MASTERDRIVE®

POWER TRANSMISSION PRODUCTS

Belt Tension Checker

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.
- To avoid damage, supporting structure including shafts and bearings must be designed to handle transmitted loads and belt tension(s).

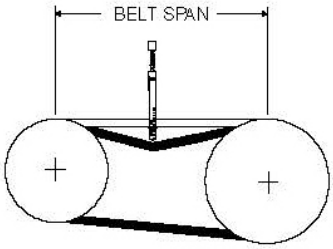
Tensioning V-Belt Drives

General rules of tensioning

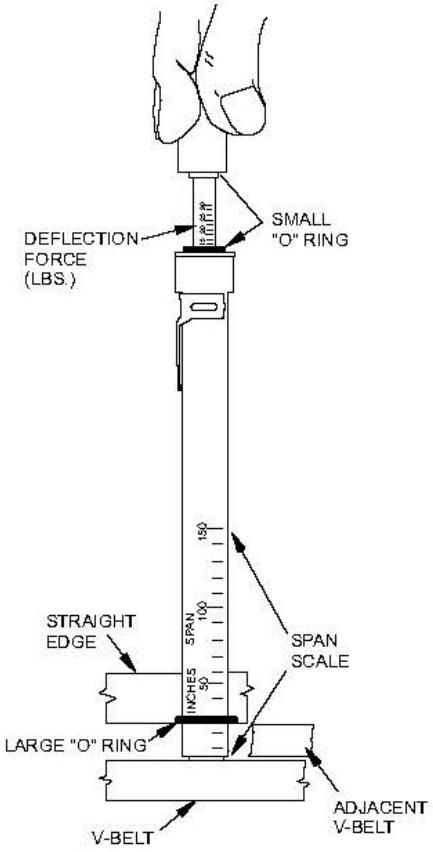
1. Ideal tension is the lowest tension at which the belt will not slip under peak load conditions.
2. Check tension frequently during the first 24 hours of operation. Check after jog start or 1-3 minutes of operation, at 8 hours, 24 hours, 100 hours and periodically thereafter are recommended.
3. Over tensioning shortens belt and bearing life.
4. Keep belts free of foreign material which may cause slip.
5. Make v-drive inspection on a periodic basis. Under-tensioned belt drives often produce audible squeal noise. Tension when slipping. Never apply belt dressing as this will damage the belt and cause early failure.

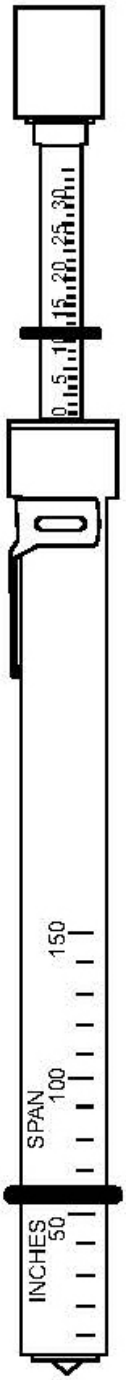
Tension Measurement Procedure

1. Measure the belt span (see sketch).
2. Position bottom of the large o-ring on the span scale at the measured belt span.
3. Set the small o-ring on the deflection force scale to zero.
4. Place the tension checker squarely on one belt at the center of the belt span. Apply a force on the plunger and perpendicular to the belt span until the bottom of the large o-ring is even with the top of the adjacent (next) belt or with the bottom of a straight edge laid across the outside diameters of the v-belt sheaves.
5. Remove the tension checker and read the force applied from the bottom of the small o-ring on the deflection force scale.
6. Compare the force you have applied with the values given in the tables on the back of this page. The force should be between the minimum and maximum shown. The maximum value is shown for “New Belt” and new belts should be tensioned at this value to allow for expected tension loss. “New Belt” tensions should be used at inital installation and after jog start or 1-3 minutes of operation. Used belts should be maintained at the minimum value as indicated in the chart. “Used Belt” tensions should be used for the 8 hour and subsequent checks. If the belt span was measured in inches, then use the force values for comparison. If the belt span was measured in centimeters, then use the kilograms of force values for comparison.
   Note: The ratio of deflection to belt span is 1:64 in either units of measurement.
7. Whenever possible, jog start for a few revolutions or preferably run drive for approximately 1-3 minutes and then re-tension in accordance with steps 1-6. Running the drive for a few revolutions or minutes will help seat the belt(s) in the groove(s). This relatively early re-tensioning may reduce or minimize the amount of re-tensioning required in the first 24 hours of drive service.



Part Number: “Tension Gauge”





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

Sheave Diameter - Inches
Deflection Force - Lbs.

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	3.7	5.5	4.1	6.1
		2501-4000	2.8	4.2	3.4	5.0
	3.8 - 4.8	1000-2500	4.5	6.8	5.0	7.4
		2501-4000	3.8	5.7	4.3	6.4
	5.0 - 7.0	1000-2500	5.4	8.0	5.7	8.4
		2501-4000	4.7	7.0	5.1	7.6
B, BX	3.4 - 4.2	860-2500	-	-	4.9	7.2
		2501-4000	-	-	4.2	6.2
	4.4 - 5.6	860-2500	5.3	7.9	7.1	10.5
		2501-4000	4.5	6.7	6.1	19.1
	5.8 - 8.6	860-2500	6.3	9.4	8.5	12.6
		2501-4000	6.0	8.9	7.3	10.9
C, CX	7.0 - 9.0	500-1740	11.5	17.0	14.7	21.8
		1741-3000	9.4	13.8	11.9	17.5
	9.5 - 16.0	500-1740	14.1	21.0	15.9	23.5
		1741-3000	12.5	18.5	14.6	21.6
D	12.0 - 16.0	200-850	24.9	37.0	-	-
		851-1500	21.2	31.3	-	-
	18.0 - 20.0	200-850	30.4	45.2	-	-
		851-1500	25.6	38.0	-	-
3V, 3VX	2.2 - 2.4	1000-2500	-	-	3.3	4.9
		2501-4000	-	-	2.9	4.3
	2.65 - 3.65	1000-2500	3.6	5.1	4.2	6.2
		2501-4000	3.0	4.4	3.8	5.6
	4.12 - 6.90	1000-2500	4.9	7.3	5.3	7.9
		2501-4000	4.4	6.6	4.9	7.3
5V, 5VX	4.4 - 6.7	500-1749	-	-	10.2	15.2
		1750-3000	-	-	8.8	13.2
		3001-4000	-	-	5.6	8.5
	7.1 - 10.9	500-1740	12.7	18.9	14.8	22.1
		1741-3000	11.2	16.7	13.7	20.1
	11.8 - 16.0	500-1740	15.5	23.4	17.1	25.5
		1741-3000	14.6	21.8	16.8	25.0
8V	12.5 - 17.0	200-850	33.0	49.3	-	-
		851-1500	26.8	39.9	-	-
	18.0 - 22.4	200-850	39.6	59.2	-	-
		851-1500	35.3	52.7	-	-

Sheave Diameter - Millimeters
Deflection Force - Kg.

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	75 - 90	1000-2500	1.7	2.5	1.9	2.8
		2501-4000	1.3	1.9	1.5	2.3
	91 - 120	1000-2500	2.0	3.1	2.3	3.4
		2501-4000	1.7	2.6	2.0	2.9
	121 - 175	1000-2500	2.4	3.6	2.6	3.8
		2501-4000	2.1	3.2	2.3	3.4
B, BX	85 - 105	860-2500	-	-	2.2	3.3
		2501-4000	-	-	1.9	2.8
	106 - 140	860-2500	2.4	3.6	3.2	4.8
		2501-4000	2.0	3.0	2.8	4.1
	141 - 220	860-2500	2.9	4.3	3.9	5.7
		2501-4000	2.7	4.0	3.3	4.9
C, CX	175 - 230	500-1740	5.2	7.7	6.7	9.9
		1741-3000	4.3	6.3	5.4	7.9
	231 - 400	500-1740	6.4	9.5	7.2	10.7
		1741-3000	5.7	8.4	6.6	9.8
D	305 - 400	200-850	11.3	16.8	-	-
		851-1500	9.6	14.2	-	-
	401 - 510	200-850	13.8	20.5	-	-
		851-1500	11.6	17.2	-	-
3V, 3VX	55 - 60	1000-2500	-	-	1.5	2.2
		2501-4000	-	-	1.3	2.0
	61 - 90	1000-2500	1.6	2.3	1.9	2.8
		2501-4000	1.4	2.0	1.7	2.5
	91 - 175	1000-2500	2.2	3.3	2.4	3.6
		2501-4000	2.0	3.0	2.2	3.3
5V, 5VX	110 - 170	500-1749	-	-	4.6	6.9
		1750-3000	-	-	4.0	6.0
		3001-4000	-	-	2.5	3.9
	171 - 275	500-1740	5.8	8.6	6.7	10.0
		1741-3000	5.1	7.6	6.2	9.1
	276 - 400	500-1740	7.0	10.6	7.8	11.6
		1741-3000	6.6	9.9	7.6	11.3
8V	315 - 430	200-850	15.0	22.4	-	-
		851-1500	12.2	18.1	-	-
	431 - 570	200-850	18.0	26.8	-	-
		851-1500	16.0	23.9	-	-

Sheave Diameter - Inches
Deflection Force - Lbs.

Belt Cross Section	Smallest Sheave Diameter Range	Belt Deflection Force	
		Used Belt	New Belt
3L	1.25 - 1.75	3/8	5/8
	2.00 - 2.25	3/4	1 1/4
	2.50 - 3.00	1	1 1/2
4L	2.10 - 2.80	5/8	1
	3.00 - 3.50	1 5/8	2 1/2
	3.70 - 5.00	2	3
5L	3.00 - 4.20	1 1/2	2 5/8
	4.50 - 5.20	2 1/2	3 1/2