MINIMUM PULLEY SIZES FOR STEEL CORD BELTING

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

- Carcass Thickness – The wire rope diameter in the case of Steel Cord Belts.
- Operating Tension – The relationship of the operating tension of the belt at the 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 steel cord 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".

	Allowable Working Tension kN/m	Elastic Modulus kN/m	Minimum Pulley Size 30-60% Tension			Minimum Pulley Size > 60% Tension		
			Type A	Type B	Type C	Type A	Type B	Type C
ST500	75	36000	360	360	315	400	360	315
ST630	95	45360	400	400	360	450	400	360
ST800	120	57600	450	450	400	500	450	400
ST1000	150	72000	560	560	500	630	560	500
ST1120	168	80640	560	560	500	630	560	500
ST1250	188	90000	630	630	560	710	630	560
ST1400	210	100800	630	630	560	710	630	560
ST1600	240	115200	710	710	630	800	710	630
ST1800	270	129600	800	800	710	900	800	710
ST2000	300	144000	900	900	800	1000	900	800
ST2240	336	161280	900	900	800	1000	900	800
ST2500	375	180000	1000	1000	900	1120	1000	900
ST2800	420	201600	1120	1120	1000	1250	1120	1000
ST3150	473	226800	1120	1120	1000	1250	1120	1000
ST3500	533	255600	1250	1250	1120	1400	1250	1120
ST4000	600	288000	1250	1250	1120	1400	1250	1120
ST4500	675	324000	1400	1400	1250	1600	1400	1250
ST5000	750	360000	1400	1400	1250	1600	1400	1250
ST5600	840	403200	1600	1600	1400	1800	1600	1400
ST6300	945	453600	1800	1800	1600	2000	1800	1600

Note: Above table are recommended pulley diameters for belts constructed to AS1333

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