



Fenner (India) Limited

DO'S & DONT'S OF V-BELTS

Drive Designing

When assessing the power requirements of the drive, do not forget to apply the appropriate service factor for the combination of prime mover and driven machine.

Consider not only the running characteristics of the machines (i.e. smooth, heavy shock, pulsating), but also any abnormal loads applied during starting by high torque motors, or the inertia of the driven machine.



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Pulley Diameter Selection

Pulley diameters should be proportionate to the other components in the drive. Minimum diameter pulleys cause an unnecessary flexing of the belts and may lead to premature bearing failure on the machines. Large pulleys have obvious space and cost disadvantages.

Minimum Recommended Pulley Diameters

Given below are the minimum recommended pulley diameters for various sections of the belts for improved flex life.

A	B	C	D	E	SPZ	SPA	SPB	SPC
80	125	200	315	500	67	90	160	224



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Mounting of Belt Drive

The baseplate or mounting for the drive should be rigid to prevent variations in belt tension under load. Rubber mountings must not be used with driven or driver machine. The baseplate should be designed to allow belt tensioning and enable the drive alignment to be easily maintained.



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Belt Length Selection

For any combination of pulley diameters, a suitable length of belt should be selected to maintain an adequate arc of contact on the small pulley. Unnecessary long belts require more take-up adjustment and can cause problems with the catenary sag of the slack side of the drive. Choose a drive site which provides adequate room for belt tensioning procedures, a part of installation and maintenance routines.



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Belt matching and length coding

Poly-F Plus PB V-belts (both Classical & Wedge sections) are in 'PB' construction, which means that they are pre-matched and no code numbers would be found on the belts.

Alignment of pulleys and belts

1. The driving shaft and driven shaft should be parallel to each other.
2. Though both the shafts look parallel when seen from above, the alignment of both shafts should be checked to be in line.
3. Even when shafts are parallel and in alignment pulleys should be checked for alignment.
4. When both shafts and pulleys are parallel and in alignment then it is Correct installation.



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Belt Guards

Drives should not be completely enclosed by guards. Open mesh guards which allow normal air circulation but prevent any accidental contact with the drive are recommended.

Belt Storage

Belts should not be subjected to extremes of heat and cold. Standard belts can tolerate a considerable range of temperatures between -18 Deg C & $+60$ Deg C without damage. Drives designed outside this range will require special belts. Certain belts have a flame-resisting ability and will self-extinguish quickly in the case of fire. These belts should be used wherever there is danger of explosion.



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Proper tensioning of V-Belts

Deflection 16mm per metre of centre distance

- 1) Measure the centre distance.
- 2) At the centre, apply a force at right angles to the belt to deflect one belt 16mm for every metre of centre distance.
- 3) Compare this force with values in the table below.

If the measured force falls within the values given, the drive tension should be satisfactory.

- 4) A measured force below the lower value indicates under-tensioning. A new drive should be tensioned to higher value to allow for the normal drop in tension during the running-in period. After the drive has been running under load for a few days, check tension and re-adjust it to the higher value and then ... relax !

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Belt Section	SPZ		SPA		SPB		SPC		Z	A	B	C
Small Pulley Dia (mm)	56 to 95	56 to 95	90 to 132	140 to 224	140 to 200	224 to 355	236 to 315	375 to 560	56 to 100	80 to 140	125 to 140	200 to 400
Newton (N)	10 to 15	10 to 15	20 to 27	35 to 50	28 to 35	60 to 90	50 to 65	90 to 120	5 to 7.5	10 to 15	20 to 30	40 to 60
Kilogram-force (kgf)	1.0 to 1.5	1.0 to 1.5	2.0 to 2.7	3.6 to 5.6	2.8 to 3.6	6.1 to 9.2	5.1 to 6.6	9.2 to 12.2	0.5 to 0.8	1.0 to 1.5	2.0 to 3.1	4.1 to 6.1



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Jockey Pulley Tensioners

On fixed centre distance drives, it is the usual practice to tension the belts by Jockey Pulleys. If using a grooved Jockey Pulley, place it on the inside of the V-belts, mounted as near as possible to the larger pulley and on the slack side of the drive.

Jockey pulley diameters should be at least equal to that of the smaller pulley of the drive, ideally a little larger.

As a special case, you can use a flat faced Jockey Pulley on the outside of the belts(preferably on the slack side of the drive), positioned within one-third of the centre distance from the driving pulley.



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Points to remember

Thoroughly clean Taper Lock Bush and Pulley hubs & the shaft by removing all protective coatings.

Insert bush into the pulley hub so that the holes line up

Fit bush and pulley after cleaning on the shaft and ensure they are correctly seated.

Reduce centre distance of pulleys to install belts without force to avoid rupture of V-Belts.