Technical Information

Design Data Required For Belt Drives

1) Type of prime driver
2) Starting arrangement: Soft Start
   Heavy Start
3) Speed of prime driver in r.p.m
4) Power rating of prime driver
5) Type of driven machine
6) Speed of driven machine in r.p.m
7) Absorbed power of the driven machine
8) Operating hours / day
9) Shaft diameters of both driver and driven machines
10) Drive centre distance. Is this fixed or does it have adjustment?
11) Are there any space constraints
12) Are the any environmental issues such as temperature, water, oil etc.

Belt Length Calculation

Length (L) $= 2C + \frac{(D-d)^2}{4C} + 1{,}57\,(D+d)$

where

L	=	Pitch length of belt in millimetres.
C	=	Centre distance in millimetres.
D	=	Pitch diam. of large pulley in millimetres.
d	=	Pitch diam. of small pulley in millimetres.

Centre distance, given pulley diameters and belt length:

Centre Distance (C) $= A + \sqrt{A^2 - B^2}$

where

$A = \frac{L}{4} - 0{,}3925\,(D + d)$ and $B = \frac{(D - d)^2}{8}$

Belt Speed Calculation

$$S = \frac{(d \times n)}{19100} \quad \text{(m/s)}$$

where S = belt speed in - metres per second (m/s)
d = pulley pitch diameter in - mm
n = rotaional speed of the same pulley in - revs per min (rpm)

Installation Guide.

Before fitting any new belts, an inspection should be carried out on the condition of the pulleys.

Good contact between belt and pulley is essential for both working capabilities and the life of the belt.

Worn or dirty pulley grooves will affect the contact of the belt with the pulley, which in turn will affect the performance of the belt. This will cause premature drive failure.

Check the parallel and angular alignment of the drive using a straight edge along the side of the pulleys prior to belt installation.

Always reduce the centre distance so that the belts can be loosely fitted to the pulley grooves. Belts should never be levered on to the pulleys as this may damage the tensile cords and cause premature belt failure.

After the belts have been fitted, the drive must be monitored over the first few hours of operation. The tension should be checked after the drive has been working under full load for approximately 30 minutes.

This will allow for the bedding in of the belt to the pulley groove and also counter initial, if any, belt stretch.

After 24 hours of working, it is advisable to check the belt tension again, particularly when they are continuously run under full load.

Belts should be stored in dry conditions and contact with cold surfaces, heat or direct sunlight should be avoided.

 All dimensions in millimetres unless otherwise stated.