V-BELTS

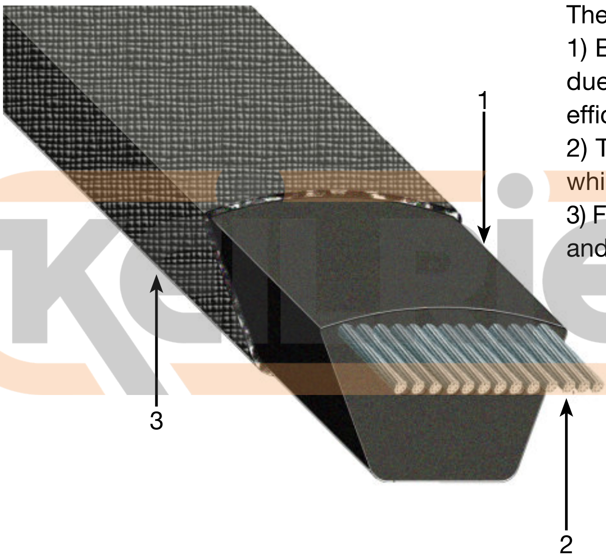
Rubber V-belts

MEGADYNE

INTRODUCTION TO V-BELTS

Megadyne V-belts have been used for decades in the most different industries and applications, offering drive solutions to customers all over the world.
Applied technology guarantees such a dimensional precision in V-belts which allows them to be suitable for multiple transmissions. This dimensional stability continues also during belt use.

The variety of belt sizes available allows the application of Megadyne V-belt in a wide range of drive applications, such as:
machine tools
industrial washing machines
textile machines
continuous paper machines
high power mills
stone crushers



The main V-belt components are:
1) Belt body made of a special rubber compound which provides, due to its excellent mechanical characteristics, high transmission efficiency and assures a minimum rubber wear off;
2) Tensile member consisting in high-strength low-stretch cords, which grant length stability over the belt life time;
3) Fabric jacket or cover made of fabric, protecting the tensile member and permitting the use of back side idler.

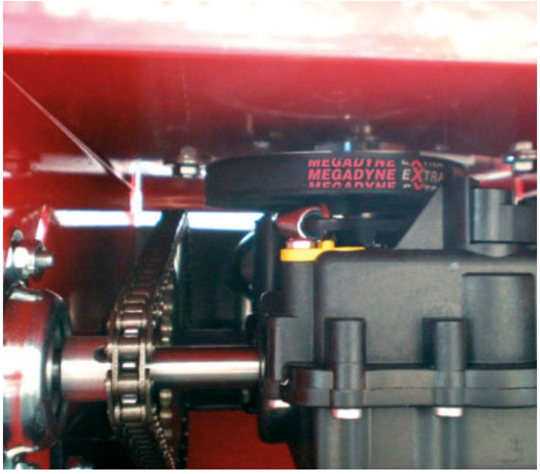
MECHANICAL AND CHEMICAL FEATURES

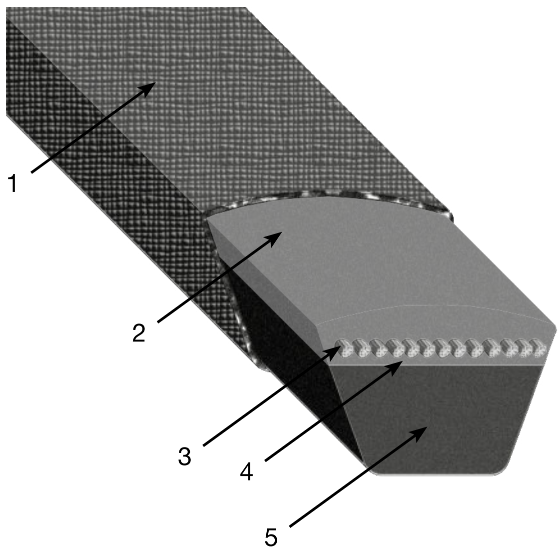
- smooth starting and running
- wide range of driven speed
- low maintenance
- high efficiency
- extremely wide horsepower ranges
- dampen vibration between driver and driven pulleys
- silent operations
- long life service
- easy installation
- reduction in drive dimension
- working temperature range from -30°C to +80/90°C (see details in family pages)
- oil and heat resistance
- antistatic properties

MEGAMATCH MEGA MATCH

All V-belts carrying the MEGA MATCH logo are made and supplied according to the matching set tolerances and limits indicated by the relevant international standards (ISO,RMA, etc)

INTRODUCTION TO V-BELTS





WRAPPED BELTS

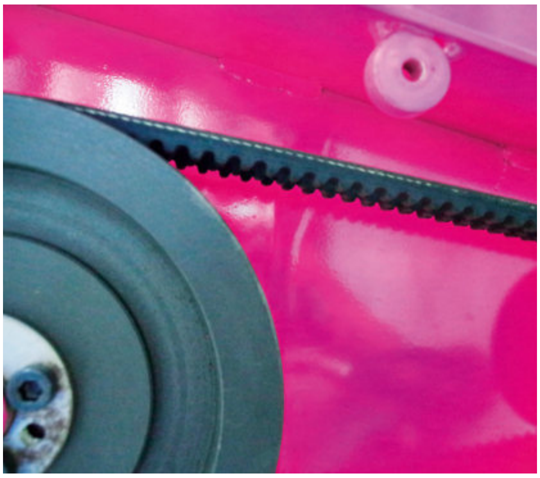
EXTRA
Extra belts were designed to offer durable and reliable performances on light and medium-duty drives. They represent an affordable solution for transmission systems of all industrial sectors.

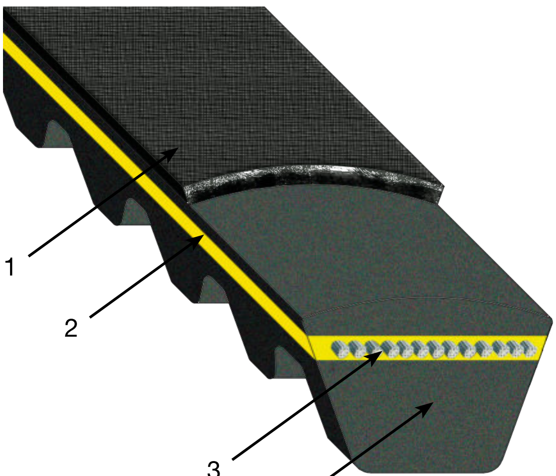
OLEOSTATIC
Oleostatic rubber belts are developed with high resistant tensile elements, they are characterised by high performances, length stability during belts life, conductivity, oil and heat resistance. They are particularly suitable for centrifugal pumps, compressor, tool machines, generators, high power mills and stone mills.

OLEOSTATIC GOLD
Different materials and design features, together with an improved production process, have led to the development of a new class of higher rated wrapped V-belts. The new OLEOSTATIC GOLD V-belts products family can operate in a wide range of industrial applications, within a large spread of load capacities and speeds — offering rated performance from 100 to 8,000 RPM and power capability from 1 to 400 kW, meanwhile granting large cost advantages for the end users.

Oleostatic Gold structure:

1) FABRIC: Double cover ply - CR Dip.
   A reinforced, double fabric cover is plied around the belt to protect it against contamination and moisture. Its increased flexibility allows the belt to bend more easily around the smallest pulleys with far less strain on the fabric, while assuring a smoother running drive.
2) TOP CUSHION: SBR compound + Fibers
3) TENSILE CORD: H.T. Polyester
   The tensile section is made up of a multiple number of high-strength, low elongation polyester cords, completely embedded in the adhesion layers, to enhance resistance to tension and flex-fatigue. Each cord is individually and specially coated to secure a long-lasting bond with the surrounding rubber and to grant a longer operational lifetime. In addition the belt requires significantly less retensioning and take-up due to its cord's consistent length stability. Longer belt life means less frequent replacement, less downtime and lower maintenance costs.
4) BOTTOM CUSHION: SBR compound + Fibers
5) BODY COMPOUND: Polycloroprene (CR) based





RAW EDGE

LINEA-X

These belts have been specifically developed to run where small pulleys diameters and high transmission ratios put a limit to the use of wrapped belts of the same section.

Compared to wrapped belts, the LINEA-X family offers important improvements, like specific compounds and special production technology. In particular the transverse orientation of the fibers improves the cord support capacity of the body section and reinforces its transverse rigidity, while maintaining, (due to the cogged profile and the precision-ground sidewalls) the highest longitudinal flexibility and running stability. These characteristics guarantee an excellent structure with advantages such as: high transmission ratios, improved grip and resistance to continuous bending.

LINEA GOLD

The NEW generation of raw edge belts
New materials, advanced design features and an innovative production process has led MEGADYNE to develop a new generation of raw edge V-belt drives that outperform, in a wide range of industrial applications, all the previous drives equipped with standard raw edge belts, granting large cost advantages for the end users and greater design flexibility for the engineers. The belt has a narrow cross section and a raw edge construction, based on a new EPDM rubber compound which can outstand chemically aggressive environments, ageing, ozone, UV and heat.

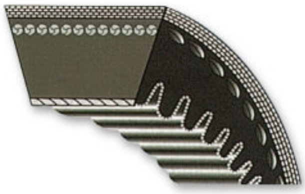
Linea Gold structure:
1) BACKSIDE FABRIC
A textile fabric is plied on the belt backside to protect it against contamination and moisture.
Its flexibility gives the belt excellent reversed bending properties when backside idlers are used and protects the belt against wear.
2) ADHESION LAYERS
An innovative, colored, EPDM compound located immediately above and below the belt cords, guarantees the best possible bonding with the under cord body material.
3) TENSILE CORD
The tensile section is made up of a multiple number of high-strength, low elongation polyester tensile cords which are completely embedded in the adhesion layers and vulcanized as one solid unit to enhance resistance to tensile and flex-fatigue forces. On request, for special extreme requirements, aramid or glassfibre cords are also available.
4) BODY COMPOUND
A newly developed EPDM compound, with high-performance fibers embodied in the rubber matrix, provides to the belt with superior abrasion and wear resistance. The transversal orientation of the fibers improves the cord support capacity of the body section and reinforces its transversal rigidity, while maintaining, in connection with the cogged profile and the precision-ground sidewalls, the utmost longitudinal flexibility and running stability.

SECTIONS

Z	E
A	20
B	25
C	45
D	50

Classical wrapped V-belts

(Extra - Oleostatic - Oleostatic Gold)



SECTIONS

AX
BX
CX

Classical raw edge V-belts

(Linea Gold)

SECTIONS

SPZ
SPA
SPB
SPC

Narrow wrapped V-belts DIN

(Extra - Oleostatic Gold)

SECTIONS

XPZ
XPA
XPB
XPC

Narrow raw edge V-belts DIN

(Linea-X - Linea Gold)

SECTIONS

3V
5V
8V

Narrow wrapped V-belts RMA

(Oleostatic)

SECTIONS

13x6	36x12
17x6	37x10
21x7	42x13
22x8	47x13
26x8	52x16
28x8	55x16
30x10	65x20
32x10	70x20

Variable speed V-belts

(Varisect)

SECTIONS

XDV2-38
XDV2-48
XDV2-58

Xtra Duty V-belts

(XDV2)

SECTIONS

AA
BB
CC

Double V-belts

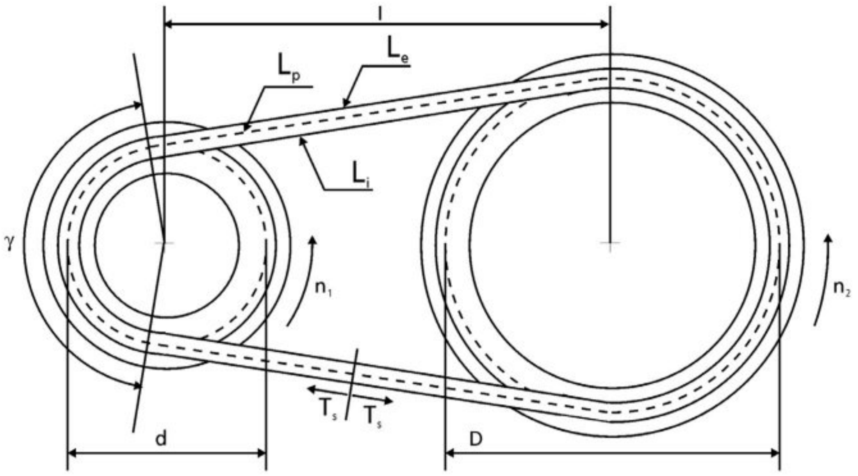
(Esaflex)

SECTIONS

RA	RSPC
RB	R3V
RC	R5V
RSPZ	R8V
RSPA	R3VX
RSPB	R5VX

Banded V-belts

(Pluriband)



Symbol	Unit	Definition	Symbol	Unit	Definition
C_γ		correction factor C_γ	L_p	mm	pitch length (effective)
C_L		correction factor C_L	n_1	RPM	speed of smaller pulley (faster)
C_c		correction factor C_c	n_2	RPM	speed of bigger pulley (slower)
d	mm	pitch diameter of smaller pulley	P	kW	power to be transmitted
D	mm	pitch diameter of bigger pulley	P_a	kW	actual power of the transmission
I	mm	theoretical center distance	P_b	kW	basic performance of a single belt
I_e	mm	effective center distance	P_c	kW	corrected power
i		transmission ratio	P_d	kW	difference to Pb due to K≠1
L'	mm	calculated pitch length	Q		number of belts
L_e	mm	external length ($L_p+\Delta_e$)	T_s	N	static belt tension
L_i	mm	internal length ($L_p-\Delta_i$)	v	m/s	peripheral belt speed
			γ	°	arc of contact

BELT SECTION

Necessary data for selection of the belt section:
P = power to be transmitted in kW
n_1 = speed in RPM of the smaller pulley
n_2 = speed in RPM of the bigger pulley
It is necessary to correct the power P by a coefficient C_c (see table 1 page 6) which considers into account the actual operating conditions.

Corrected power P_c is given by:
$P_c = P \cdot C_c$
The graphs gives a guiding criterion for the section of the belt.

TRANSMISSION RATIO

Transmission ratio is calculated as follows:

$$i = \frac{n_1}{n_2} = \frac{D}{d}$$

where D is the pitch diameter of larger pulley and d is the pitch diameter of the smaller pulley.

TECHNICAL CALCULATION

Peripheral speed of the belts is determined by

$$v = \frac{d \bullet n_1}{19100}$$

If the drive being calculated is of the V/flat type (one V pulley and one flat pulley) it is necessary to find the corresponding pitch diameter of the flat pulley.
The pitch diameter of the flat faced pulley is obtained by increasing its external diameter by the amount in millimetres shown in the following table:

Z	A	B	C	D	E	19	20	25
8	10	14	20	24	33	16	15	19

PITCH LENGTH OF THE BELT AND CORRECT CENTER DISTANCE

Whenever the shaft center distance I is not predetermined by the layout of the drive, the optimum distance may be chosen as follows:

$1<i<3 \quad I \geq \frac{(i+1) \bullet d}{2} + d$

$i>3 \quad I \geq D$

The pitch length is determined by:

$$L' = 2 \bullet I + 1{,}57 \bullet (D+d) + \frac{(D-d)^2}{4I}$$

From the list of belt sizes, should be selected the belt pitch lenght L_p nearest to the value of L' above calculated.
Since $L' \neq L_p$ the center distance "**I**" may be varied by subtracting half $L' - L_p$. Therefore the effective center distance of the drive will be:

$$I_e = I - \frac{(L'-L_p)}{2}$$

NUMBER OF BELTS

The basic performance P_b is the power which a single belt transmits under the following conditions:

- $i = 1$

This configuration corresponds to 180° arc of contact belt on both pulleys;

- $i \neq 1$

The difference of kW-rating P_d is the power which the belt transmits in excess of P_b because $i \neq 1$ in service conditions.
The actual kW-rating P_a is the power which the belt transmits in operating conditions and is obtained by means of:

$$P_a = (P_b + P_d) \times C_g \times C_L$$

Table 4 (see belt family pages) gives the values of P_b according to RPM and d (smaller diameter) and the values of P_d according to RPM and i.

Table 2 (bottom of this page) and 3 (see belt family pages) give values of the coefficients C_γ and C_L taking into account the operating conditions.

The arc of contact g of the belt on the smaller pulley is determined by:

$$\gamma = 180° - 57 \bullet \frac{D\text{-}d}{l_e}$$

The number of belts Q necessary for the transmission of the power P_c is determined by:

$$Q = \frac{P_c}{P_a}$$

The number of belts actually is obtained in general by rounding up Q to the next highest whole number.

TABLE 1 - TYPE OF MOTOR

Drivers

(1)
AC electric motors: high slip, squirrel cage, synchronous:
DC electric motors: parallel excitation;
multi-cylinder internal combustion engines;
gas or steam turbines.

(2)
AC electric motors: high torque, high slip, single phase, wound rotor, commutator;
DC electric motors: series and compound excitation;
single-cylinder internal combustion engines with direct coupling or with countershaft;
steam engines.

Applications	**Daily operating hours**					
	0-8[1]	8-16[1]	16-24[1]	0-8[2]	8-16[2]	16-24[2])
Light use Centrifugal pumps and compressors, belt conveyors, (light materials) fans and pumps up to 7,5 kW.	1,1	1,1	1,2	1,1	1,2	1,3
Normal use Shears for steel sheet presses, belt and chain conveyors, (heavy material) sifters, generator sets, machine tools, kneading machines, industrial washing machines, printing presses, fans and pumps over 7,5 kW.	1,1	1,2	1,3	1,2	1,3	1,4
Heavy use Hammer mills, piston compressors, belt conveyors for heavy loads, lifters, textile machines, continuous paper machines, piston and dredging pumps, ripping saws.	1,2	1,3	1,4	1,4	1,5	1,6
Extra heavy use High power mills, stone crushers, calendars, mixer, cranes, diggers, dredgers.	1,3	1,4	1,5	1,5	1,6	1,8

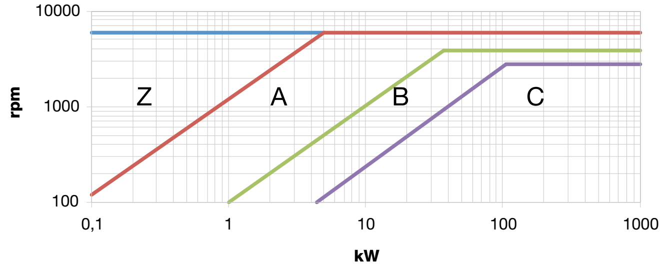
TABLE 2 - Correction factor Cγ (T/T=V/V drives; T/P=V/Flat drives; γ=arc of contact on the smaller pulley)

	γ	**180°**	**175°**	**170°**	**165°**	**160°**	**155°**	**150°**	**145°**	**140°**	**135°**	**130°**	**125°**	**120°**	**115°**	**110°**	**105°**	**100°**	**90°**
C_γ	T/T	1	0,99	0,98	0,96	0,95	0,93	0,92	0,90	0,89	0,87	0,86	0,84	0,82	0,80	0,78	0,76	0,74	0,69
	T/P	0,75	0,76	0,77	0,79	0,80	0,81	0,82	0,83	0,84	0,85	0,86	0,84	0,82	0,80	0,78	0,76	0,74	0,69

WRAPPED V-BELTS SELECTION CHARTS

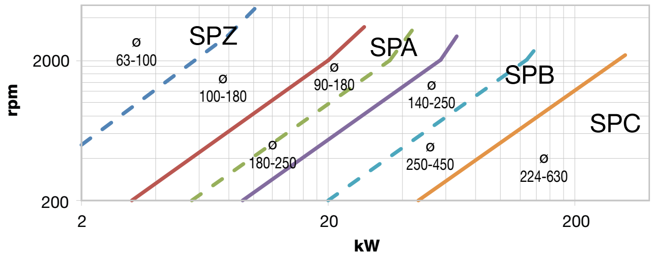
Classical wrapped V-belts

EXTRA

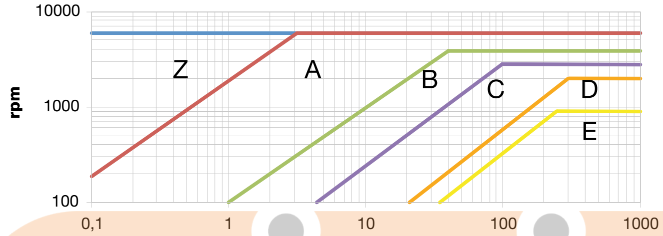


Narrow wrapped V-belts DIN

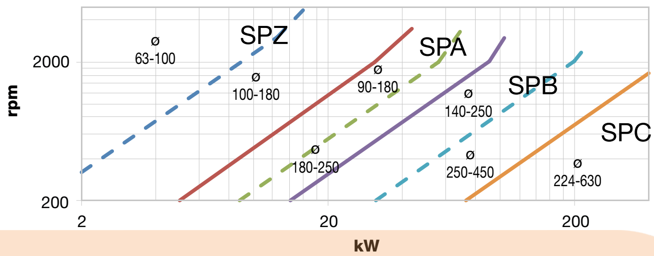
EXTRA



OLEOSTATIC GOLD

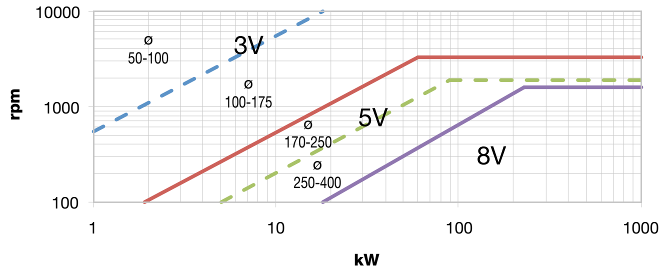


OLEOSTATIC GOLD



Narrow wrapped V-belts RMA

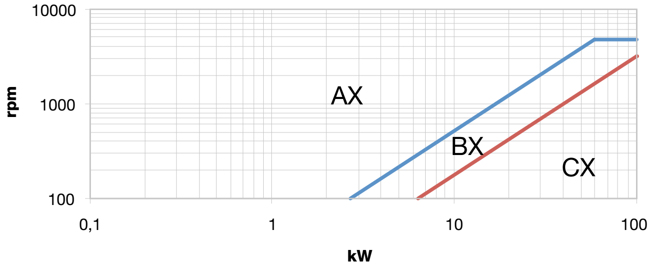
OLEOSTATIC



RAW EDGE V-BELTS SELECTION CHARTS

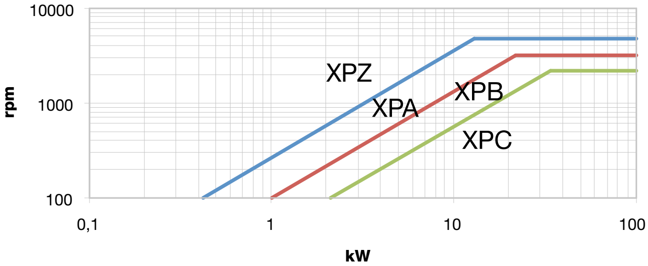
Classical raw edge V-belts

LINEA GOLD

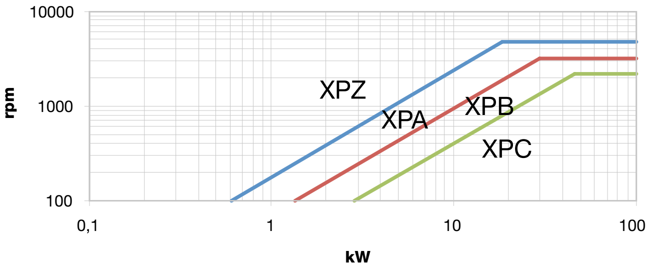


Narrow raw edge V-belts DIN

LINEA-X



LINEA GOLD

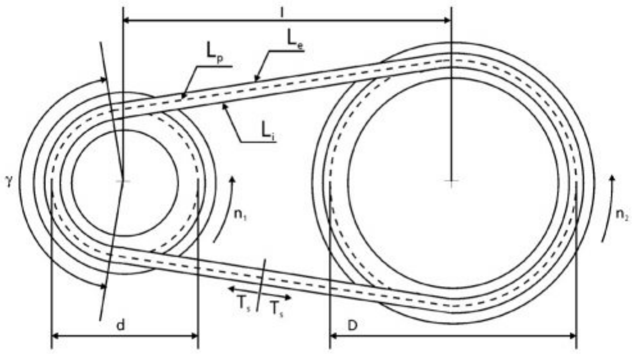


CALCULATION EXAMPLE

EXAMPLE
P = 22 kW
n_1 = 1200 RPM
n_2 = 660 RPM
Textile machine operating 12 hours a day
Type of motor: ac electric motor, normal torque

The correction coefficient is 1,3 (see table 1)
The corrected power is:

$P_c = 22 \cdot 1{,}3 = 28{,}6$ kW



BELT SELECTION

From selection charts, for P_c = 28,6 and n_1 = 1200 RPM it is appropriate to choose section B.

TRANSMISSION RATIO

The transmission ratio can be calculated as follows:

$$i = \frac{n_1}{n_2} = \frac{1200}{660} = 1{,}82$$

Considering diameter d = 250 mm for the smaller pulley, the pitch diameter of the larger pulley is:

$$D = i \cdot d = 1{,}82 \cdot 250 = 455 \text{ mm}$$

Peripheral speed of the belts is determined by

$$v = \frac{d \cdot n_1}{19100}; \quad v = \frac{0{,}052 \cdot 250 \cdot 1200}{19100} = 15{,}7 \text{ m/s}$$

BELT PITCH LENGTH AND CORRECT CENTER DISTANCE

For i = 1,82 (i.e. 1<i<3) the center distance is given by:

$$I \geq \frac{(i+1) \cdot d}{4} + d \qquad \text{so} \qquad I = 610 \text{ mm}$$

The pitch length of the belt is determined by:

$$L' = 2 \cdot I + 1{,}57 \cdot (D+d) + \frac{(D-d)^2}{4 \cdot I};$$

$$L' = 2 \cdot 610 + 1{,}57 \cdot (455+250) + \frac{(455-250)^2}{4 \cdot 610} = 2344 \text{ mm}$$

From the list of belt sizes (see table on belt family pages), should be selected the belt pitch lenght L_p nearest to the value of L' previously calculated.
The center distance "**I**" may be varied by subtracting half L'-L_p. Therefore the effective centre distance of the drive will be:

$$Ie = I - \frac{L'-L_p}{2}$$

Having selected **Oleostatic Gold B 91** (L_p = 2355 mm), the actual shaft center distance is calculated by:

$$Ie = 610 - \frac{2344-2355}{2} = 615{,}5 \text{ mm}$$

From table 4 of B section (d=250 mm; 1200 RPM; K=1,82):

P_b = 11,57 kW

P_d = 0,48 kW

The arc of contact γ of the belt on the smaller pulley is determined by:

$$\gamma = 180° - 57 \bullet \frac{D-d}{l_e} = 180° - 57 \bullet \frac{455-250}{616} \cong 161°$$

From table 2 for γ = 161°

$C\gamma$ = 0,95

From table 3, pag 19 for **Oleostatic Gold B 91** belt

C_L = 1,00

Therefore:

P_a = (11,57+0,48) • 0,95 • 1,00 = 11,45 kW

The number of belts Q necessary for transmission of the power P_c is established by:

$$Q = \frac{P_c}{P_a} = \frac{28,6}{11,45} = 2,5$$

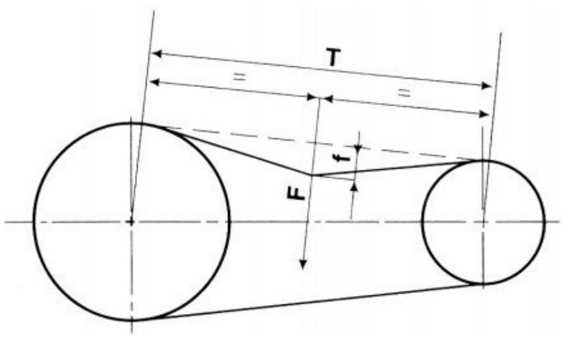
Round up to 3 belts **Oleostatic Gold B 91**.

BELT TENSIONING RECOMMENDATION

The correct belt assembling tension is given by:

$$Ts = 500 \bullet \frac{2,5-C_\alpha}{C_\alpha} \bullet \frac{P_C}{Q \bullet v} + m \bullet v^2$$

Symbol	*Unit*	*Definition*
C_α		arc correction factor
m	kg/m	belt linear mass (see belt family page)
P_c	kW	corrected power
Q		number of belts
T_s	N/strand	static belt tension
v	m/s	peripheral belt speed
α	°	arc of contact



Arc corretcion factor:

α [°]	180	174	169	163	157	151	145	139	133	127	120	113	106	99	91	83
C_α	1,00	0,98	0,97	0,96	0,94	0,93	0,91	0,89	0,87	0,85	0,82	0,80	0,77	0,73	0,70	0,65

LENGTH MEASURING AND GROOVE PULLEYS

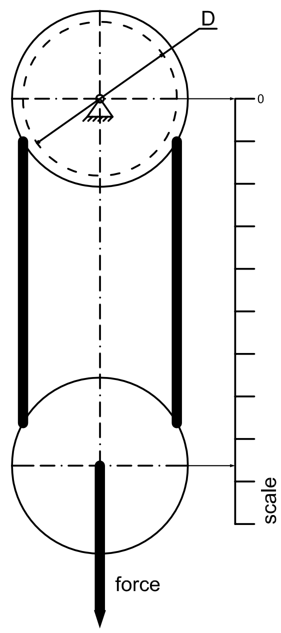
BELT LENGTH MEASURING

The first and easiest way for measuring the V-belt length is by placing the belt on a flat surface, giving the belt a circular shape and finally measuring the internal length L_i by means of a measuring tape. Adding Δ_i and after Δ_e (see belt families pages) to this length, it's possible to calculate respectively L_p and L_e.
This measuring way is not very precise, even if practically easy and feasible with a tape only.

The correct way for measuring the V-belt length is by means of pulleys and dynamometer.
The belt is put on 2 pulleys, specific for the family and size of the belt and having the same pitch diameter. One is fixed while the second can move on a linear graduated scale.
Depending on the belt, a certain force is applied to the second pulley in order to put the complete system under tension. The correct force is tabled the relevant standards referring to the belt family.
To stabilize the system, at least 3 rotations of the pulleys are required.
The pitch length L_p is given by the pulleys pitch diameter D and center distance a in the formula:

$L_p = 2\ a * \pi_D$

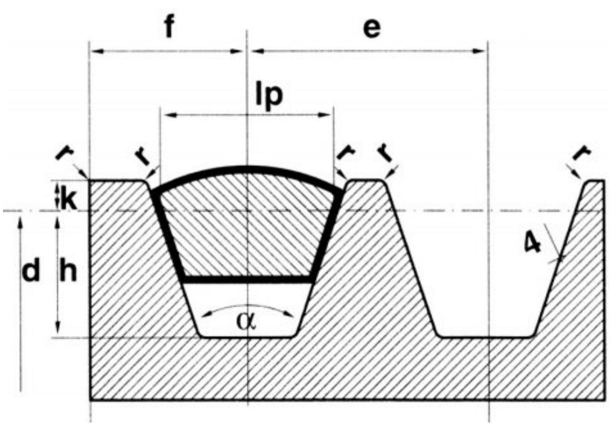
Subtracting Δ_i and adding Δ_e (see belt families pages) it's possible to calculate respectively L_i and L_e.



GROOVE PULLEYS

Groove pulleys for V-belts must be manufactured with care and be made of good quality steel or engineering cast iron. It is most important that the flanks of the grooves shall be perfectly smooth and show no visible sign of machining, that all sharp corners of the grooves shall be rounded off and chamfered and that the external diameter of the face shall be constant overall.
All pulleys must also be statically balanced.
Dynamic balancing is required for speeds over 30 m/second.

Profile and dimension of pulley should be in accordance to DIN 2211, BS 3790, ISO, RMA depending on the belt relevant standard.
In tha drawing are shown the main characteristics and dimensions of groove pulleys for V-belts (example referring to Oleostatic belts).



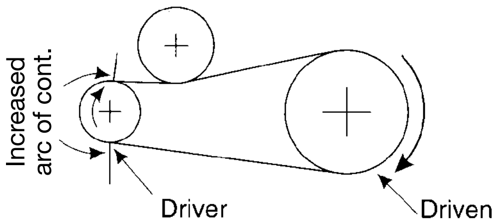
lp = pitch width
k = minimum height of groove above the pitch line
h = minimum depth of groove below the pitch line
α = groove angle
d = pitch diameter
e = distance between the axes of the sections of two grooves
f = distance between the axis of the section of the outer groove and the rim of the pulley

The use of idlers in V-belt drives is not recommended.
However, due to particular drive requirements and limitations, use of idlers may be absolutely necessary.
For using idlers, requirements are as follows:
1. Providing take-up for fixed center drives.
2. Turning corners (as in mule pulley drives).
3. Breaking up long spans where belt whip may be a problem.
4. Maintaining tension, when idler is spring-loaded or weighted.
A power corretcion (see below) is required.

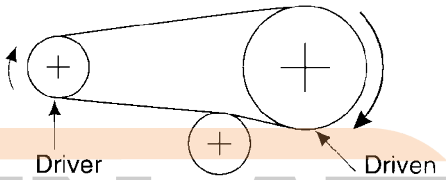
OUTSIDE IDLER

1. An outside idler should be at least one and one-third times as large as the smallest pulley on the drive, unless drive has unusually large pulleys.
2. An outside idler must be flat and without any crown.
3. To find the face width of a flat idler (between flanges if flanged) add 1 ½ times the nominal belt top width to the face width of the grooved pulley used.
4. An outside idler pulley should be located as close as possible to the preceding pulley. This is because V-belts move back and forth slightly on a flat pulley and locating it as far away from the next pulley minimizes the possibility of the belt entering that pulley in a misaligned condition.
5. Idler pulleys should be located only on the slack side of a drive.

RECOMMENDED



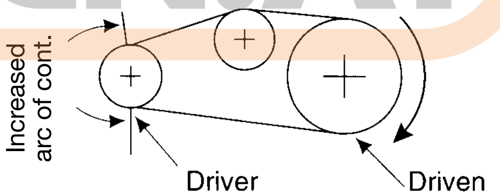
NOT RECOMMENDED



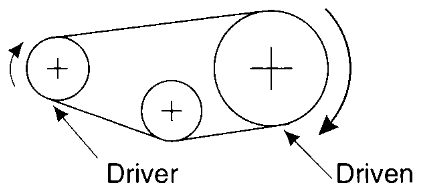
INSIDE IDLER

1. An inside idler will decrease the arc of contact.
2. An inside idler should be at least as large as the smallest pulley on the drive, unless the drive has unusually large pulleys.
3. An inside idler should better be a grooved pulley. In alternative, flat pulleys can be used.
4. A grooved inside idler pulley may be located anywhere along the span, preferably so that it gives nearly equal arcs of contact on the two adjacent pulleys.
5. Idler pulleys should be located only on the slack side of a drive.

RECOMMENDED



NOT RECOMMENDED



RATED POWER CORRECTION

Because idlers impose an additional bending stress point on the V-belt, the transmittable power is reduced.
The smaller the idler diameter, the greater the bending stress, which results in a greater reduction in rated power and belt life.
To compensate this loss, the design power of the drive must be increased.
The following table gives the approximate correction factors according to the number of pulleys in the drive.
The normal power rating should be multiplied by this factor.

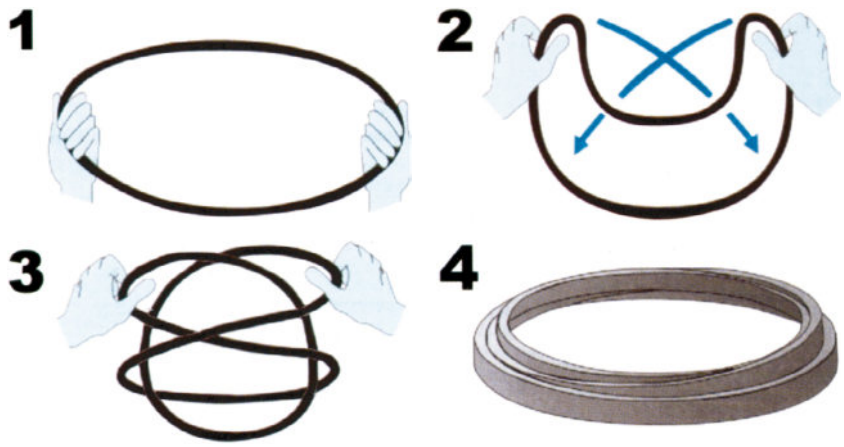
No. of pulleys in drive	2	3 (one idler)	4 (two idlers)
Rating Correction Factor	1,00	0,90	0,80

Note:
As stated, the above listed factors are only approximate values and apply only when idler diameters and their location is in accordance with the above recommendations.

STORAGE MAINTENANCE AND USEFUL ADVICES

HOW TO STORE BELTS

In order to store V-Belts correctly, it is advisable to hang them on “saddles” or on large-diameter tubular brackets. This diameter should be at least ten times the height of belts cross section.
Long belts can be stacked to save space, provided that they are correctly coiled (see figures).
Short belts can be stored on shelves, but be aware that stacks should not be more than 300 mm high, as the bottom belts may be otherwise deformed.
Finally, hooks and nails are unsuitable for suspending the belts.



CONDITIONS OF STORAGE

Rubber V-belts can be stored for several years without causing any performance or reliability loss.
For a correct storage, some prescription have to be taken into account.
- Environment
The storage premises should be cool, dry and well ventilated but not draughty.
- Temperature
Storage temperature should be within +5 and +30°C.
Lower temperatures causes stiffening in the belt but are accepted in the storage. In order to avoid damages in the start-up, it becomes necessary to heat the belt up to around 20° before making it run on the machine.
Higher temperatures due to heating are to be avoided. Distance from heating sources should be at least 1 meter.
- Light
Belts should be protected from light, especially direct sunlight and artificial light with high ultraviolet rays (neon light).
- Ozone
Equipments generating ozone, like high voltage electrical machines or fluorescent light sources, should not be installed in the storage.
Also combustion gases and vapours, that can cause ozone, should be avoided.
- Chemicals
Flammable materials, lubricants, acids and any other aggressive material should not be kept in the storage. Belts elastomers may be affected or even irreparably damaged by such agents.

CLEANING

Never clean V-belts. If you need, for any reason, to clean belts use a dry towel or one soaked with a glycerine/alcohol mixture in the ratio 1:10. Other solvents such as petrol or benzene must not be used.
Sharp-edged objects must not be used for cleaning V-belts.

To ensure a long service life and high performances, it is important to design correctly the application and to take care of correct installation, maintenance and storage of the belt.
A drive must be designed in such a way to make proper provision for both installation and tensioning of the V-belts. For this purpose a take-up device is necessary; a slide adjuster on the motor is recommended to simplify installation and permit optimum tensioning.
Table 5 (see belt family pages) provides minimum variation of center distance permitted for installation and tensioning of the belts.

x = Take up allowance
y = Installation allowance
I = Center distance

Furthermore, the following rules must always be observed:

1) check the alignment of the drive pulleys;
2) make sure that the flanks of the grooves are clean;
3) adjust the tensioner to stretch the belts sufficiently;
4) check the tension (see following section);
5) check correct diameter for tensioning pulley;
6) protect belt from oil and other chemicals;
7) when installing belts, slack off tensioner and avoid using tools or implements which may damage the belts.

Pulleys with large diameters increase belt life. They must be statically balanced up to the speed of 30 m/s and dynamically balanced over this value.

TENSIONING SYSTEM

The satisfactory performance of a transmission equipped with V-belts depends on the correct fitting tension.
It is therefore necessary to proceed in the following way, using the slide adjuster:

Belt tension control by deflection method

The approximate relation among deflection force, belt deflection and belt tension is given by:

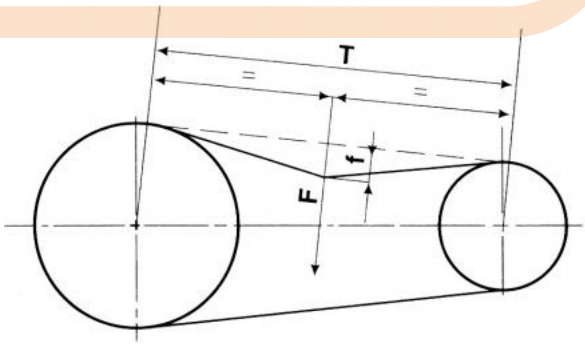
$$T_s \simeq \frac{f \cdot t}{4 \cdot f}$$

Imposing a belt deflection

$$f = \frac{t}{64}$$

the deflection force should be in the range

$$F_{min} \simeq F' = \frac{T_s}{16} \qquad F_{max} \simeq F'' = \frac{1{,}5 \cdot T_s}{16}$$



where:

Symbol	Unit	Definition
F	N	perpendicular deflection force
f	mm	belt deflection
t	mm	free span length
T_s	N/strand	static belt tension (see page 9)

Belt tension control by vibration method

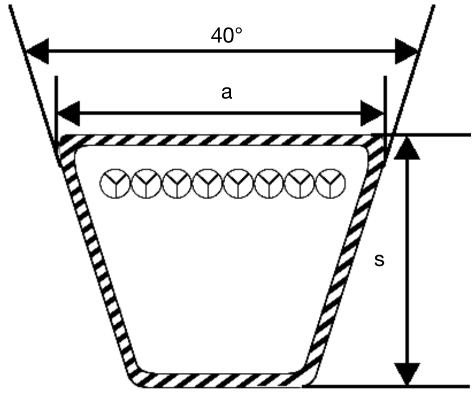
Belt vibration frequency: $F^2_r = \frac{T_s}{4 \cdot m \cdot t^2}$

Symbol	Unit	Definition
F_r	Hz	natural frequency of belt
m	kg/m	specific belt mass
t	m	free span length
T_s	N/strand	static belt tension (see page 9)


MEGADYNE
MEGADYNE

BELT CHARACTERISTICS

section	38	48	58
a (mm)	9,5	12,7	15,9
s (mm)	5,5	7,2	9
weigth (gr/m)	57	95	143
working temperature		-20°C / +80°C	
relevant antistatic standard		ISO 1813	
materials		CR blend - aramid cord - cotton/polyester fabric	



XDV2 series belts are designed for maintenance free operation in applications with exceptional hard working conditions.

BELT FEATURES

- trouble free operation on drives with small pulleys;
- smooth power transmission due to the belts capacity to absorb power shock.
- ideal for drives with power oscillations;
- thanks to the high grade of its materials the belt gives even better results when used with back side idlers;
- made with strong cotton cover for long lasting clutching transmissions;
- low tolerances reduce drive vibrations and allow its use in single or multiple drive transmissions without any restrictions;
- superior resistance to temperature, oil and weather;
- easily identified by its light grey coloured fabric;
- comes in popular sizes (3/8”, 1/2”, 5/8”);
- meets requirements for static conductivity.

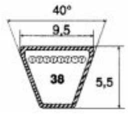
XDV2 BELT DRIVES

The XDV2 belt has been created for drives which include small pulley diameters and high temperature peaks, combined with a high grade of moisture and humidity.
It withstands the harshest environmental requirements, such as oil and grease contaminated drives or transmissions were grits may interfere between pulleys and belt.
Thanks to its characteristics, the XDV2 perfectly matches the requirements of clutching drives as the aramid cord protect the belt against shock loads while maintaining its length constant.

XDV2 belts are used successfully in applications such as:

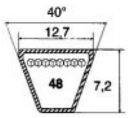
- lawn movers
- garden tillers
- snow blowers
- garden tractors

X-TRA DUTY V-BELTS
XDV2



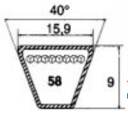
XDV2- 38 SECTION

Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)
XDV38 /150	15	XDV38 /230	23	XDV38 /310	31	XDV38 /390	39	XDV38 /470	47	XDV38 /550	55	XDV38 /630	63
XDV38 /160	16	XDV38 /240	24	XDV38 /320	32	XDV38 /400	40	XDV38 /480	48	XDV38 /560	56	XDV38 /690	69
XDV38 /170	17	XDV38 /250	25	XDV38 /330	33	XDV38 /410	41	XDV38 /490	49	XDV38 /570	57	XDV38 /710	71
XDV38 /180	18	XDV38 /260	26	XDV38 /340	34	XDV38 /420	42	XDV38 /500	50	XDV38 /580	58	XDV38 /740	74
XDV38 /190	19	XDV38 /270	27	XDV38 /350	35	XDV38 /430	43	XDV38 /510	51	XDV38 /590	59	XDV38 /750	75
XDV38 /200	20	XDV38 /280	28	XDV38 /360	36	XDV38 /440	44	XDV38 /520	52	XDV38 /600	60		
XDV38 /210	21	XDV38 /290	29	XDV38 /370	37	XDV38 /450	45	XDV38 /530	53	XDV38 /610	61		
XDV38 /220	22	XDV38 /300	30	XDV38 /380	38	XDV38 /460	46	XDV38 /540	54	XDV38 /620	62		



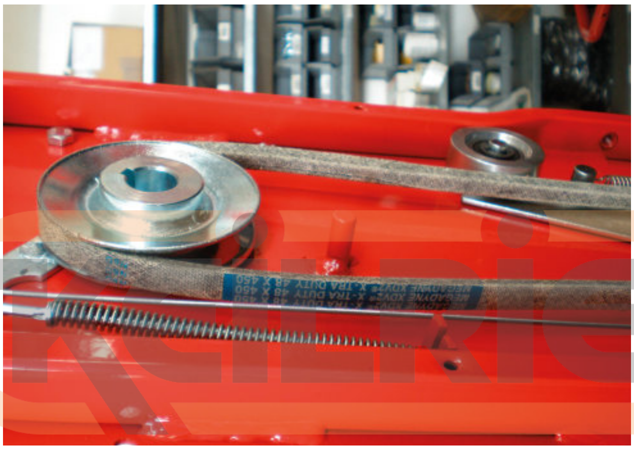
XDV2-48 SECTION

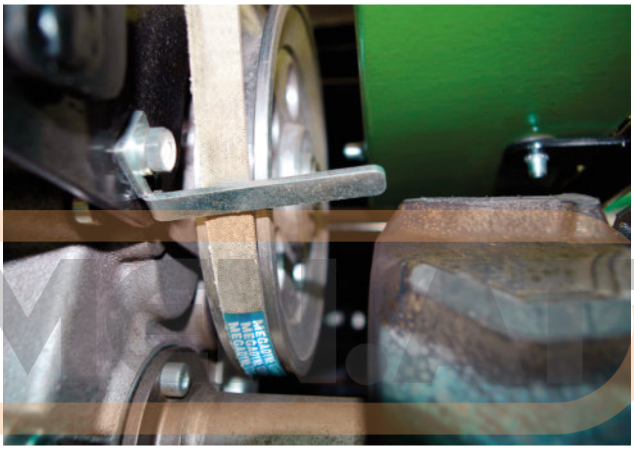
Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)
XDV48 /170	17	XDV48 /300	30	XDV48 /430	43	XDV48 /560	56	XDV48 /690	69	XDV48 /820	82	XDV48 /950	95
XDV48 /180	18	XDV48 /310	31	XDV48 /440	44	XDV48 /570	57	XDV48 /700	70	XDV48 /830	83	XDV48 /960	96
XDV48 /190	19	XDV48 /320	32	XDV48 /450	45	XDV48 /580	58	XDV48 /710	71	XDV48 /840	84	XDV48 /970	97
XDV48 /200	20	XDV48 /330	33	XDV48 /460	46	XDV48 /590	59	XDV48 /720	72	XDV48 /850	85	XDV48 /980	98
XDV48 /210	21	XDV48 /340	34	XDV48 /470	47	XDV48 /600	60	XDV48 /730	73	XDV48 /860	86	XDV48 /990	99
XDV48 /220	22	XDV48 /350	35	XDV48 /480	48	XDV48 /610	61	XDV48 /740	74	XDV48 /870	87	XDV48 /1000	100
XDV48 /230	23	XDV48 /360	36	XDV48 /490	49	XDV48 /620	62	XDV48 /750	75	XDV48 /880	88	XDV48 /1050	105
XDV48 /240	24	XDV48 /370	37	XDV48 /500	50	XDV48 /630	63	XDV48 /760	76	XDV48 /890	89	XDV48 /1070	107
XDV48 /250	25	XDV48 /380	38	XDV48 /510	51	XDV48 /640	64	XDV48 /770	77	XDV48 /900	90	XDV48 /1140	114
XDV48 /260	26	XDV48 /390	39	XDV48 /520	52	XDV48 /650	65	XDV48 /780	78	XDV48 /910	91	XDV48 /1170	117
XDV48 /270	27	XDV48 /400	40	XDV48 /530	53	XDV48 /660	66	XDV48 /790	79	XDV48 /920	92		
XDV48 /280	28	XDV48 /410	41	XDV48 /540	54	XDV48 /670	67	XDV48 /800	80	XDV48 /930	93		
XDV48 /290	29	XDV48 /420	42	XDV48 /550	55	XDV48 /680	68	XDV48 /810	81	XDV48 /940	94		



XDV2-58 SECTION

Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)	Code	External length LE (inches)
XDV58 /230	23	XDV58 /350	35	XDV58 /470	47	XDV58 /590	59	XDV58 /710	71	XDV58 /830	83	XDV58 /950	95
XDV58 /240	24	XDV58 /360	36	XDV58 /480	48	XDV58 /600	60	XDV58 /720	72	XDV58 /840	84	XDV58 /960	96
XDV58 /250	25	XDV58 /370	37	XDV58 /490	49	XDV58 /610	61	XDV58 /730	73	XDV58 /850	85	XDV58 /970	97
XDV58 /260	26	XDV58 /380	38	XDV58 /500	50	XDV58 /620	62	XDV58 /740	74	XDV58 /860	86	XDV58 /980	98
XDV58 /270	27	XDV58 /390	39	XDV58 /510	51	XDV58 /630	63	XDV58 /750	75	XDV58 /870	87	XDV58 /990	99
XDV58 /280	28	XDV58 /400	40	XDV58 /520	52	XDV58 /640	64	XDV58 /760	76	XDV58 /880	88	XDV58 /1000	100
XDV58 /290	29	XDV58 /410	41	XDV58 /530	53	XDV58 /650	65	XDV58 /770	77	XDV58 /890	89	XDV58 /1030	103
XDV58 /300	30	XDV58 /420	42	XDV58 /540	54	XDV58 /660	66	XDV58 /780	78	XDV58 /900	90	XDV58 /1080	108
XDV58 /310	31	XDV58 /430	43	XDV58 /550	55	XDV58 /670	67	XDV58 /790	79	XDV58 /910	91		
XDV58 /320	32	XDV58 /440	44	XDV58 /560	56	XDV58 /680	68	XDV58 /800	80	XDV58 /920	92		
XDV58 /330	33	XDV58 /450	45	XDV58 /570	57	XDV58 /690	69	XDV58 /810	81	XDV58 /930	93		
XDV58 /340	34	XDV58 /460	46	XDV58 /580	58	XDV58 /700	70	XDV58 /820	82	XDV58 /940	94		





DATA SHEET FOR CALCULATION

CUSTOMER DATA

Date ____/_____/_____

Company Name ____
Address ______________________________ Zip Code ______________
City ___________________ State __________ Country _____________
Customer Name/Surname ___________________________________
Office___________________ Tel. ___________ Fax ________________
e-mail ____

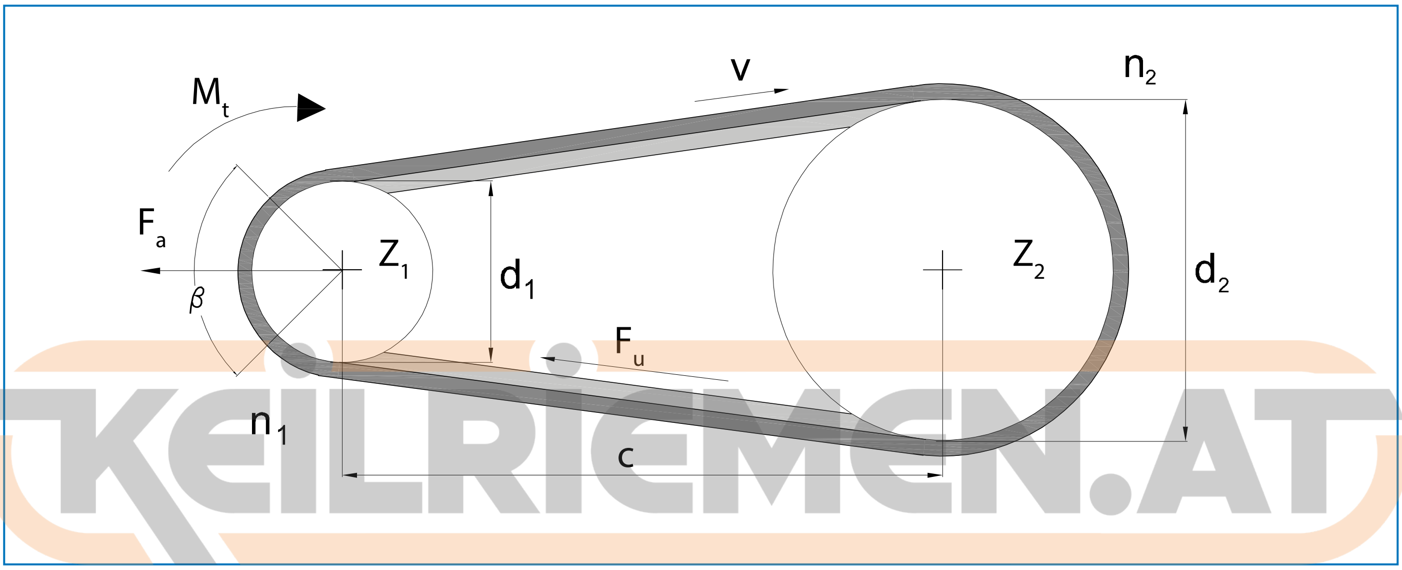
Application field ______________________________ New Existing*

Volume: _______________________________________

*Please enclose to this request all the details of the existing application (competitor's belt, current data, etc..)

POWER TRANSMISSION

TRANSMISSION LAYOUT



If layout is different please sketch it below

DRIVE INFORMATION

MOTOR:

☐ AC ☐ DC ☐ Soft Start ☐ Inverter

Power: ______________________
Speed: ______________________
Torque: ______________________
Acceleration: __________________
Working time: ☐ < 8h ☐ From 8h up to 16h ☐ >16h

APPLICATION:

Driver pulley diameter: __________________
Driven pulley diameter: __________________
Center distance: _______________________
Minimum safety factor required: __________
Are there any size limitation? ☐ Yes ☐ No
(if yes please indicate):
diameter (min. and/or max.): _____________
width (min. and/or max.): ________________
center distance: (min. and/or max.) ________

NOTES