

## Comparison on Transmission Parts

### [ROLLER CHAIN]

- Roller Chain, like a timing belt, is used to transmit power. Roller Chain is suitable for power transmission in slow and medium speed applications.
- There are 13 typical chain sizes from #25 to #240 (#25, #35, #40, #50, #60, #80, #100, #120, #140, #160, #180, #200 and #240).
- Compared to timing belts, roller chain drives have fewer tooth skipping problems.
- Forward/Backward transmission is available with roller chain along multiple shafts. Roller chain can be used for horizontal, vertical and inclined applications.
- Lubrication is required. Roller chain drives do give off some noise. Drive center distance is flexible.
- Maximum chain speed should be less than 7 m/sec. For general applications, 2~3 m/sec is suitable. For speeds lower than 0.83m/sec (50m/min), a slow speed selection method should be used.
- Roller chain wrap on the small sprocket should be more than 120 degrees. Normally its output is lower than 100kw.
- The normal speed ratio of roller chain can range up to 5:1. High transmission efficiency of 95~98% is expected.
- The minimum number of sprocket teeth is 13~16. For slow speed applications, sprockets with 9~10 teeth can be used.
- For sprockets smaller than 17 teeth, an odd number of teeth is recommended.
- Optimum distance is 30~50 times the pitch of the chain used. When there is a pulsating load, the distance should be up to about 20 times.
- Normal application temperature is  $-10^{\circ}\text{C}$ ~ $170^{\circ}\text{C}$ .

### [V BELT]

- V belts are used for high speed and medium speed transmission.
- Lubrication is not necessary. For this reason, equipment may be smaller.
- They have smaller vibration, shock, and driving noise compared to roller chain drives.
- When oil sticks to the V belt, transmission efficiency is greatly reduced.
- Drive center distance is flexible.
- V belt wrap on the small pulley should be more than 120 degree.
- There is slippage between the V belt and pulley. The slippage is about 1~3%.
- Maximum V belt speed should be less than 25m/sec.
- For general application, 5~18m/sec is suitable.
- Transmission efficiency is 80~95%. Standard speed ratio of V belt is up to 8:1.
- Standard output is less than 75kw. There are 6 types of V belt, of M, A, B, C, D & E.

### [TIMING BELT]

- Timing belts have teeth to engage the pulley. Non-slip transmission is available.
- They are used as timing belts in automobile-type engines. It is also commonly used for transmission in office equipment.
- There are 6 sizes of timing belts with pitch ranging from 2.032, 5.08, 9.525, 12.70, 22.225 to 31.75.
- Transmission efficiency is 90~98%.
- Application temperature is  $-40^{\circ}\text{C}$ ~ $90^{\circ}\text{C}$ .
- Pulley alignment is required.