



V-BELT Installation Instructions

Power Transmission Solutions
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FORM
8658E
Revised
September 2015

⚠ WARNING

- Read and follow all instructions carefully.
- Disconnect and lock-out power before installation and maintenance. Working on or near energized equipment can result in severe injury or death.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.

⚠ CAUTION

Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.

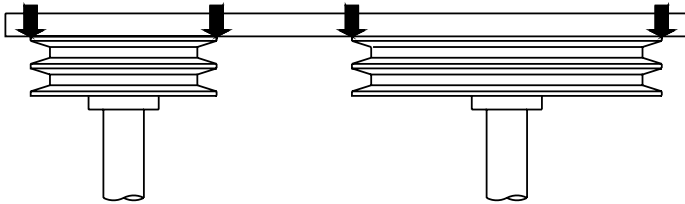
NOTICE

- Do not pry or otherwise force belts onto sheave. Doing so may result in permanent damage to the belt.

V-Belt Sheave Alignment

Before installing the bushings, refer to Form No. F20-23 for Q-D® instructions and Form No. 4013 for Browning Split Taper® instructions. After installing the bushings in the sheaves and the resulting assemblies onto the shafts, use a straight edge or string placed on the outside face of both sheaves to adjust parallel offset and angular alignments. The straight edge or string should be close to the shafts and contact each sheave as shown in the figure 1 and 2 below. The objective is to have the shafts parallel and the center lines of the two sheaves in line.

Figure 1
Four Point Contact with Straightedge



Belt drives should be aligned as perfect as possible to maximize drive life. The practical maximum misalignment is stated as the angle at which the belt enters the sheave, and is 1/2 degree. This angle is a result of both angular and parallel offset misalignment.

V-Belt Installation

Some means must be employed to allow tensioning the belts. These steps describe an application having adjustable center distance. If the design has fixed, non-movable centers then other means of tensioning must be considered such as idlers and drive tighteners. Contact Application Engineering at 1-800-626-2093 for additional assistance.

Step 1: Loosen moveable base bolts (or motor base bolts) and move sheaves close to facilitate installation of belt. See Table 1 for minimum installation allowance.

Step 2: Move all the slack in multiple belt drives to one side, then remove the slack (increase centers). Then rotate sheaves several revolutions by hand to equalize belt tensions.

Step 3: Tension belts as outlined on the next page.

Note: If BROWNING Tension Checker is used, only 35 lbs maximum force (F) can be obtained. If higher forces are required, use other means such as dead weights or hydraulic pressure to apply a known force.

Figure 2
Four Point Contact on Both Sides with String

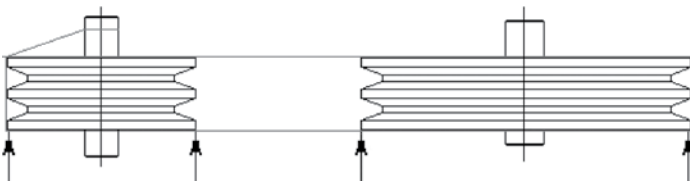
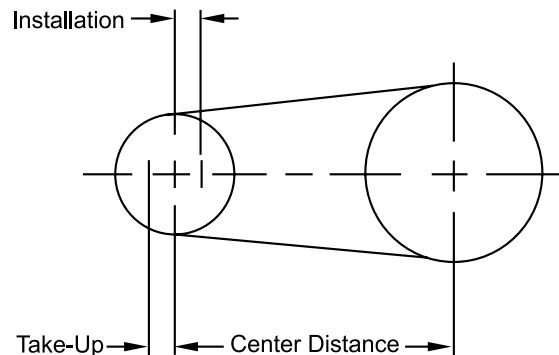


TABLE 1: CENTER DISTANCE ALLOWANCE

Belt No.	Allowance for Installation				Allowance for Initial Tensioning and Subsequent Take-Up
	4L, A	5L, B	C	D	All Sections
26 - 35	.8	1.0	-	-	1.0
38 - 55	.8	1.0	1.5	-	1.5
60 - 85	.8	1.3	1.5	-	2.0
90 - 112	1.0	1.3	1.5	-	2.5
120 - 144	1.0	1.3	1.5	2.0	3.0
158 - 180	-	1.3	2.0	2.0	3.5
195 - 210	-	1.5	2.0	2.0	4.0
240	-	1.5	2.0	2.5	4.5
220 - 300	-	1.5	2.0	2.5	5.0
330 - 390	-	-	2.0	2.5	6.0
420 and over	-	-	2.3	3.0	1 1/2% of Belt Length
	3V	5V	8V		All Sections
250 - 475	.5				1.0
500 - 710	.8	1.0			1.2
750 - 1060	.8	1.0	1.5		1.5
1120 - 1250	.8	1.0	1.5		1.8
1320 - 1700	.8	1.0	1.5		2.2
1800 - 2000		1.0	1.8		2.5
2120 - 2240		1.2	1.8		2.8
2360		1.2	1.8		3.0
2500 - 2650		1.2	1.8		3.2
2800 - 3000		1.2	1.8		3.5
3150		1.2	1.8		4.0
3350 - 3550		1.5	2.0		4.0
3750		-	2.0		4.5
4000 - 5000		-	2.0		5.5
5600		-	2.0		6.0

Figure 3



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Tensioning V-Belts

Calculate or measure the belt span length as shown in Figure 3. Calculate the required deflection by multiplying this number by 1/64. For example, if the belt span is 32 inches, $32 \times 1/64 = 1/2$ inch deflection. Increase the belt tension by increasing the center distance (or adjusting the idler, if present). Apply the force listed in Table 2 to any one of the belts in the drive at the center of the belt span until the calculated deflection amount is reached. Drives with shock loading or other unusual conditions may require increased tension. Always check to be sure bearings can handle the loads. Excessively high or low tensions will affect belt life. Recheck belt tensions after jog start or 1-3 minutes of operation, and 8 hours, 24 hours, 100 hours, and periodically thereafter.

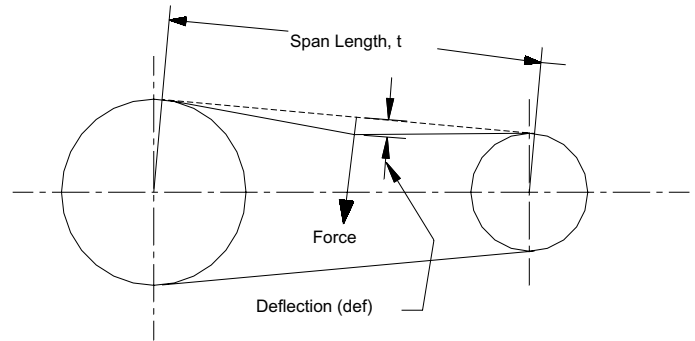
TABLE 2
SHEAVE DIAM - INCHES
DEFLECTION FORCE - LBS.

The values in Table 2 are general in nature providing deflection force to cover a wide range of drives. For precise deflection force refer to our EDGE online V-Belt Drive Selection Program.

Belt Cross Section	Smallest Sheave Diameter Range	RPM Range	Belt deflection force			
			Super Gripbelts and Unnotched Gripbands		Gripnotch Belts and Notched Gripbands	
			Used Belt	New Belt	Used Belt	New Belt
A - AX	3.0 - 3.6	1000 - 2500 2501 - 4000	3.7 2.8	5.5 4.2	4.1 3.4	6.1 5.0
	3.8 - 4.8	1000 - 2500 2501 - 4000	4.5 3.8	6.8 5.7	5.0 4.3	7.4 6.4
	5.0 - 7.0	1000 - 2500 2501 - 4000	5.4 4.7	8.0 7.0	5.7 5.1	8.4 7.6
B - BX	3.4 - 4.2	860 - 2500 2501 - 4000	- -	- -	4.9 4.2	7.2 6.2
	4.4 - 5.6	860 - 2500 2501 - 4000	5.3 4.5	7.9 6.7	7.1 6.1	10.5 9.1
	5.8 - 8.6	860 - 2500 2501 - 4000	6.3 6.0	9.4 8.9	8.5 7.3	12.6 10.9
C - CX	7.0 - 9.0	500 - 1740 1741 - 3000	11.5 9.4	17.0 13.8	14.7 11.9	21.8 17.5
	9.5 - 16.0	500 - 1740 1741 - 3000	14.1 12.5	21.0 18.5	15.9 14.6	23.5 21.6
D	12.0 - 16.0	200 - 850 851 - 1500	24.9 21.2	37.0 31.3	- -	- -
	18.0 - 20.0	200 - 850 851 - 1500	30.4 25.6	45.2 38.0	- -	- -
3V - 3VX	2.2 - 2.4	1000 - 2500 2501 - 4000	- -	- -	3.3 2.9	4.9 4.3
	2.65 - 3.65	1000 - 2500 2501 - 4000	3.6 3.0	5.1 4.4	4.2 3.8	6.2 5.6
	4.12 - 6.90	1000 - 2500 2501 - 4000	4.9 4.4	7.3 6.6	5.3 4.9	7.9 7.3
5V - 5VX	4.4 - 6.7	500 - 1749 1750 - 3000 3001 - 4000	- - -	- - -	10.2 8.8 5.6	15.2 13.2 8.5
	7.1 - 10.9	500 - 1740 1741 - 3000	12.7 11.2	18.9 16.7	14.8 13.7	22.1 20.1
	11.8 - 16.0	500 - 1740 1741 - 3000	15.5 14.6	23.4 21.8	17.1 16.8	25.5 25.0
8V	12.5 - 17.0	200 - 850 851 - 1500	33.0 26.8	49.3 39.9	- -	- -
	18.0 - 22.4	200 - 850 851 - 1500	39.6 35.3	59.2 52.7	- -	- -

Belt Cross Section	Smallest Sheave Diameter Range	Belt deflection force	
		Super Gripbelts and Unnotched Gripbands	
		Used Belt	New Belt
3L	1.25 - 1.75	$\frac{3}{8}$	$\frac{5}{8}$
	2.00 - 2.25	$\frac{3}{4}$	1 $\frac{1}{4}$
	2.50 - 3.00	1	1 $\frac{1}{2}$
4L	2.10 - 2.80	$\frac{5}{8}$	1
	3.00 - 3.50	1 $\frac{5}{8}$	2 $\frac{1}{2}$
	3.70 - 5.00	2	3
5L	3.00 - 4.20	1 $\frac{1}{2}$	2 $\frac{5}{8}$
	4.50 - 5.20	2 $\frac{1}{2}$	3 $\frac{1}{2}$

Figure 4



Note: For gripbands (multiple or banded belts), the belt deflection force table 2 must be multiplied by the number of ribs in the gripband. Lay a narrow steel bar such as keystone across the gripband belt and apply the belt deflection force to the bar such that all the individual ribs are deflected evenly.

General Notes

Do not install new belts in worn sheave grooves. Such sheaves should be replaced with new ones to insure a proper fit of the belts in the grooves.

Keep belts clean. Do not use belt dressing.

When replacing belts on a drive, be sure to replace the entire set with a new set of matched belts. Keep extra belts stored in a cool, dark, dry place.

For additional assistance please contact
Application Engineering at 1-800-626-2093.

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