

# CONVERSION CONSTANTS

The units and symbols used in this catalogue comply with the requirements of the Measuring Units and National Measuring Standards Act.

## LENGTHS

Inches x 25.4 = millimetres

Inches x 0.0254 = metres

Feet x 0.30480 = metres

Yards x 0.91440 = kilometres

Statute miles x 1.60935 = kilometres

## TORQUE

Kilogramforce Metre (kgf.m) x 9.81 = newton metre (N.m)

Pound Feet x 1.36 = newton metre (N.m)

Pound Inches x 0.113 = newton metre (N.m)

## FORCE

Kilogramforce x 9.81 = newtons (N)

Pound Feet x 1.36 = newton metre (N.m)

Pound Inches x 0.113 = newton metre (N.m)

## POWER

Horse Power (hp) x 0.746 = kilowatt (kW)

## ELECTRICAL POWER

3 Phase AC Power =  $\sqrt{3} V \times I \times \cos\theta$

Assume power factor ( $\cos\theta$ ) = 0.8

Absorbed Power =  $P \times \eta$

$\eta$  is efficiency of motor

DC Power =  $V \times I \times \cos\theta = I^2 \times R$

## ADDITIONAL SYMBOLS USED

r/min = revolutions per minute

m/s = metres per second

To covert foot per minute to m/s multiply by  $5.08 \times 10^{-3}$

## TORQUE AND POWER EQUIVALENTS

The kilowatt (kW) is the common unit of mechanical power, i.e. the rate of doing work.

Torque is a turning moment or twisting effort and is expressed in newton metre (N.m).

$$\text{N.m} = \frac{\text{Kw} \times 9\,550}{\text{r/min}} = \frac{\text{N.m} \times \text{r/min}}{9\,550}$$

## INERTIA

Pound feet squared (lbf.ft<sup>2</sup>) x 0.41339 = newton metres squared (N.m<sup>2</sup>)

## POLAR MOMENT OF INERTIA

The polar moment of inertia. I or flywheel effect of a sold cylinder, disc or hollow cylinder can be derived from the following formula:

For a disc or cylinder.  $I = 0.5 m.r^2$

Where  $m$  is the mass of the disc or cylinder and  $R$  and  $r$  are the outside and inside radii respectively.

## PERIPHERAL SPEED

$$s = \frac{d \times n}{19\,100}$$

Where  $s$  = belt speed ...m/s

$d$  = pulley pitch diameter ...mm

$n$  = notational speed ... r/min

## TEMPERATURE

$$^{\circ}\text{C} = \frac{(F - 32) \times 5}{9} \quad ^{\circ}\text{F} = \frac{(^{\circ}\text{C} \times 9)}{5} + 32$$

Where  $^{\circ}\text{F}$  = degrees Fahrenheit

$^{\circ}\text{C}$  = degrees Centigrade