg) |

RPM to Surface Speed Conversion

To convert revolutions per minute (rpm) to surface speed in feet per minute, multiply the shaft diameter times PI times rpm, and divide by 12.