ACCU-LINK

MEGADYNE

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Accu-Link is the Megadyne's link belt, created and developed as an alternative to classical rubber V-belts. Megadyne's Accu-Link combines superior strength and durability with quick and easy assembly and installation. The original concept is to give a fast replacement to classical V-belts in case of break. Despite this, thanks to the performance of link belts, today Accu-Link is used in a very wide range of applications as original equipment.

Accu-Link is a link belt: it means it is made of several links assembled all together. Thanks to this, belts can have every length just by modifying the number of links.

Links are made with a polyurethane polymer reinforced by a multilayer woven polyester fabric. The design of the links and the state-of-art manufacturing process allow superior performances and finishing quality. Accu-Link is ground to get a smooth and precise side edge and section, leading to a low vibrating belt and a smooth and silent transmission.

The belt is delivered already assembled and pre-tensioned to reduce the elongation especially during the early stage of its start-up.

Main features and advantages:

- EASY TO ASSEMBLE

  Accu-Link can be assembled without any tool and in a matter of seconds.
- EASY TO INSTALL

  Accu-Link can be adapted to every length; in case of difficult layout or when taking the drive apart would take too long. Acculink can be installed open and closed afterwards, in a very easy and fast way.
- SMALL INVENTORY

  With one roll of Accu-Link it is possible to get any length of classical V-belts; with one roll per section, inventories will be much smaller, easier and cheaper to manage.
- HIGH POWER RATE

  Accu-Link has power ratings similar to classical V-belts.
- HIGH RESISTANCE TO ENVIRONMENT

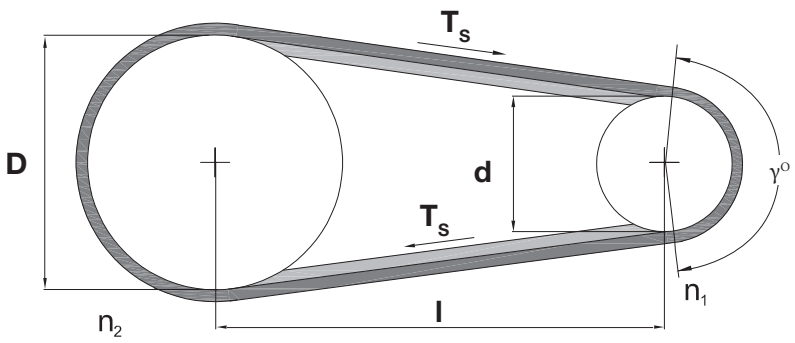
  Thanks to its state-of-the-art materials, Accu-Link can withstand to salt, chemicals, mineral pure oils and greases. This increases the life time compared to standard rubber V-belts.
- HIGH TEMPERATURE RESISTANCE

  Accu-Link can operate un a wide range of temperature:
  -25 °C / +80 °C (-13 °F / 176 °F)
- HIGH RESISTACE TO HARSH ENVIRONMENT

  Accu-Link is suited for harsh environment where it can last ever longer than standard rubber V-belts.
- QUIET AND SMOOTH RUNNING

  Thanks to the superior finishing, Accu-Link may run quieter and smoother than a V-belt.

Technical calculation



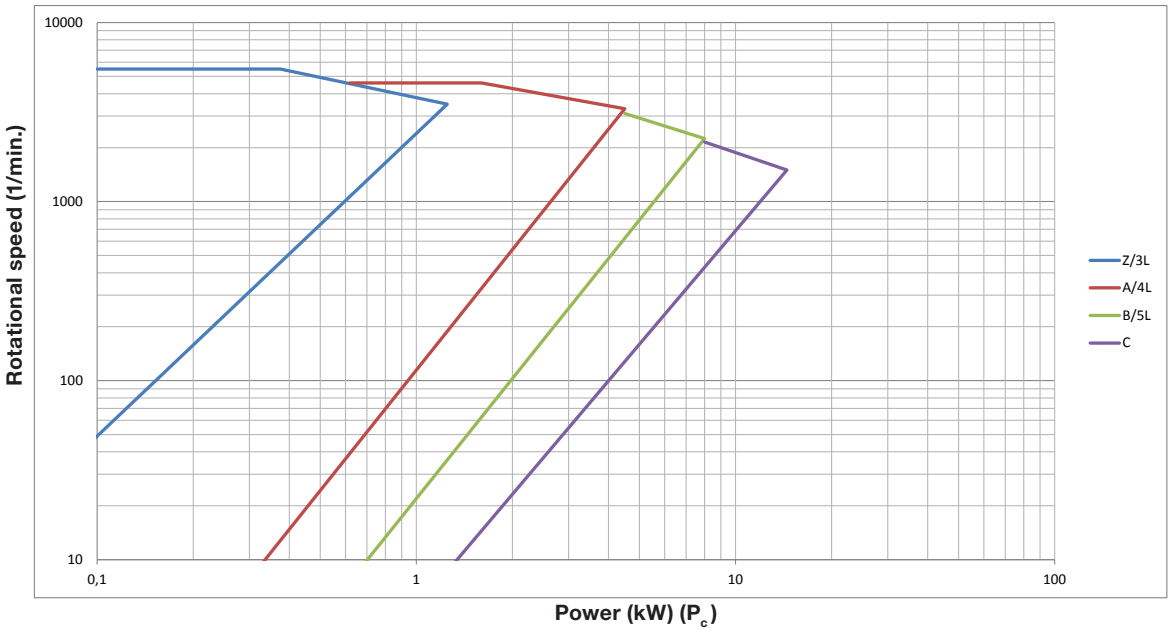
SYMBOL	UNIT	DEFINITION	SYMBOL
Cγ		correction factor	
n$_1$	(RPM)	speed of smaller pulley (faster)	
d	(mm)	pitch diameter of smaller pulley	
D	(mm)	pitch diameter of bigger pulley	
I	(mm)	center distance	
i		transmission ratio	
T$_s$	(N)	static belt tension	
γ	(°)	arc of contact	
n$_2$	(RPM)	speed of bigger pulley (slower)	
P	(kW)	power to be transmitted	
P$_c$	(kW)	corrected power	
P$_b$	(kW)	basic performance of a single belt	
P$_a$	(kW)	actual belt power	
Q		number of belts	
v	(m/s)	peripheral belt speed	
F$_s$		service factor	

CHOICE OF BELT SECTION

To choose between the sections, to find out the corrected power (P_c) it is first necessary to calculate:

$P_c = P \times F_s$

Table 1: belt section selection



DETERMINATION OF ACTUAL POWER RATING

The actual power rating P_a is given by the drive working conditions:

$P_a = P_b \times C_\gamma$

where P_b is the power base of the belt and C_γ is the arc of contact correction factor as per following table.

Table 2: arc of contact correction factor C_γ

The arc of contact is calculated as follows:

$\gamma = 180 - (57 \times [(D-d):I])$

Arc of contact γ	180°	175°	170°	165°	160°	155°	150°	145°	140°	135°	130°	125°	120°	115°	110°	105°	100°
C_γ	1,00	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

Table 3: service factor F_s

DRIVES					
(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 Classical industrial drives up to 5 kW Fans, pumps, compressors Light conveyors	1,0	1,1	1,2	1,1	1,2	1,3
Normal use Drives up to 15 kW Fans, pumps, compressors, line shafts, machine tools, punches, generators Heavy conveyors	1,1	1,2	1,3	1,2	1,3	1,4
Heavy use Textile machines saw mills, woodworking machines, brick machines, piston compressors, paper mills, positive blowers	1,2	1,3	1,4	1,4	1,5	1,6

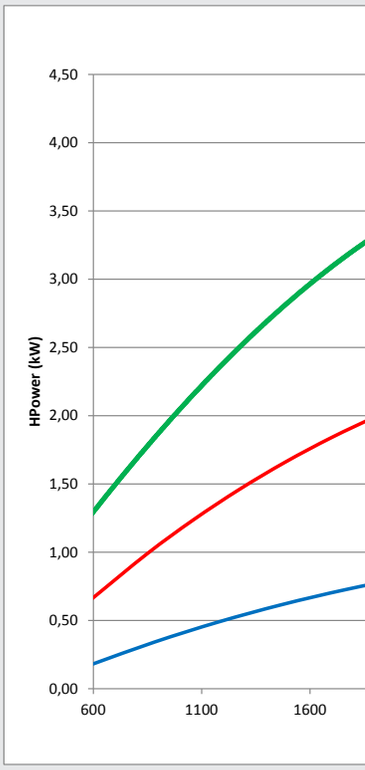
DETERMINATION OF NUMBER OF BELTS

The number of belts comes from the following formula:

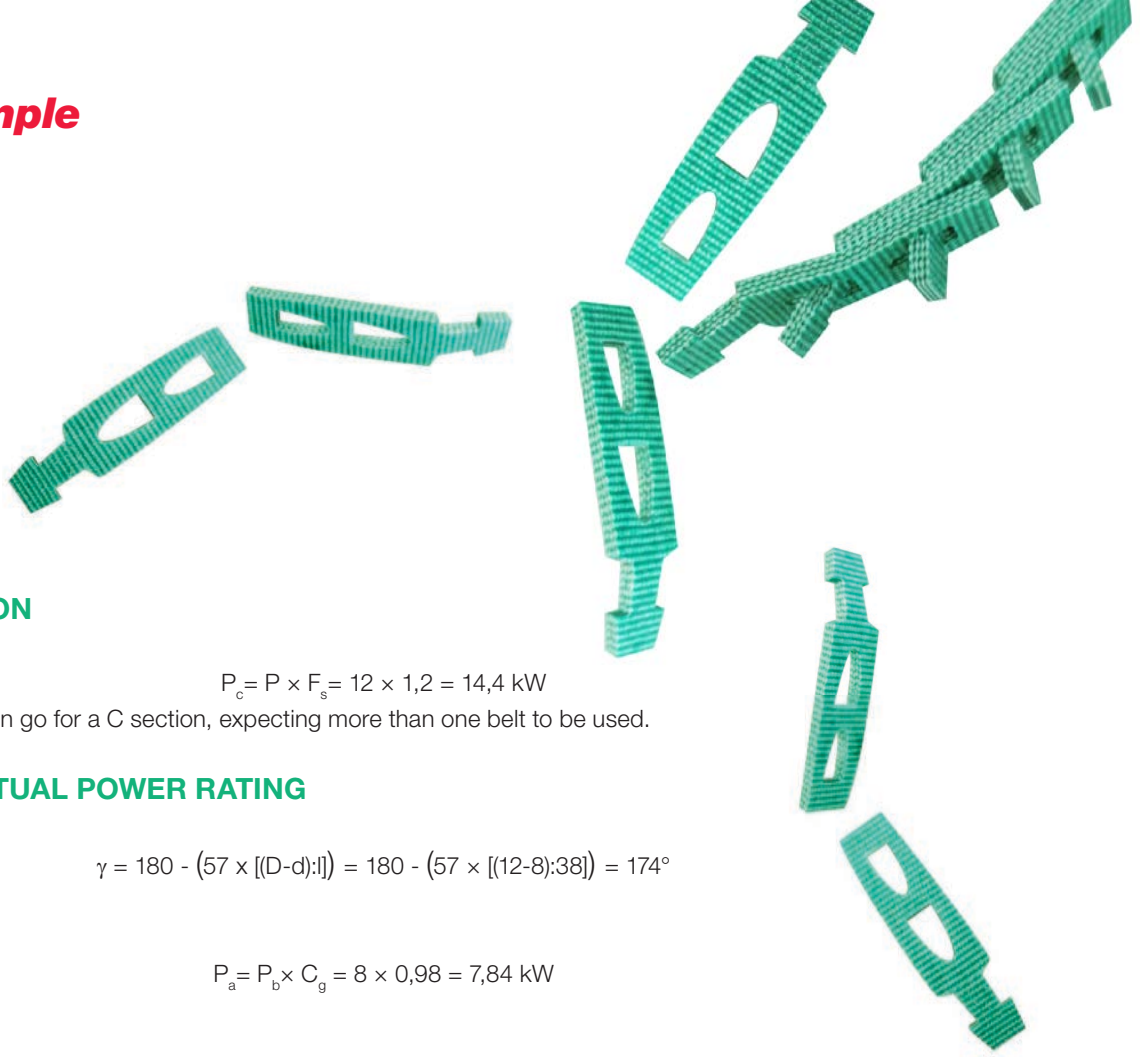
$$Q = P_c : P_a$$

The final number of belts is given by rounding up Q to the next higher integer number.

Trasmittable Power



Calculation example



MACHINE DATA

P = 12 kW
Speed: 1100 rpm
Drive sheave: 8”
Driven sheave: 12”
Center distance: 38”

Application: compressor
Type of engine: 1
Working hours: 8-16 per day
F_s will be 1,2

CHOICE OF BELT SECTION

The corrected power P_c is

$$P_c = P \times F_s = 12 \times 1,2 = 14,4 \text{ kW}$$

Because of the high power, we can go for a C section, expecting more than one belt to be used.

DETERMINATION OF ACTUAL POWER RATING

Arc of contact γ

$$\gamma = 180 - (57 \times [(D-d):I]) = 180 - (57 \times [(12-8):38]) = 174°$$

This means that $C\gamma$ is 0.98.
The belt power rating P_a is

$$P_a = P_b \times C_g = 8 \times 0,98 = 7,84 \text{ kW}$$

where P_b comes from table 7.

DETERMINATION OF NUMBER OF BELTS

The final number of belts is:

$$Q = P_c : P_a = 14,4 : 7,84 = 1,84$$

This means that the actual number of needed belts is 2.

Table 5 - A/4L profile

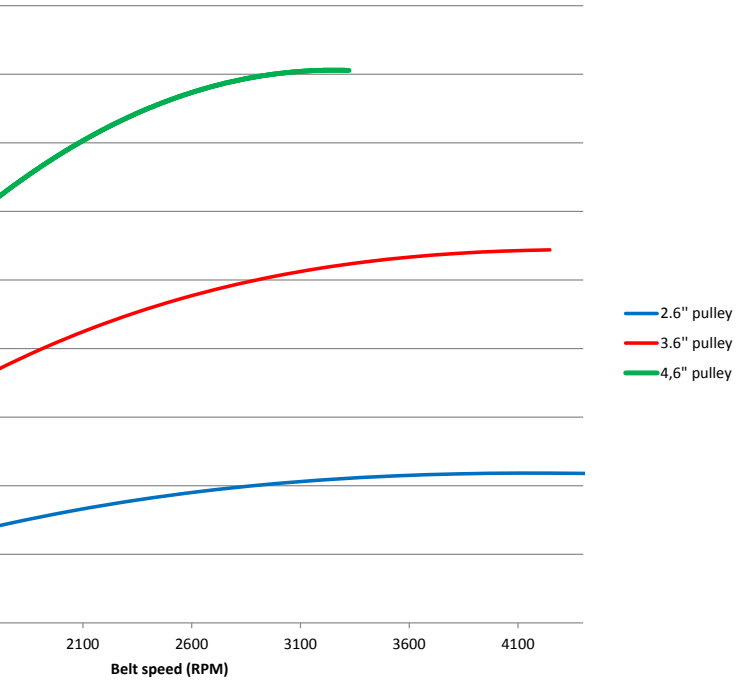
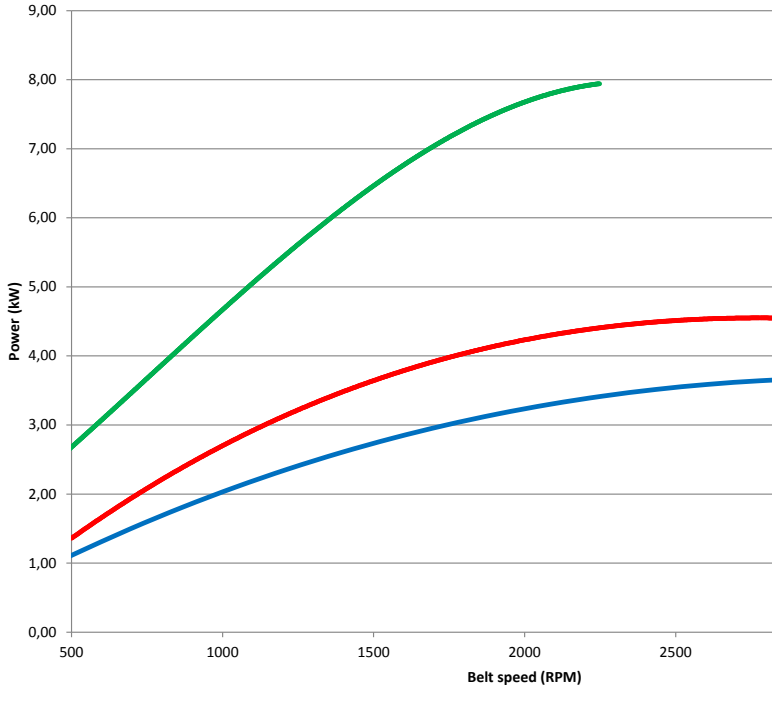


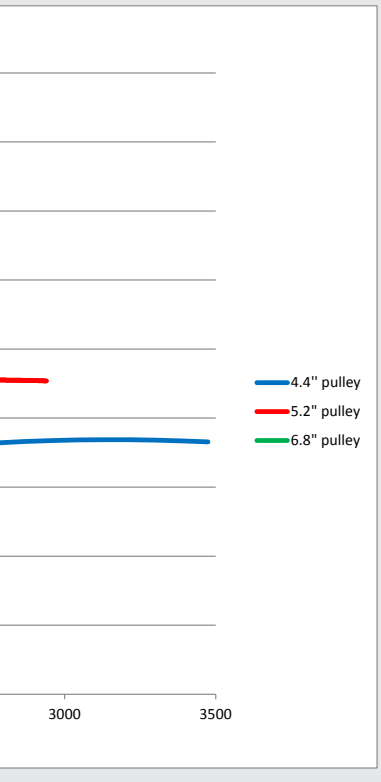
Table 6 - B/5L profile

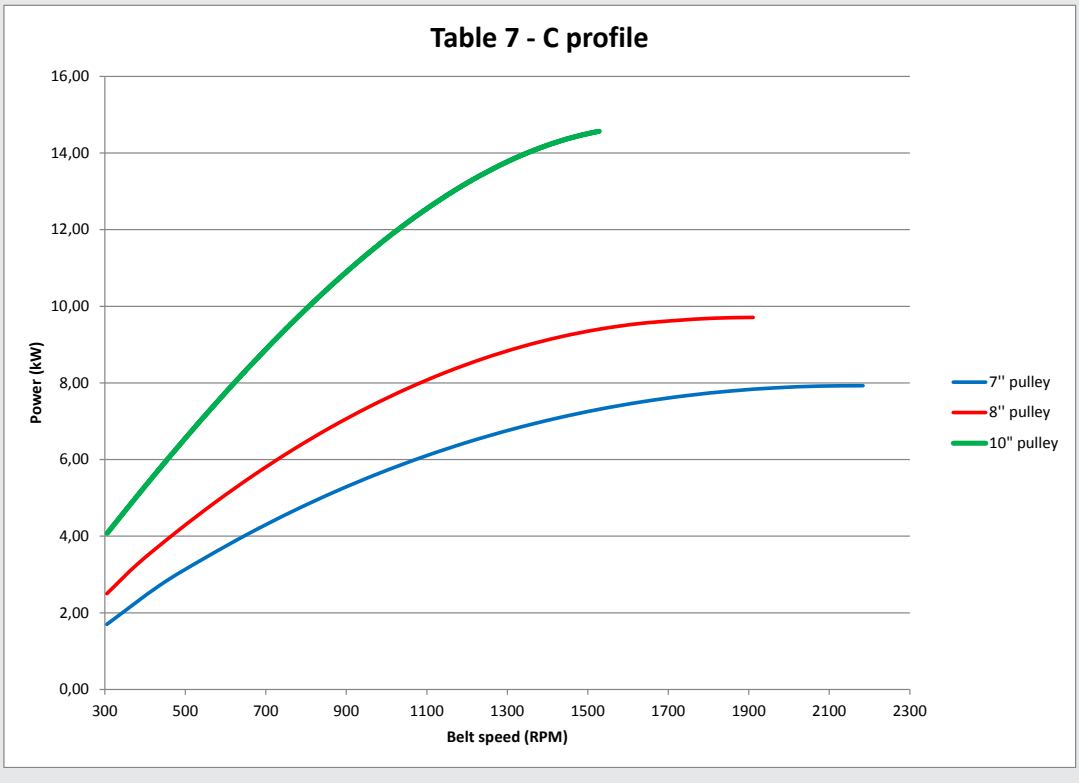


Applications

Thanks to their features, Accu-Link belts can be used in very wide range of applications. In the following table it is possible to find a list of the main applications where Accu-Link are widely used with the advantages compared to the classical rubber V-Belts.

APPLICATIONS	MAIN ADVANTAGES
Marine industry	Higher resistance to salty and greasy environment Reduced inventory
Air handling	Easier and quicker to install
Metal and wood working machines	Reduced noise, reduced vibration
Poultry industry	Enhanced resistance to harsh environment
Agriculture	Enhanced resistance to typical agri-environment
Rolling conveyor	Easier and quicker to install Better performing in case of pulley misalignment
Glass industry	No staining
Tiles and marble conveyor	Easier and quicker to install Enhanced resistance to harsh environment





Range

Accu-Link belts are available in Z/3L, A/4L, B/5L and C sections. Accu-Link can work on standard pulleys for V-belts. Megadyne can supply open end Acculink in carton boxes or endless belts in light carton sleeves.

	Z/3L	A/4L	B/5L	C
Belt weight g/m (+/-1,5)	43,0	76,5	117,5	178,5
Min pulley diameter (mm)	45	80	140	225
Service temperature range	-25 °C / +80 °C (-13 °F / 176 °F)			
Standard roll lengths (ft)	25-100	25-100	25-100	25-50
Standard sleeve lengths (ft)	5	5-6	6	5

Measuring

1. Pull the belt tight around the sheaves to check the needed length, overlapping the last two tabs with two holes in matching.
2. Count the number of links and remove one link every 24 for Z/3L, A/4L and B/5L sections, and one link every 20 for C section to get the proper installation tension.
3. For multiple belt drives, be ensure that each belt has the same number of links.

Assembling

1. Holding the belt with the tabs upwards, let the tab of one belt's end get through two links at once.
(three if C section)

2. Flexing the belt as much as needed, twist and insert the second tab through the end link.

3. Ensure that tab will stay transversally to the belt's running direction; reverse the belt upside down to let it running on the tab side.

Disassembling

1. Put the belt with the tabs upwards and bend it as much as possible.

2. Twist one tab 90° to make it parallel to the belt; in this way you can pull the end of the link over the tab.

3. Rotating the belt by 90° you can now easily pull one belt's end away from the other one.

NOTE: Unlike conventional V-Belts, Accu-Link can be rolled onto pulleys - no cord to break.

Installation

1. Be sure that the belt has the tabs on the inner side: the belt has to run with the tabs oppositely facing the running direction;
2. Fit the belt in the nearest groove of the smallest sheave and then roll the belt onto the larger sheave. For multiple belts drive, repeat the operation on all the grooves
3. Always make sure that belts look pretty tight and tabs are still in the correct position.

If it is easy to move the engine, you might install the belt in the following way:

1. Set the engine in mid position of its adjustment range and mark this position clearly;
2. Check the belt's length as previously shown;
3. Move the engine forward to reduce the center distance;
4. Install the belt as in "INSTALLATION" paragraph;
5. Pull the engine back to the previously marked position.

Retensioning

As in any V-Belt drive, Acculink belts require to check for tension after 24 h of full load operating time. If the belt is not tight enough, restore the tension by removing some link. Anyway, check the belt's tension periodically and restore tension.

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