MINIMUM PULLEY SIZES FOR TEXTILE BELTING

The minimum pulley diameter recommended for a particular belt depends upon the following three factors:

- Carcass Thickness – The overall thickness of all plies plus the rubber skims between plies in the case of ply type textile belts.
- Operating Tension – The relationship between the operating tension of the belt at a particular pulley to the belt's allowable working tension.
- Carcass modulus – The relationship between elongation of the carcass and the resulting stress.

No matter whether the carcass type is steel cord or textile ply, when the belt is wrapped around a small pulley radius, tension stresses are developed in the outer fibres whilst compression stresses are built up in the inner fibres.

As the elastic properties of the rubber cover materials are much greater than the carcass material, the cover thickness of the belting is not a factor in determining minimum pulley size, and thus may be disregarded.

With in the table below is the of recommended pulley diameters for Dyna Engineering's ply type textile belting. The recommended diameters are based on the three types of pulleys defined in ISO 3684;

- Type "A" – High tension / tight side pulleys (T1) e.g. head, drive, tripper and shuttle pulleys
- Type "B" – Low tension or slack side pulleys (T2) such as tail and take up pulleys
- Type "C" – Low tension snub or bend pulleys with wrap angle of less than 30 degrees

The Two sets of Pulley Diameter types included in the table are:
- For belts operating at over 60% of allowable working tension
- For belts operating at 30 – 60% of allowable working tension

Note: For belts operating at less than 30% of the allowable working tension, the diameter of Type "A" pulleys can be reduced to the same as Type "B".

		Min. Pulley Size 30-60% Tension			Min. Pulley Size > 60% Tension		
		Type A	Type B	Type C	Type A	Type B	Type C
2 Ply Belts	PN 315/2	160	125	100	250	160	125
	PN 400/2	250	200	160	315	250	200
	PN 500/2	315	250	200	400	315	250
	PN 630/2	400	315	250	500	400	315
	PN 800/2	500	400	315	630	500	400
3 Ply Belts	PN 500/3	315	250	200	400	315	250
	PN 630/3	400	315	250	500	400	315
	PN 800/3	400	315	250	500	400	315
	PN 1000/3	500	400	315	630	500	400
	PN 1250/3	630	500	400	800	630	500
4 Ply Belts	PN 630/4	400	315	250	500	400	315
	PN 800/4	500	400	315	630	500	400
	PN 1000/4	630	500	400	800	630	500
	PN 1250/4	630	500	400	800	630	500
	PN 1600/4	800	630	500	1000	800	630
5 Ply Belts	PN 800/5	500	400	400	630	500	400
	PN 1000/5	630	500	500	800	630	500
	PN 1250/5	800	630	500	1000	800	630
	PN 1600/5	800	630	500	1000	800	630
	PN 2000/5	1000	800	630	1250	1000	800

Note: Above table are recommended pulley diameters for belts constructed to AS1332

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