

TECHNICAL INFORMATION & TIPS



V-BELT LENGTHS & SELECTION

It is not always possible to measure the length noted in the part number of a belt in the field. When selecting and finding equivalent belts in the field the easiest way to do this is by measuring the inside or outside length. You can then use the following as a guide to locate the closest belt size.

Classical Section Belts

The part description of a classical section belt includes the inside length, eg A30 refers to 30 inches inside length. The following table shows the difference in inches between the inside and outside length of a classical section belt. Measure the outside length of a classical belt and subtract the below measurement to find the inside length. Eg. An A section belt that measures 32 inches outside length is an A30.

Belt Section	Z	A	B	C	D	E
Difference between the inside & outside length	1" (25.4mm)	2" (50.8mm)	3" (76.2mm)	4" (101.6mm)	5" (127mm)	6" (152.4mm)

Narrow Section Belts

Measure the outside length of the belt (mm) and find the closest belt size using the effective or datum length (mm) found in the size lists for the appropriate belt section.

SPZ and 3V are equivalent in cross-section so look in both size listings to find the closest match.

SPB and 5V are equivalent in cross-section so look in both size listings to find the closest match.

NOTE: To find equivalent narrow or classical belt, choose a belt with the same datum length.

Eg. A B130 Hi-Power II belt is the same length as an SPB3350 Super HC belt because they both have a datum length of 3350mm.

MATCHING SYSTEMS

Uniset & V80

Uniset and V80 are Gates matching systems for V-belts. Belts that are part of these systems are made so that no matching of belts is required. The Uniset system meets or exceeds the ISO 4184 standard and the V80 system meets or exceeds the RMA standards, IP-20 for Classical Section & IP-22 for Narrow Section. All belts that are part of this system once tensioned and run-in will even out to the same length.

Predator Matching System

Predator belts have a matching system which must be used on multiple belt drives. This applies to both Single and Powerband versions of Predator belts. Predator belts are marked with a match/group number between 46 to 54 and each belt on a drive must have the same match/group number. Each matching number refers to a length tolerance range. The limited stretch characteristic of the Predator belts make it necessary to match them in this way. If matched belts are not used then it will severely impact performance and life.



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MINIMUM RECOMMENDED PULLEY/SPROCKET DIAMETERS

Power Transmission belt minimum recommended pulley/sprocket diameters are shown below. If sizes smaller than these are used belt life will be severely reduced.

SYNCHRONOUS IDLER SIZE RECOMMENDATIONS			
BELT SECTION	Minimum O.D. of Sprockets/Idlers		
	INSIDE	FLAT BACKSIDE	
	Teeth	(mm)	(mm)
POLY CHAIN GT CARBON			
5MGT	18	28.65	40
8MGT	22	56.02	80
14MGT	28	124.78	170
POWERGRIP GT3			
2MGT	10	7.64	13
3MGT	16	11.46	25
5MGT	18	22.28	45
8MGT	22	56.02	80
14MGT	28	124.78	170
POWERGRIP HTD			
3M	12	11.46	20
5M	14	22.28	33
8M	22	56.02	80
14M	28	124.78	170
20M	34	216.45	286
POWERGRIP TIMING			
MXL	12	7.76	13
XL	12	19.40	27
L	12	36.38	52
H	14	56.60	80
XH	18	127.34	170
XXH	18	163.72	247
SYNCHROPOWER			
T5	10	15.92	30
T10	16	50.93	80
AT5	12	19.10	60
AT10	18	57.30	120

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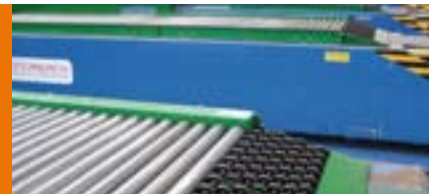
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V-BELT IDLER SIZE RECOMMENDATIONS		
BELT SECTION	Min. O.D. of Pulleys/Idlers	
	INSIDE (mm)	FLAT BACKSIDE (mm)
HI-POWER II		
Z	60	90
A	85	110
B	112	160
C	160	220
D	300	350
E	500	600
TRI-POWER		
AX	60	110
BX	80	160
CX	150	220
HI-POWER DUBL-V		
AA	85	---
BB	112	---
CC	229	---
SUPER HC		
SPZ/ 3V	71	120
SPA	100	160
SPB/ 5V	160	250
SPC	250	350
8V	315	450
QUAD-POWER		
XPZ/ 3VX	56	85
XPA	80	120
XPB/ 5VX	112	168
XPC	180	270
PREDATOR		
AP	85	110
BP	112	160
CP	160	220
SPBP/ 5VP	160	250
SPCP	250	400
3VP	71	120
8VP	315	450

V-BELT IDLER SIZE RECOMMENDATIONS		
BELT SECTION	Min. O.D. of Pulleys/Idlers	
	INSIDE (mm)	FLAT BACKSIDE (mm)
TRUFLEX & POWERATED		
2L (0)	21	27
3L (1 & 67)	38	50
4L (2 & 68)	64	83
5L (3 & 69)	89	116
MICRO-V		
J (PJ)	20	32
L (PL)	75	115
M (PM)	180	270
POLYFLEX & POLYFLEX JB		
3M-JB	17	47
5M-JB	26	75
7M-JB	42	130
11M-JB	67	170
ROUND ENDLESS		
Short Life or Intermittent Use - 8 x Belt diameter		
Long Life or Continuous Use - 16 x Belt diameter		

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BELT OPERATING TEMPERATURES

The following table lists the operating temperature ranges for different belt types.

BELT TYPE	TEMPERATURE RANGE
Hi-Power II & Truflex	-35°C up to +60°C
Predator, Super HC, Micro-V & PoweRated	-35°C up to +80°C
Quad-Power III & Tri-Power	-40°C up to +110°C
Rubber Synchronous belts	-35°C up to +100°C
Polyurethane V-Belts	-54°C up to +85°C
Poly Chain GT Carbon	-54°C up to +85°C
Polyurethane Synchronous Belts	-30°C up to +80°C

When belts are used in temperatures outside of this range the belt life is severely reduced. For operating temperatures outside of these ranges please contact Gates Customer Service for recommendations. Ph: (03) 9797 9688

PULLEY SPECIFICATIONS

V-Belt pulley groove specifications are available in the Preventive Maintenance Manual. This covers the groove spacing and angles for ranges of diameters. Note that belts of equivalent cross sections, eg. SPZ and 3V, may have a different pulley groove spacing (pitch) for Powerband versions which are not interchangeable. To monitor pulley wear use the gauges shown in the tools section of this catalogue.

BELT TENSION

All V-belt and synchronous belt drives need to be tensioned to the Gates specifications. Operating outside these specifications will severely impact belt life, performance and efficiency. With the drive information it is possible to calculate the tension requirements using the Gates design software or Gates design manuals. General tensioning specifications for properly designed V-Belt drives can be found in the Gates Preventive Maintenance Manual or in the Tension Pocket Guide. To apply the correct tension specifications use the tensioning tools mentioned in the tools section.

CONSIDERATIONS FOR OPERATING ENVIRONMENTS

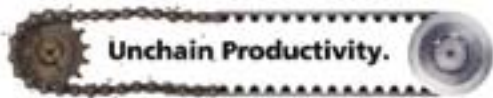
For applications/environments that exhibit slippage, debris and contamination, Gates recommends the use of a wrapped construction V-Belt such as Hi-Power II, Super HC or Predator. Examples: Timber saws, crushers and vacuum pumps.

Notched and Raw-edged V-belts (Tri-Power and Quad-Power III) have no protection to those environments or conditions. As such these belts are suitable to well guarded and clean environments that exhibit minimal slippage. Examples: Air Compressors, fans, heating and ventilation equipment.

Drives in environments with high moisture, chemical or oil contamination can severely impact belt performance. Using glass fibre corded belts such as PowerGrip belts should be avoided as it can degrade the tensile cords. Kevlar or Carbon corded belts are more suited to these environments. Many chemicals will react and degrade the rubber used in V-belt and synchronous belts. Belt materials should be selected with considerations to the chemicals involved. Belts made of Polyurethane (Poly Chain GT Carbon, Polyflex and Synchropower) provide greater compatibility in these environments. Pulley/ sprocket material may also need to be taken into consideration. Consult Gates in regard to which products best suit your application.

DRIVE DESIGN REQUEST FORM

INDUSTRIAL POWER TRANSMISSION



When requesting or designing a belt drive, use this form to collect the relevant details.

NOTE: It is always helpful to complete a drive design for existing drives especially if it is experiencing short belt life or other issues. You can easily see whether it is under rated or under-tensioned for the application.

BLUE details are required to complete a drive design.

Date: _____

Reference: _____

Customer: _____

Ph: _____

Company: _____

Fax: _____

Email: _____

Mob: _____

APPLICATION	
Name or Description	
Hours of use per day	

EXISTING DRIVE DETAILS			
Belt/Chain Description			
DriveR Pulley Size		DriveN Pulley Size	

CENTRE DISTANCE		
Minimum (mm)	Nominal (mm)	Maximum (mm)

Is the CD adjustable? _____ if no, is an idler acceptable? _____

INPUT (DriveR)		
Power (kW)	DR Speed (rpm)	DR Shaft Size
Gearbox Ratio	GB Output Speed (rpm)	

OUTPUT (DriveN)	
Speed Ratio or DN Speed (rpm)	DN Shaft Size

ADDITIONAL INFORMATION

DRIVE RESTRICTIONS:

DriveR Max OD		DriveN Max OD	
DriveR Max Width		DriveN Max Width	

AMBIENT CONDITIONS:

Temperature		Moisture	
Abrasives		Oil/Chemicals	
Weather		Other	
Description			



DRIVE LAYOUT

