

IV Troubleshooting for Power

Failure during machinery operation is a serious matter. To resolve belt failure, determine cause of failure before replacing with a new belt. This will maximize the capability of the belt and extend its life.

The following is an introduction to belt failure main causes.

Please check the items in this table when failure occurs.

1. For Timing Belt

Occurrence	Cause	Measure
Abnormal side wear	● Poor alignment	Adjust the alignment
	● Base not adequately fixed	Strengthen the base fixture
	● Bending of the pulley flange	Correct flange bending
Abnormal wear at tooth surface where pressure is being exerted	● Overload	Amend the design and use better grade
	● Overstretched belt	Adjust the initial tension of the belt
Abnormal wear at contact point of pulley area	● Overstretched belt	Adjust the initial tension of the belt
	● Defective pulley tooth form	Replace using special attention on the R of the pulley tooth end
Tooth damage	● Pulley diameter too small	Change the system design
	● 6 teeth or less for T.I.M	Increase T.I.M or change the system design
	● Exertion of shock load	Ensure that shock is not exerted on the belt or increase the belt width
Breaking of tensile body	● Overload	Change the system design
	● Drop in elasticity or corrosion of tensile body	Check the storage condition and transport condition of the belt
	● Exertion of shock load	Ensure that shock is not exerted on the belt or increase the belt width
Crack at the back side	● Usage under -22°F (-30°C)	Raise the surrounding temperature
	● Pulley diameter too small	Use a bigger diameter pulley
Thermal ageing of rubber/polyurethane	● Temperature of 176°F (80°C) and above at the rubber and polyurethane	Reduce the surrounding temperature
Swelling of the rubber	● Oil contamination	Use polyurethane or oil resistant rubber belt
Abnormal wear at pulley tooth	● Overload	Change the system design
	● Overstretched belt	Adjust the initial tension of the belt
	● Unsuitable pulley material (too soft)	Add surface treatment or change the material of pulley
Wear at pulley edge	● Pulley life	Change to a new pulley
	● Overstretched belt	Change to new pulley and belt while loosening the tension
	(Tensile body can be seen underneath the belt)	
Abnormal operation sounds	● Poor alignment	Adjust the alignment
	● Overstretched belt	Adjust the initial tension of the belt
	● Overload	Change the system design
	● Pulley diameter too small	Change the system design
	● Defective pulley tooth form	Ensure that pulley tooth is accordance to standard dimensions
Belt looks elongated	● Short inter-shaft distance	Adjust to the correct inter-shaft distance
	● Loosening of the base	Strengthen the base fixture



Transmission Products

2. For V-Belt

Occurrence	Cause	Measure
Slippage	● Loose belt tension	Apply appropriate tension
	● Overload	Increase belt width or increase the number of belts in use.
	● Minimum contact angle	Widen belt width or install an idler pulley of the appropriate diameter
	● Oil or water contamination	Completely remove the oil and water and prevent further contamination by placing the belt cover
Early failure	● Load variation/ large shock	While there are design elements to be altered, the specified type and number of belts should be installed (Depending on the application, please upgrade the belt specification by 1 level)
	● Use of the belt above its transmission capacity	
	● Belts not mounted according to the specified number of belts	
	● Not using the specified belt type	Take counter-measure on heat dissipation or change the system design - alter the pulley diameter, revolution speed, bending angle
	● High heat generated and large flex fatigue (overly small pulley diameter/ bending angle and high revolution speed)	
● Tension loss and slippage	Apply appropriate tension	
Crack	● Tension loss and slippage	Apply appropriate tension
	● Use under high temperature	Take counter-measure on heat dissipation
	● Continuous sudden stoppage and start-up	Change the system design
	● Oil contamination	Fix oil leak and prevent oil contamination
	● Pulley diameter too small	Change the system design
	● Too strong reverse bending due to backside tension	
	● Direct exposure to sunlight	Install belt cover
Base crack	● Tension pulley diameter too small	Use a larger diameter tension pulley
	● Small bending angle	Decrease the bending angle
	● Loose tension and occurrence of slippage	Apply appropriate tension
Wear	● Rusty pulley groove or rough finishing of pulley groove surface	Perform uniform finishing on the pulley groove surface (Standard 12S to 6S)
	● Tension loss and slippage	Apply appropriate tension
	● Inappropriate pulley installation angle	Change alignment to 1/3° and below or replace the pulley
	● Defective pulley form	
	● Inappropriate pulley groove angle	
● Damage on pulley groove		
Excessive vibration	● Resonance due to unstable fixture of machine body	Secure the fixtures
	● Weak belt tension	Change inter-shaft distance
	● Belt lengths not uniform	Use matched set
Peeling	● Belt used beyond its transmission capacity	Mount belts with the right specification, type, number
	● Usage under deformed condition	Change the system design
	● Usage method resulted in large flex fatigue	
Noise problem	● Sudden stop and start during usage	Consider changing the system design for smooth operation
	● Belt tension too loose	Apply appropriate tension
	● Overload	Increase belt width or increase the number of belt in use.
	● Wrong belt type	Select belt type, specification that matches the operating conditions
Overturning of belt	● Inappropriate pulley groove angle, installation angle	Change alignment to 1/3° and below
	● Pulley groove damage or sticking of belt due to roughly finished surface	Replace the pulley
	● Wear at pulley groove	
	● Belt lengths not uniform during multiple usage	Use matched set