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Sonic Tension Meter Troubleshooting Guide

Symptom	Cause	To Correct
Meter Won't Turn On		
	Batteries are dead	• Replace Batteries
	Battery contacts are corroded	• Clean contacts and replace batteries
	Meter has sustained damage	• Consider meter repair or replacement • Gates certification / evaluation / repair service
Don't Know What Reading Is Correct For Belt Drive		
	Meter measures belt tension but does not indicate if it is correct	• Determine correct belt tension level using the Design Flex Pro, Design Flex Mobile, or Design IQ applications • Determine correct belt tension level from engineering equations in Gates Drive Design Manual • Establish proper belt tension level based on knowledge and experience • **All Gates design tools are available at** www.gates.com/drivedesign
Don't Know What Constants To Enter		
	Mass Constant	• Mass constants for all Gates belt sections are available on the data card and Users Manual provided with the Sonic Tension Meter • The appropriate Mass constant is provided on drive design printouts
	Width Constant	• Width represents the width of synchronous belts in mm or the number of V-belt strands/ribs being measured at once (enter "1" if the tension of only one belt within a set is being measured at a time) • The appropriate Width constant is provided on drive design printouts
	Span Constant	• Span represents the length of the belt span being measured in mm • The appropriate Span constant is provided on drive design printouts
Can't Obtain A Belt Tension Reading		
	Sensor is too far away from belt surface	• Move sensor as close as possible without interfering with vibrating belt span
	Belt is too loose to generate frequency signal	• Tighten belt
	Background noise is excessive	• Try using "Low" or "High" frequency settings to filter our background noise (press "0" for 1-2 sec for menu) • Temporarily eliminate background noise • Use inductive sensor instead of microphone

	Meter is set in the incorrect frequency range	• "Standard" frequency range is generally best • With meter on, press "0" for 2 sec and select "Standard", or appropriate frequency range • Low (L) = 10 – 50 Hz / Standard (S) = 10 – 600 Hz / High (H) = 500 – 5000 Hz
	Belt span frequency is less than 30 Hz	• Microphone performance is reduced considerably at frequencies less than 30 Hz • Use the inductive sensor for frequencies down to 10 Hz
	Excessive wind is blowing across Microphone	• Shield or shelter microphone • Use inductive sensor
	Belt span is long and frequency very low	• Tighten belt • Check to see if calculated belt frequency is below 50 Hz • Artificially reduce belt span length using a block, etc. • Use inductive sensor for span frequencies from 10 – 50 Hz
	Incorrect belt constants have been entered	• Use correct mass, width, and span constants for drive • Press "Select" to toggle through data memory registers
	Sensor or connections have been damaged	• Confirm sensor damage and replace
	Iron or magnet is not present when using inductive sensor	• Tape a small magnet to the belt at mid span for the inductive sensor to read (furnished with inductive sensor)
Can't See Belt Span Frequency On Display		
	Meter is set in the wrong display mode	• Press "Hz" to display belt span frequency • Press "Hz" again to display both belt span frequency and tension
Meter Displays "Error" When Taking Tension Readings And Red Light Illuminates		
	Belt tension reading is outside of meter display capability	• Confirm that correct mass, width, and span constants have been entered • Press "Select" and toggle through data memory registers to select another data set • Non-zero constants must be entered even with the meter in the frequency only mode
	An error has been made in reading the belt tension	• Take another tension reading
	Belt is too loose to generate frequency signal	• Tighten belt
Multiple Belt Tension Readings Are Significantly Different		
	Belt tension is near absolute minimum threshold	• Tighten belt and see if reading variation is reduced
	Some tension reading variation is normal	• It is normal for the meter to detect slightly different fundamental span frequencies

		• Take at least three tension readings and average the results
	The drive has been rotated between readings	• Belts must fully seat on pulleys / sheaves and equalize for tension to stabilize • Pulley / shaft eccentricity can change belt tension significantly; establish minimum / average / maximum tension level limits and set belt tension accordingly
Meter Displays Tension In Wrong Units		
	Meter is set if incorrect unit mode	• With the meter powered off, press “0” and “9” and “Power” at the same time and then select the desired display unit (N / kg / lb) by pressing “SELECT”
Meter Readings Seem Incorrect		
	Incorrect belt constants may have been entered	• Use correct mass, width, and span constants • Press “Select” and toggle through data memory registers to select another data set
	The tension of a non-Gates belt is being measured	• Mass constants for non-Gates belts must be derived experimentally
	An unrelated competing frequency signal may be picked up	• Temporarily eliminate noise • Try using low or high frequency settings to filter out background noise • Use inductive sensor
	Batteries are weak	• Check battery strength meter on display • Replace weak batteries with new alkaline cells
	Non-alkaline type batteries are being used	• Use only alkaline type batteries for full 1.5 volt output required by meter
	Meter accuracy can be verified / certified	• Generate an accurate frequency signal for the meter to read using a tuning fork • Generate an accurate frequency signal for the meter to read using a signal generator • Send meter to Gates for evaluation (for a fee)
	Belt span length may be too short	• The minimum span length recommended for synchronous belts is 20X the belt pitch • The minimum span length recommended for V-type belts is 30X the belt or rib top width
Meter Battery Life Is Short		
	Meter usage is heavy	• Fresh alkaline batteries provide approximately 20 – 24 hours of continuous meter usage
	Non-alkaline type batteries are being used	• Use only alkaline type batteries for full 1.5 volt output required by meter
Need Extra Sensors Or Inductive Sensor Magnets		
	Flat Flexible Sensor Cord Sensor Inductive Sensor Inductive Sensor Magnets	• Gates Product # 7420-0205 • Gates Product # 7420-0206 • Gates Product # 7420-0212 • Gates Product # 7420-1212 (sets of 10 each)