



More Power For Tough Drives

PowerTwist Plus
V-BELTS

Proven Results

PowerTwist Plus V-Belts outperform conventional rubber drive belts and ALL other link V-belts time after time in harsh environments. A high performance polyurethane elastomer reinforced with multiple plies of polyester fabric provides an incredibly strong, yet flexible belt with the same horsepower ratings as classical section V-belts. And, the best materials give excellent resistance to extremes of temperature, abrasion, exposure to oils, grease, water, steam, and common industrial solvents and chemicals.

Reduce Downtime

With PowerTwist Plus, you will always have the right V-belt available. Just determine the length you need, then twist and interlock the end links by hand. No tools needed!

In Many Industries

The real proof is performance on the drive. In the harshest environments, field results show red PowerTwist Plus can last up to 15 times longer than conventional rubber V-belts and ALL other link V-belts!



Food

Marine

Conveying

Packaging

Air Moving

Agriculture

Machine Tool

Petrochemical

Pulp and Lumber

Metal Processing

Coal and Aggregate

Belts shown
actual size.

800-243-3374



PowerTwist Plus V-BELTS

Unique Twistlock Design

- 3 High Horsepower
- 4 Fast, Permanent Replacement
- 4 Easy Installation
- 5 Inventory Reduction
- 6 Oil, Chemical and Temperature Resistant
- 7 Drive Design
- 9 Performance Advantages
- 10 Specialty Belts

FAX 717-665-2649

The color red for link V-belts is registered in the U.S. Patent and Trademark Office as a trademark of Fenner, Inc.

High Horsepower



Steel Mill
200 HP Hot Saw

Put to the test, PowerTwist Plus V-Belts have amazing durability. They combine extremely high strength with low stretch and have the same power ratings as conventional V-belts.

On this Hot Saw drive, conventional V-belts were failing within 3 months due to heavy shock loads, high heat combined with constant attack from metal slivers, and abrasive particles. Sheave groove wear was also a problem.

When PowerTwist V-Belts of “C” section were fitted, belt life was extended to over 12 months with a major reduction in downtime on this critical production unit. The unique twistlock design of PowerTwist Plus enabled belts to be custom-sized for each sheave groove, thereby accommodating sheave groove wear and providing a truly matched set of belts when mounted on the drive.

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Fast, Permanent Replacement



Cotton Cleaner: 4 x "B" section—
Can replace damaged sections following
jamming and stalling of drive.



Debarker: 5 x "C" section—
Shock load and abrasion resistance.



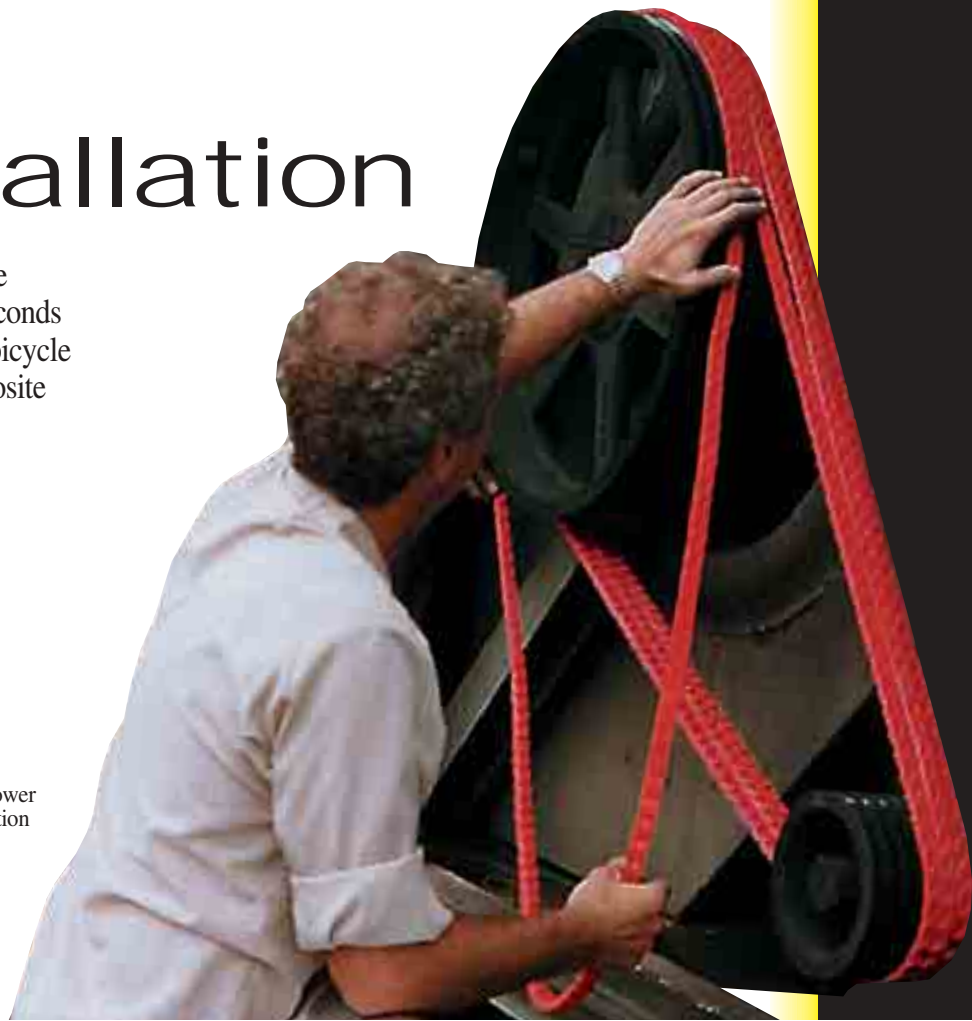
Flat Glass Conveyor: 6 x "C" section—
Easy installation, non-marking surface and
high temperature resistance.

Whether you're operating a cotton gin or a saw mill or running transfer conveyors, productivity is critical. PowerTwist Plus V-Belts minimize downtime with easy installation in minutes without machine tear downs or struggling with rusted down motor bases. Single belts or matched sets can be made with a flick of the wrist! And PowerTwist Plus V-Belts are a permanent replacement.

Easy Installation

PowerTwist Plus V-Belts can be made up to required length, by hand, in seconds and rolled onto the drive just like a bicycle chain. Their special multi-ply composite construction prevents damage. If conventional rubber V-belts are installed this way, almost certainly some of the load bearing tension cords will be broken, leading to reduced life. PowerTwist Plus V-Belts have the same cross section dimensions as regular belts and can be installed on existing sheaves with no changes in set up.

Cooling Tower
Drive Installation



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Inventory Reduction

Available in 3L, A/4L, B/5L, C, D and AA, BB, CC Sections, in packs of 5', 25' and 100' lengths. PowerTwist Plus will reduce the dollars you have tied up in spares and still give you instant availability in the plant.



If your shop looks like this...



***Switch to PowerTwist Plus
for convenience and
reduced inventory***

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Oil, Chemical and Temperature Resistant

PowerTwist Plus's special composite polyurethane/polyester construction means PowerTwist Plus V-Belts will outperform conventional rubber V-belts and ALL other link V-belts in handling hostile environments including exposure to oil, grease, water, most common industrial and agricultural chemicals and solvents, and extremes of temperature from -40°F to +240°F.



Lathe: 4 x "B" section—Oil and heat resistance plus reduced transmitted vibration to spindle.



Poultry Ventilation Fan: 1 x "A" section—Ammonia and heat resistance with easy installation.



Oil Pumping Unit: 3 x "C" section—Handles shock loads, resists dry rotting and provides on-site availability.

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Drive Design

TECHNICAL DATA

To calculate the belt requirement for individual drives, first find the design power by multiplying the nominal power by the correct Service Factor (Table 1) and Arc of Contact Factor (Table 2), and then divide by the power available per belt (Table 3. 3L, Table 4. A/4L, Table 5. B/5L, Table 6. C)

Example:

Figure out the following drives' needs from details given.

Milling Machine
10 Hp motor, 1750 RPM
Star Delta Start
Motor Sheave 7" dia.
Driven Sheave 10" dia.
Centers 33.5"
Runs for 16 hours per day
2 "B" Section belts

1. Find Design Hp.

From Table 1, select 1.3
(Machine tools—Star Delta Start)
Design Hp = $10 \times 1.3 = 13 \text{ Hp}$

2. Find Arc of Contact Factor (A/C).

$180^\circ - \frac{60(10-7)}{33.5} = 175^\circ$
From Table 2, $175^\circ = 1.01$

3. Find Total Design Hp.

Design Hp x A/C Factor =
 $13 \times 1.01 = 13.13 \text{ Hp}$

4. Find Belt Speed.

$1750 \times 7 \times 0.262 = 3210 \text{ ft./min.}$

5. Check Drive Out.

Hp per "B" Section belt for 7" dia. sheave is 10.3 Hp
No. of belts required =
 $\frac{\text{Total Design Hp}}{\text{Hp per Belt}} = \frac{13.13}{10.3} = 1.3 \text{ belts}$

For belt speeds higher than those shown, use the 4000 ft./min. rating.
If belt speed is over 6000 ft./min., consult factory.

6. 2 PowerTwist Plus V-Belts required.

Table 3. 3L

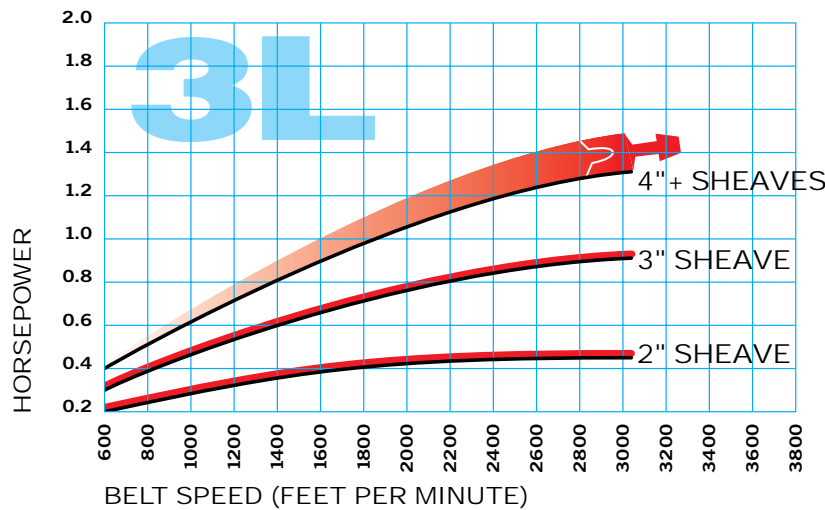


Table 4. A/4L

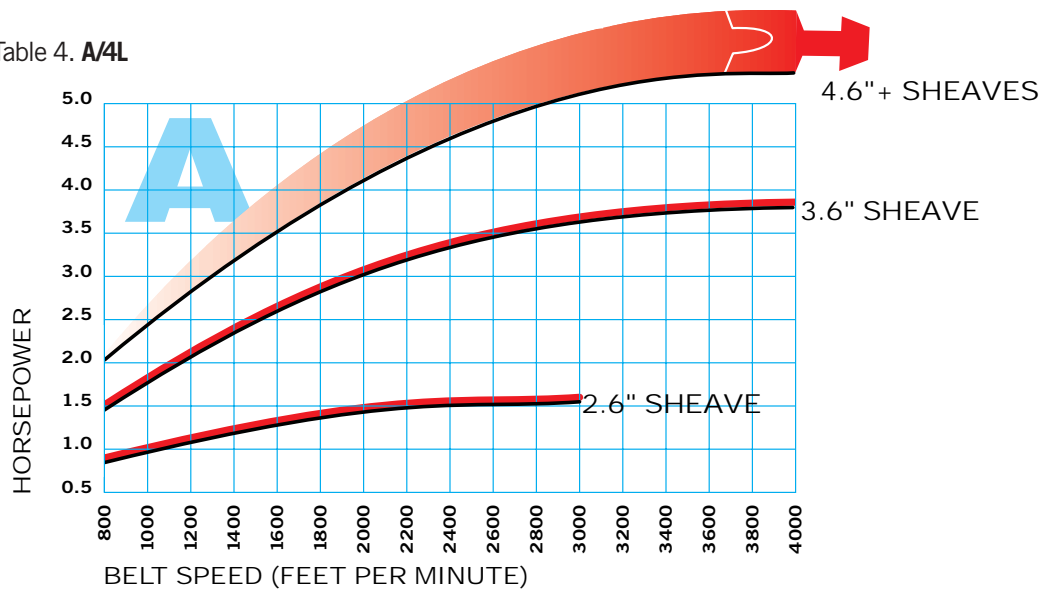


Table 1. Service Factors

| DUTY | TYPE OF DRIVE | TYPES OF PRIME MOVER | | | | | |
|--------------------|---|--|----------|---------|--|----------|---------|
| | | A.C. Motors, Star Delta Start, Normal Torque Squirrel Cage Induction Motors. D.C. Shunt wound. Steam-Gas-Engines over 600 RPM. | | | A.C. Motors, Direct On Line Start, High Torque, High Slip Repulsion. D.C. Motors, Series and Compound wound Steam-Gas-Engines under 600 RPM, Lineshafts-Clutches-Brakes. | | |
| Special Conditions | NOTE: For Speedup, Vertical and Reversing Drives, Long Centers, extremely Short Centers, multiply the Service Factor by 1.2. Starting Torques of 150% to 200% should be treated as very heavy loads and the last column used. | | | | | | |
| | TYPES OF DRIVEN MACHINE | UNDER 10 | 10 TO 16 | OVER 16 | HOURS PER DAY UNDER 10 | 10 TO 16 | OVER 16 |
| Light Duty | Normal Industrial Drives – Fans, Pumps, Compressors up to 5 Hp. | 1.0 | 1.1 | 1.2 | 1.1 | 1.2 | 1.3 |
| Medium Duty | Bakery machinery – Fans, Pumps, Compressors up to 20 Hp. Line shafts, Printing machinery, Generators. Machine Tools, Punches, Presses, Shears. | 1.1 | 1.2 | 1.3 | 1.2 | 1.3 | 1.4 |
| Heavy Duty | Textile Machinery, Saw Mills, Woodworking machinery, Brick machinery, Exciters, Piston compressors, Paper Mill machinery, Brick and Pipe machinery, Positive Blowers. | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 |

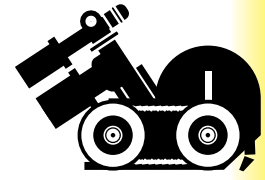


Table 2. Arc of Contact Correction Factors (A/C)

| Arc of contact | 180° | 175° | 170° | 165° | 160° | 155° | 150° | 145° | 140° | 135° | 130° | 125° | 120° |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Correction factor for speed reduction drives | 1.00 | 1.01 | 1.02 | 1.04 | 1.05 | 1.07 | 1.08 | 1.11 | 1.12 | 1.14 | 1.16 | 1.18 | 1.20 |



Arc of Contact = $180^\circ - 60 \times (\text{dia. of Large Sheave} - \text{dia. of Small Sheave}) / \text{Center Distance}$
 Belt Speed ft./min. = RPM x Sheave dia. in inches x 0.262

Table 5. B/5L

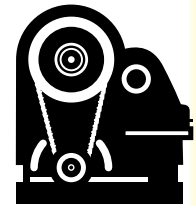
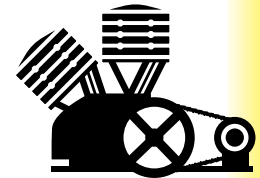
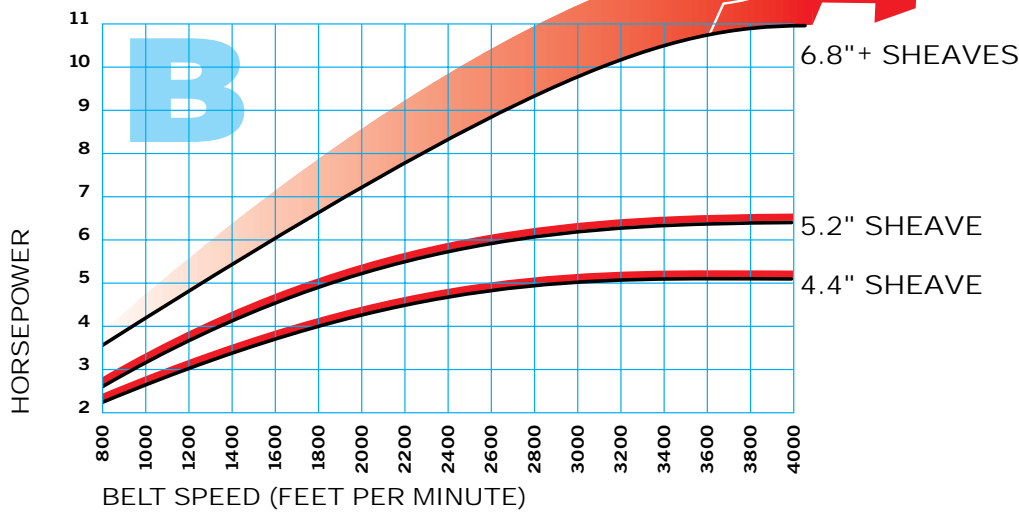
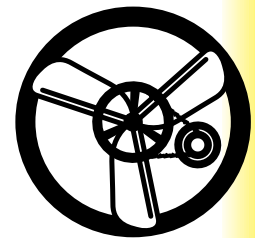
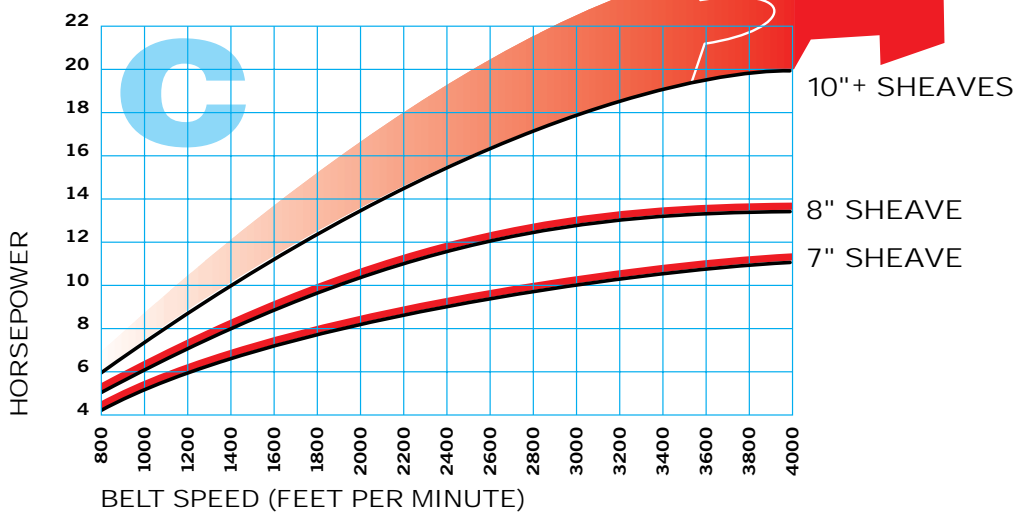


Table 6. C



Note: Horsepower ratings valid for ambient temperature of 85°F ± 5°F and uncontaminated environments.

Performance Advantages

How do other link V-belts compare to PowerTwist Plus?

Not too well! The strength of red PowerTwist Plus lies in its unique polyester/polyurethane plied fabric reinforced construction. This was custom-designed inhouse by our R & D team for power transmission applications.

Other link V-belts are fabricated from off-the-shelf conveyor belting of solid woven construction. This may be sufficient for handling packages, but it's not good for handling power!

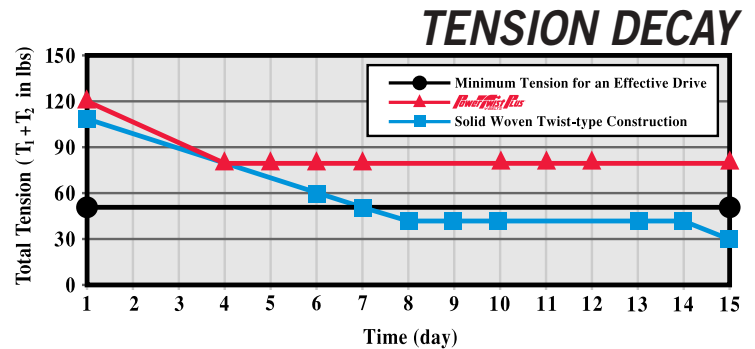
Let's compare the performance advantages of PowerTwist Plus versus a solid woven type link V-belt.

PowerTwist Plus
V-BELTS

More Power For Tough Drives

What do higher tensile strength, greater flex resistance, and less tension decay mean for you?

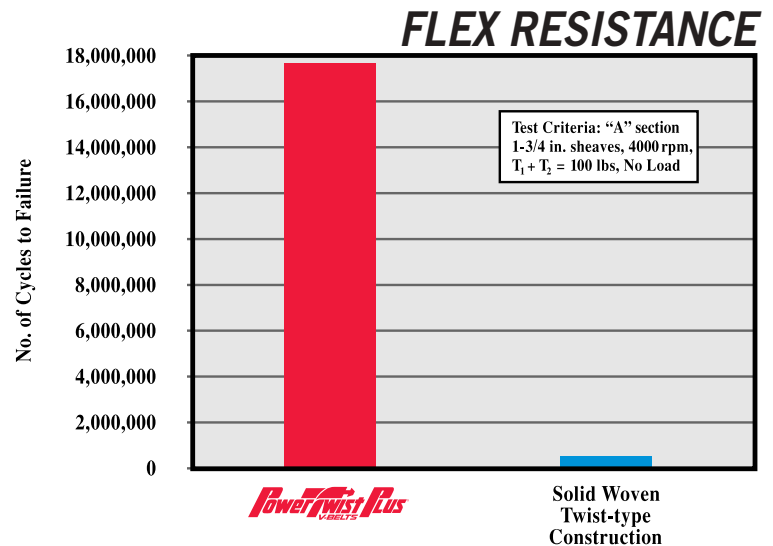
Quite simply, longer belt life, higher drive efficiency, less hassle, and less downtime.



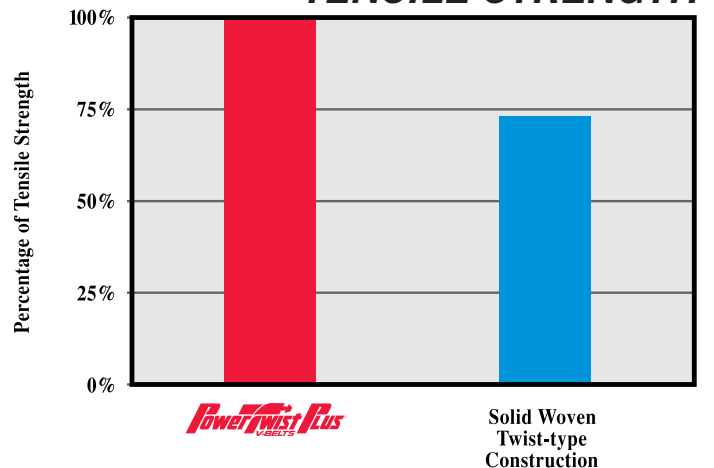
Test Criteria: 1.2 hp motor, 1750 rpm, D_i=3.2 in., D_o=10.0 in. 48 in. fan, single "A" section belt.

Note 1: Installed using manufacturer's recommended installation instructions.

Note 2: Solid Woven belt required re-tensioning during the first 24 hours as drive tension dropped below minimum.



Test Criteria: "A" section
1-3/4 in. sheaves, 4000 rpm,
T₁ + T₂ = 100 lbs, No Load



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Specialty Belts

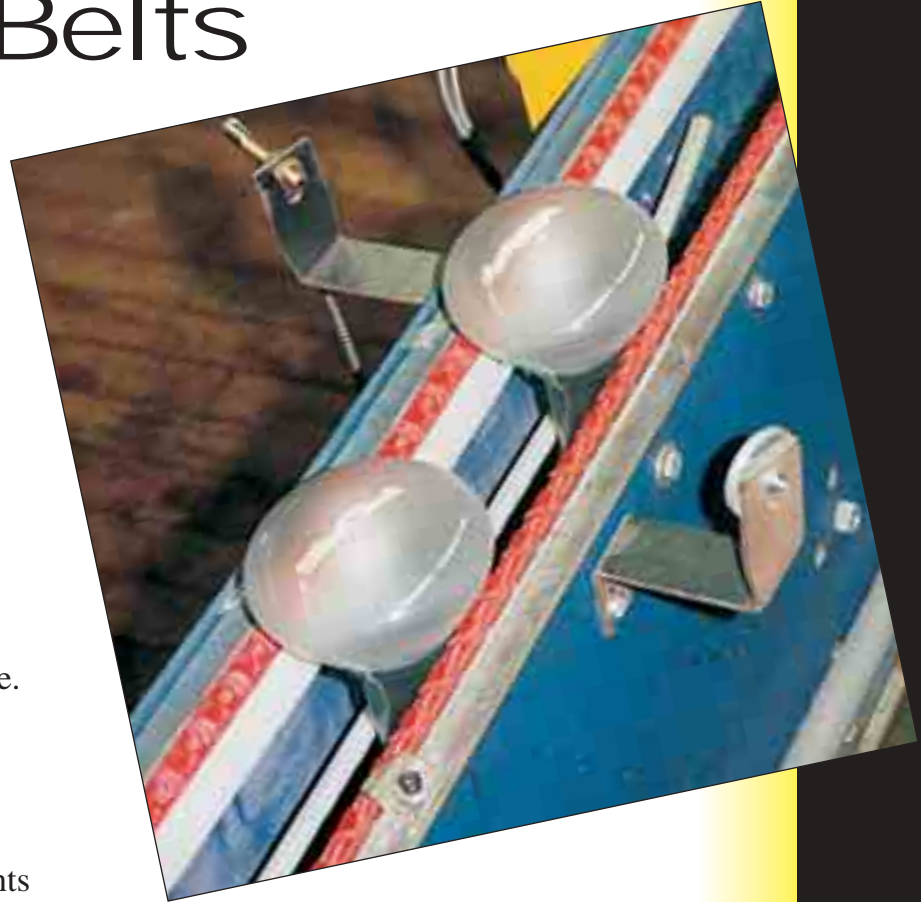
PowerTwist Plus V-belts

are available in a number of specialty profiles and constructions for power transmission and material handling applications.

Friktion Top *(patent pending)*

Features a cast 85A durometer additional supergrip top surface.

- A, B, and C sections
- Cannot delaminate
- Non-marking
- Easily installed without dismantling drive components



Ground Round *(patent # D.347,919)*

Designed specifically to replace round profile rubber, urethane and leather belts.

- $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ " and $\frac{3}{4}$ " diameters
- Suitable for use with small sheave diameters
- Highly flexible
- Non-marking
- Easily installed without dismantling drive components

Bridge Top *(patent # 5,564,558; # 6,062,379)*

Polymer bridge tab inserts increase top surface grip and cushion product during transfer.

- A and B sections only
- Non-marking
- Easily installed without dismantling drive components
- 85A urethane inserts are standard
- Teflon inserts available for high temperature applications

Double-V

Ideal for use with serpentine drives or for material transfer applications where a reduced contact surface is required.

- AA, BB and CC sections

How to Measure, Assemble & Install

PowerTwist Plus® V-BELTS

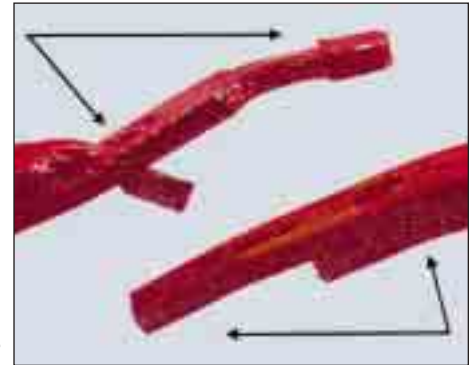
I. HOW TO MEASURE

Pull belt tight around sheaves to check hand tight length, overlapping the last two tabs with two holes in matching links as shown at right.

Count the number of links and remove one link for every 24 of O/3L, A/4L and B/5L Sections, and one link for every 20 of C & D Sections.

This gives the correct installed belt length and will ensure optimum belt tension when running. Note: Every tenth link is designated with an arrow (←).

For multiple belt drives, ensure that each belt has the same number of links.



II. DISASSEMBLY



1. Hold belt upside down. Bend back as far as possible; hold with one hand. Twist one tab 90° parallel with slot.



2. Pull end of link over tab.



3. Rotate belt end with tab 90°.



4. Pull belt end through two links.

III. ASSEMBLY



1. Hold belt with tabs pointing outward.



2. Place end tab through two links at once.



3. Flex belt further and insert second tab through end link by twisting tab with thumb.



4. Ensure tab returns to position across belt. Reverse belt so tabs run inside.

IMPORTANT—Turn Belt INSIDE OUT
(As shown) To Ensure Easy Assembly and Disassembly

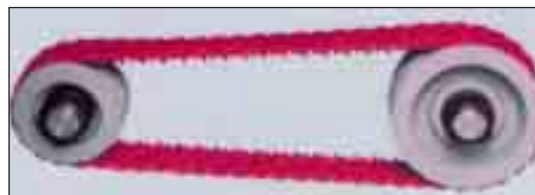
IV. INSTALLATION

1. Turn belt with tabs to the inside before installing.
2. Determine direction of drive rotation.
3. Align belt directional arrow (←) with drive rotation.
4. Fit belt in nearest groove of smaller sheave.
5. Roll belt onto larger sheave, turning the drive slowly. Belt may seem very tight; this is okay; DO NOT JOG MOTOR.
6. Check to see all tabs are still in their correct position and are not twisted out of alignment.
7. For multiple belt drives, work belt from groove to groove. On particularly wide drives, it may be easier to install half the belts from the inboard side and half from the outboard. **Note:** With drive ratios around 1:1, it may be necessary to *add back* one link to allow belts to be rolled on. This does *not* apply if using Alternative Installation Method



V. ALTERNATIVE INSTALLATION METHOD

1. Set motor to mid position of adjustment range and mark base clearly.
2. Determine required belt length as in I.
3. Push motor forward to minimum center distance..
4. Install belts as in IV.
5. Pull motor back to previously marked mid position.



VI. RETENSIONING

Like all high performance V-belts, PowerTwist Plus V-Belts require the maintenance of correct drive tension to operate efficiently. Experience indicates that drive tension should be checked after 24 hours running at full load. A retension may be necessary depending on the severity of the drive. Any initial belt stretch is then taken up. Subsequently, belt tension should be checked periodically and adjusted when necessary.

POWERTWIST APPLICATION DATA SHEET

Customer Data:

Customer Name: _____ Contact: _____

Address: _____

Telephone No.: _____

Fax No.: _____

Email Address: _____

Web Page Address (URL): _____

Product or Project Name: _____

Equipment Being Driven: _____

Type of Drive (Electric, Hydraulic, etc.): _____

RPM: _____ Horse Power: _____ Reduction to Final Drive: _____

Ratio: _____

Driver Pulley OD: _____

Driven Pulley OD: _____

Driver Pulley Material: _____

Driven Pulley Material: _____

Pulley Center Distance: _____

Type of Load (e.g., Uniform): _____

Min Time to Decelerate and/or Accelerate: _____

Working Torque Required to Perform Operation: _____

Peak Torque Required to Perform Operation: _____

Environmental Conditions (i.e. Temp., Humid, Chemicals,
etc.): _____

Service (Hours/Day, Days/Year): _____

Potential Quantity: _____

Target Price: _____

*Drive Layout Sketch (include dimensions of components
and their drive locations):*



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