SURFACE VEHICLE STANDARD

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V-Belts and Pulleys

RATIONALE

Although antiquated in design compared to today's serpentine belt drives, V-belts are still common in many emerging markets. The scope is to stabilize the V-belts and pulleys.

1. SCOPE

This specification covers standard dimensions, tolerances, and methods of measurement of V-belts and pulleys for automotive V-belt drives.

2. REFERENCES

There are no referenced publications specified herein.

3. V-BELT TYPES

Automotive V-belts are produced in a variety of constructions in a basic trapezoidal shape. The inside circumference of the V-belt can be a plain straight line or corrugated by means of cogs or notches for the purpose of increasing the belt(s) flexibility for use with pulleys in the lower proposed diameter. Belts are to be dimensioned in such a way that they are functional in pulleys dimensioned as described in subsequent sections.

4. PULLEYS

Pulleys are to conform to requirements of Figure 1 and Tables 1A, 1B, 2A, and 2B.

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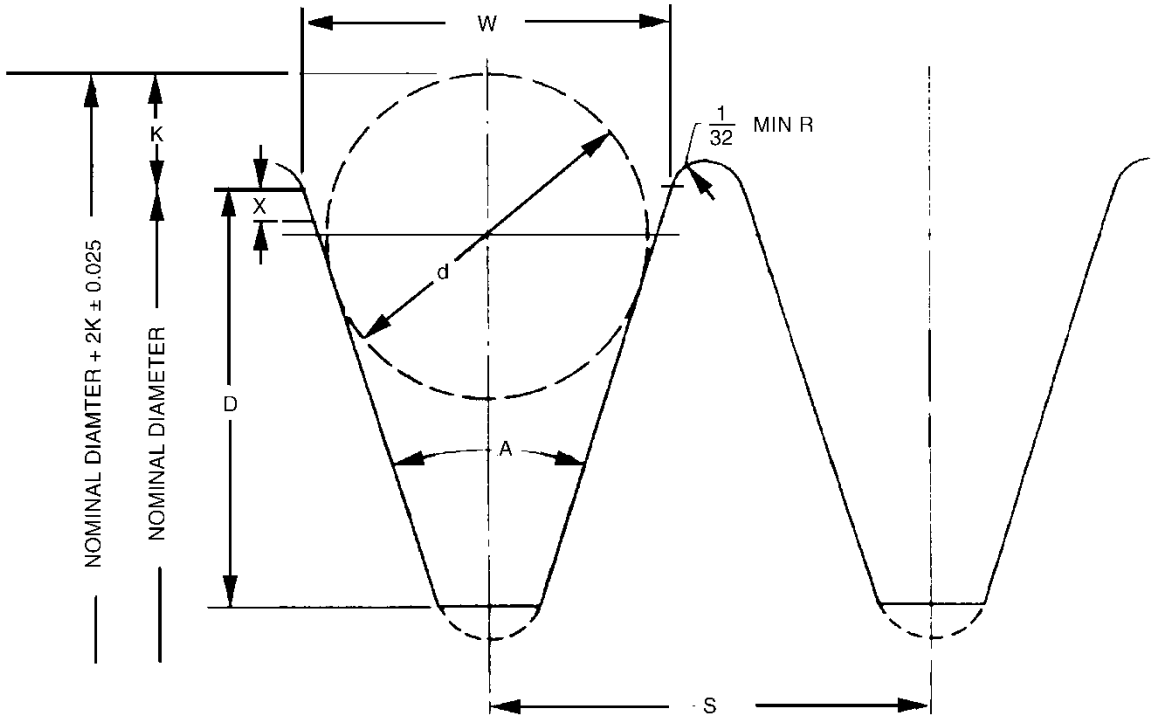

NOTES:

1. The sides of the groove are to be 3.2 µm (125 µin) A. A. maximum.
2. Radial runout is not to exceed 0.38 mm (0.015 in) full indicator movement (FIM). Axial runout is not to exceed 0.38 mm (0.015 in) FIM. Runout in the two directions is measured separately with a ball mounted under spring pressure to follow the groove as the pulley is rotated. Diameter, load, and overhang conditions may require or permit variations in the above-specified runout limits.
3. Bottom corner radii optional, but if used, it shall be below the depth, D.
4. In pulleys for use with belts in multiple on common centers, the diameters over the ball gages are not to vary from groove to groove in the same pulley more than 0.05 mm/25 mm (0.002 in/in) of diameter, with top limit of 0.30 mm (0.012 in) for diameters 152 mm (6 in) and above.
5. Centerline of groove is to be 90 degrees ± 2 degrees with pulley axis.
6. The X dimension is radial. 2X is to be subtracted from the effective diameter to obtain "pitch diameter" for speed ratio calculations.

Figure 1 - V-belt pulley dimensions, inch

Table 1A - V-belt pulley dimensions, mm

SAE Size	Recommended[1] Min Effective Dia	A Groove[2] Angle (Deg) ±0.5	W Effective Groove Width	D Groove Depth Min	d Ball or Rod Dia (±0.013)	2K 2X Ball[3] Extension	2X[4]	S Groove[5] Spacing (±0.38)
6A	57	36	6.3	7	5.558	4.16	1.0	8.00
8A	57	36	8.0	9	7.142	5.63	1.3	10.49
10A	61	36	9.7	11	7.938	3.77	1.5	13.74
11A	70	36	11.2	13	9.525	5.88	1.8	15.01
13A	76	36	12.7	14	11.113	7.99	2.0	16.79
15A	76	34				6.42		
	Over 102	36	15.2	14	12.700	7.02	0	19.76
	Over 152	38				7.56		
17A	76	34				8.21		
	Over 102	36	16.8	15	14.288	8.82	0.5	21.36
	Over 152	38				9.38		
20A	89	34				11.77		
	Over 114	36	20.0	18	17.463	12.42	1.0	24.54
	Over 152	38				13.02		
23A	102	34				15.67		
	Over 152	36	23.1	21	20.638	16.33	1.5	27.71
	Over 203	38				16.94		

1 Pulley effective diameters below those recommended should be used with caution, because power transmission and belt life may be reduced.

2 ±1.0 for spun fabricated pulleys.

3 2K dimensions are calculated in millimeters.

4 2X is to be subtracted from the effective diameter to obtain "pitch diameter" for speed ratio calculation.

5 These values are intended for adjacent grooves of the same effective width (W). Choice of pulley manufacture or belt design parameter may justify variance from these values. The S dimension shall be the same on all multiple groove pulleys in a drive using matched belts.