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**GHS STRINGS**  
PLAY WITH THE BEST™

## Bass String Guide

*Updated September, 2017*

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## Introduction

Whether you are a luthier, a repair tech, or someone looking to find your “ideal” set for your application, string tension will play a role. It is with this in mind that we at GHS have put together our Bass String Guide, as a way to help you find the information you are looking for to help you in whatever role you fall.

## How to Calculate Tension

String tension is the amount of force a string has when tuned to a specific pitch. To find out the tension of a particular string, you need three variables: the **Unit Weight**, the **Scale Length**, and the **Frequency or Pitch** of the string you will be using. We have taken the time to provide you with a comprehensive list of all of our current bass strings, in single strings as well as in our pre-packaged sets. The formulas used to this end are the industry standard, and can be used to approximate other string tensions.

For those bassists that prefer to use altered - or down - tunings, we present our tension guide in such a way as to help facilitate your endeavors, to make choosing the ideal set of strings for your application much easier.

- UW**     **UNIT WEIGHT:** The weight of the string, measured in pounds per linear inch (lb/in).
- L**        **SCALE LENGTH:** The vibrating length of a string. Measure the distance from the nut to the bridge of the instrument to find the scale length. GHS has used the below scale lengths in the enclosed guide; your individual instrument may vary.
  - Long Scale Plus - 34"
  - Standard Long Scale - 34"
  - Medium Scale - 32"
  - Short Scale - 30"
- F**        **FREQUENCY or PITCH:** The specific pitch at which each note is expressed, represented in cycles per second (Hertz).

To calculate the tension of a particular string in pounds, use the formula below, inserting the three needed variables.

$$T (\text{Tension}) = (UW \times (2 \times L \times F)^2) / 386.4$$

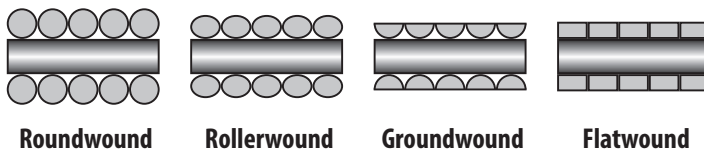
For those looking for a specific tension, you can use the formula below to get the unit weight for your particular needs. With that, compare the unit weight against the ones listed in the following pages to find the string gauge that meets your needs.

$$UW (\text{Unit Weight}) = (T \times 386.4) / (2 \times L \times F)^2$$

## Other Considerations

A common misconception is that the tension of a string is the same as the feel of the string under your fingers. And while string tension plays a part, there are a number of other processes that will also have an affect on the tone and playability of a string.

**Winding Techniques:** There are four types of winding techniques used for strings. The type providing the brightest tone (all else being equal) is the roundwound string. Next is the rollerwound, followed by the groundwound (also called a halfwound) and finally a flatwound.



**PLEASE NOTE:** We have provided this guide as a reference of the tension of our strings at various pitches. Please use caution when making sets that have extremely high tensions, as the set as a whole may put undue stress on the neck, as well as snap the core of the strings prematurely.

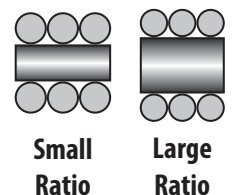
## Frequency Chart

The chart below represents the frequency or pitch of each note, as it relates to the bass fretboard. Standard tunings are shown in bold type; use the additional frequencies to calculate tension for strings when using altered tunings.

<b>B0</b> 30.9 Hz	<b>E1</b> 41.2 Hz	<b>A1</b> 55.0 Hz	<b>D2</b> 73.4 Hz	<b>G2</b> 98.0 Hz	<b>C3</b> 130.8 Hz	Nut / Open
C1 32.7 Hz	F1 43.7 Hz	A#1 58.3 Hz	D#2 77.8 Hz	G#2 103.8 Hz	C#3 138.6 Hz	First Fret
C#1 34.7 Hz	F#1 46.3 Hz	B1 61.7 Hz	E2 82.4 Hz	A2 110.0 Hz	D3 146.8 Hz	Second Fret
D1 36.7 Hz	G1 49.0 Hz	C2 65.4 Hz	F2 87.3 Hz	A#2 116.5 Hz	D#3 155.6 Hz	Third Fret
D#1 38.9 Hz	G#1 51.9 Hz	C#2 69.3 Hz	F#2 92.5 Hz	B2 123.5 Hz	E3 164.8 Hz	Fourth Fret
<b>E1</b> 41.2 Hz	<b>A1</b> 55.0 Hz	<b>D2</b> 73.4 Hz	<b>G2</b> 98.0 Hz	<b>C3</b> 130.8 Hz	<b>F3</b> 174.6 Hz	Fifth Fret

**String Materials:** The hardness of common materials used in the cover wire of strings affects both the tone and “feel” of a string. Usually, with all else remaining constant, the harder the material the brighter the string. Common cover wire materials include (ranked by order of brightness) stainless steel, Alloy 52, nickel plated steel, pure nickel, and for acoustics, brass and bronze.

**String Geometry:** “String Geometry” generally refers to the ratio of the core wire diameter to the cover wire diameter. These two parameters are utilized to come up with the final string gauge. All else remaining constant, a small core-to-cover ratio generally results in a string with greater flexibility and brighter tone. A larger core-to-cover ratio generally results in a string with greater volume, sustain, tone life and durability.



# Super Steels™ - Tension



- Grey Silks
- Stainless Steel Roundwound Strings
- Bright, Punchy and Articulate Tone

## By Individual String

### Long Scale Plus (38" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	GO			
PB18	.0000727	26.5	23.6	21.0	18.8	16.7																																	
PB20	.0000841	30.7	27.3	24.3	21.7	19.3	17.2	15.3																															
STB027	.00016212		52.7	46.9	41.8	37.3	33.2	29.6	26.3	23.5	20.9	18.6	16.6																										
STB030	.00017301		56.3	50.1	44.6	39.8	35.4	31.6	28.1	25.0	22.3	19.9	17.7	15.8																									
STB040	.00029172							53.2	47.4	42.3	37.6	33.5	29.9	26.6	23.7	21.1	18.8	16.8																					
STB044	.00038523									55.8	49.7	44.3	39.4	35.1	31.3	27.9	24.9	22.1	19.7	17.6	15.7																		
STB046	.00040243									58.3	51.9	46.3	41.2	36.7	32.7	29.1	25.9	23.1	20.6	18.3	16.4																		
STB050	.00048386										55.6	49.5	44.1	39.3	35.0	31.2	27.8	24.8	22.1	19.7	17.5	15.6																	
STB058	.00059786											54.5	48.6	43.3	38.6	34.3	30.6	27.3	24.3	21.6	19.3	17.2	15.3																
STB063	.00077190												55.9	49.8	44.4	39.5	35.2	31.4	27.9	24.9	22.2	19.8	17.6	15.7															
STB067	.00082542													59.8	53.3	47.4	42.3	37.7	33.6	29.9	26.6	23.7	21.2	18.8	16.8														
STB070	.00095418														54.8	48.8	43.5	38.8	34.5	30.8	27.4	24.5	21.7	19.4	17.3														
STB075	.00104534															53.5	47.7	42.5	37.8	33.7	30.0	26.8	23.8	21.3	18.9	16.8													
STB080	.00113651																58.2	51.8	46.2	41.1	36.6	32.6	29.2	25.9	23.1	20.6	18.3	16.4											
STB084	.00129257																	58.9	52.6	46.8	41.7	37.1	33.2	29.5	26.2	23.4	20.8	18.6	16.5										
STB090	.00136385																		55.5	49.4	43.9	39.2	35.0	31.1	27.7	24.7	22.0	19.6	17.4	15.6									
STB098	.00181843																				58.6	52.2	46.6	41.5	36.9	32.9	29.3	26.2	23.3	20.7	18.5	16.5							
STB102	.00200935																					57.7	51.5	45.8	40.8	36.4	32.4	28.9	25.7	22.9	20.4	18.2	16.2						
STB106	.00214559																						55.0	48.9	43.6	38.8	34.6	30.9	27.5	24.5	21.8	19.4	17.3	15.3					
STB121	.00279247																								56.7	50.6	45.0	40.2	35.7	31.8	28.4	25.3	22.5	20.0					
STB126	.00291823																									59.3	52.9	47.1	42.0	37.3	33.3	29.6	26.4	23.5	21.0				

### Medium Scale (35.5" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	GO	
5501 (.044)	.00034447							55.7	49.6	44.2	39.3	35.1	31.2	27.8	24.8	22.1	19.7	17.5	15.6																		
5502 (.063)	.00075784														54.6	48.6	43.3	38.6	34.4	30.6	27.3	24.3	21.6	19.3	17.2	15.3											
5503 (.084)	.00109724																	55.9	49.8	44.3	39.5	35.2	31.3	27.9	24.9	22.2	19.7	17.6	15.7								
5504 (.106)	.00199794																					57.0	50.9	45.4	40.4	36.0	32.0	28.5	25.5	22.6	20.2	16.0					

## By Available Sets

### Long Scale Plus (38" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
L5000 Light	153.5		STB40 33.5	STB58 38.6	STB80 41.1	STB102 40.8	
ML5000 Medium Light	176.0		STB44 44.3	STB63 49.8	STB80 41.1	STB102 40.8	
M5000 Medium	184.5		STB44 44.3	STB63 49.8	STB84 46.8	STB106 43.6	
CM5000 Custom Medium	184.3		STB46 46.3	STB67 53.3	STB80 41.1	STB106 43.6	

### Standard Long Scale (36.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
5ML-STB Medium Light, 5 String	203.9		STB44 44.3	STB63 49.8	STB80 41.1	STB98 36.9	STB121 31.8
5M-STB Medium, 5 String	217.8		STB44 44.3	STB63 49.8	STB84 46.8	STB106 43.6	STB126 33.3
6L-STB Medium, 6 String	220.5	STB27 33.2	STB40 33.5	STB58 38.6	STB80 41.1	STB102 40.8	STB126 33.3

### Medium Scale (35.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
5500 Medium	149.6		5501 (.044) 35.1	5502 (.063) 43.3	5503 (.084) 35.2	5504 (.106) 36.0	







# Bass Boomers® - Tension (cont.)

## Short Scale (32.75" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0		
3136 (.045)	.00041435							58.8	52.3	46.7	41.6	37.1	33.0	29.4	26.2	23.3	20.8	18.5	16.5																			
3036 (.050)	.00047666									53.7	47.8	42.6	38.0	33.8	30.2	26.9	23.9	21.3	19.0	16.9	15.1																	
3137 (.060)	.00066895											59.8	53.3	47.5	42.3	37.7	33.6	29.9	26.7	23.7	21.2	18.8	16.8															
3037 (.070)	.00088008												55.7	49.6	44.2	39.4	35.1	31.3	27.9	24.8	22.1	19.7	17.6	15.6														
3138 (.075)	.00099367														49.9	44.5	39.6	35.3	31.4	28.0	24.9	22.2	19.8	17.6	15.7													
3038 (.090)	.00147901																	58.9	52.5	46.8	41.7	37.1	33.1	29.5	26.2	23.4	20.8	18.6	16.6									
3139 (.095)	.00162311																		57.6	51.4	45.7	40.7	36.3	32.4	28.8	25.7	22.9	20.4	18.2	16.2								
3039 (.107)	.00208113																			58.6	52.2	46.6	41.6	36.9	32.9	29.3	26.1	23.3	20.7	18.5	16.4							

## By Available Sets

### Long Scale Plus (38" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
<b>P3045</b> Piccolo	122.4		PB18 33.4	DYB30X 46.3	DYB40X 46.2	DYB50X 38.5	
<b>L3045X</b> Light	147.4		DYB40X 36.6	DYB55X 36.8	DYB75X 37.8	DYB95X 36.2	
<b>ML3045X</b> Medium Light	185.4		DYB45X 47.8	DYB65X 52.2	DYB80X 47.6	DYB100 37.8	
<b>M3045X</b> Medium	194.7		DYB45X 47.8	DYB65X 52.2	DYB85X 51.1	DYB105X 43.6	
<b>5M-C-DYB</b> Medium, 5 String	222.1	DYB30X 36.7	DYB45X 47.8	DYB65X 52.2	DYB80X 47.6	DYB100 37.8	
<b>8L5-DYB</b> Regular, 8 String	278.8	Octaves Regulars	PB20 38.6 DYB40X 36.6	DYB25 36.8 DYB55X 36.8	DYB35 32.7 DYB70X 33.2	DYB45X 33.8 DYB90X 31.6	

### Medium Scale (35.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
<b>3140</b> Medium Light	144.8		3041 (.045) 41.8	3042 (.065) 36.9	3143 (.080) 35.6	3144 (.100) 30.5	
<b>3040</b> Regular	148.3		3041 (.045) 41.8	3042 (.065) 36.9	3043 (.085) 39.9	3044 (.105) 32.7	

### Short Scale (32.75" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
<b>3135</b> Light	124.4		3136 (.045) 37.1	3137 (.060) 33.6	3138 (.075) 28.0	3139 (.095) 25.7	
<b>3035</b> Regular	161.4		3036 (.050) 42.6	3037 (.070) 44.2	3038 (.090) 41.7	3039 (.107) 32.9	

### Universal Long Scale (37.25" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
<b>XL3045</b> Extra Light	109.1		DYB30 20.9	DYB50 28.9	DYB70 31.5	DYB90 27.8	
<b>L3045</b> Light	140.8		DYB40 33.6	DYB55 35.2	DYB75 35.9	DYB95 36.1	
<b>ML3045</b> Medium Light	177.7		DYB45 44.8	DYB65 50.1	DYB80 45.0	DYB100 37.8	
<b>M3045</b> Medium	186.5		DYB45 44.8	DYB65 50.1	DYB85 49.4	DYB105 42.2	
<b>M3045F</b> Flea Signature Set	186.5		DYB45 44.8	DYB65 50.1	DYB85 49.4	DYB105 42.2	
<b>H3045</b> Heavy	221.0		DYB50 51.3	DYB70 56.2	DYB95 64.3	DYB115 49.2	
<b>4ML-B-DYB</b> Med Light, BEAD Tuning	186.5			DYB60 42.2	DYB80 45.0	DYB100 37.8	DYB126 33.2
<b>4M-B-DYB</b> Medium, BEAD Tuning	186.5			DYB65 50.1	DYB85 49.4	DYB105 42.2	DYB130 38.5
<b>4H-B-DYB</b> Heavy, BEAD Tuning	221.0			DYB70 56.2	DYB90 56.8	DYB115 49.2	DYB140 39.8
<b>5L-DYB</b> Light, 5 String	172.1		DYB40 33.6	DYB55 35.2	DYB75 35.9	DYB95 36.1	DYB120 31.3
<b>5ML-DYB</b> Medium Light, 5 String	210.9		DYB45 44.8	DYB65 50.1	DYB80 45.0	DYB100 37.8	DYB126 33.2
<b>5M-DYB</b> Medium, 5 String	225.0		DYB45 44.8	DYB65 50.1	DYB85 49.4	DYB105 42.2	DYB130 38.5
<b>6ML-DYB</b> Medium Light, 6 String	248.1	DYB30 37.2	DYB45 44.8	DYB65 50.1	DYB80 45.0	DYB100 37.8	DYB126 33.2

# Crossovers - Tension

## By Individual String

### Special Long Scale (47.5" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
NS47	.00039368											69.0	61.5	54.8	48.8	43.5	38.7	34.5	30.7	27.4	24.4	21.7															
NS53	.00062989														69.6	62.0	55.2	49.2	43.8	39.1	34.8	30.9	27.6	24.6	21.9												
NS74	.00110231																			68.4	60.9	54.2	48.3	43.2	38.3	34.2	30.4	27.1	24.2	21.5							
NS104	.00204715																									71.2	63.4	56.6	50.4	45.0	40.0	35.6	31.7	28.3	25.2	22.4	
NS127	.00314940																												69.2	61.5	54.8	48.8	43.5	38.7	34.5		



- Red Silks
- Nickel-Iron Groundwound Strings
- Mellow sound, with definition and sustain
- For NS Design CR and NXT Electric-Upright Bases ONLY!

## By Available Sets

### Special Long Scale (47.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
<b>NS3075</b> Medium	255.0		NS47 69.0	NS53 62.0	NS74 60.9	NS104 63.4	
<b>NS3075-5</b> Medium, 5 String	309.8		NS47 69.0	NS53 62.0	NS74 60.9	NS104 63.4	NS127 54.8

# Progressives™ - Tension

## By Individual String

### Long Scale Plus (38" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0														
PRB030	.00014882	54.3	48.4	43.1	38.4	34.2	<b>30.5</b>	27.2	24.2	21.5	19.2	17.1	15.2																																					
PRB035	.00022588	58.3 51.2 46.3						41.2	36.7	32.7	29.1	<b>26.0</b>	23.1	20.6	18.4	16.3																																		
PRB040	.00028882	52.7 46.9 41.8 37.2								<b>33.2</b>	29.6	26.3	23.5	20.9	18.6	16.6																																		
PRB045	.00039303	56.9 50.7										<b>45.2</b>	40.2	35.8	31.9	28.5	25.4	22.6	20.1	17.9	16.0																													
PRB055	.00048831	56.1 50.0 44.5 39.7 35.4												<b>31.5</b>	28.1	25.0	22.3	19.9	17.7	15.7																														
PRB060	.00064823	59.1 52.7 46.9														<b>41.8</b>	37.2	33.2	29.6	26.4	23.5	20.9	18.6	16.6																										
PRB065	.00073558	59.7 53.3																<b>47.4</b>	42.3	37.7	33.6	29.9	26.6	23.7	21.1	18.9	16.8																							
PRB080	.00113235	57.9 51.6 46.0																		<b>41.0</b>	36.5	32.5	29.0	25.8	23.0	20.5	18.3	16.3																						
PRB085	.00135735	55.2																				<b>49.1</b>	43.7	39.0	34.8	30.9	27.6	24.6	21.9	19.6	17.4	15.5																		
PRB095	.00169529	54.6 48.7 43.5 38.7																								<b>34.4</b>	30.7	27.4	24.4	21.7	19.3	17.2	15.3																	
PRB100	.00183720	59.2 52.8 47.1 41.9																										<b>37.3</b>	33.3	29.6	26.5	23.5	20.9	18.7	16.6															
PRB105	.00187199	53.8 48.0 42.7																												<b>38.0</b>	33.9	30.2	27.0	24.0	21.3	19.0	16.9	15.1												
PRB126	.00240211	54.8 48.8 43.5 38.7 34.6																														<b>30.7</b>	<b>27.4</b>	24.4	21.7	19.4	17.2													
PRB130	.00276601	56.2 50.8 44.6 39.9 35.4																																		<b>31.5</b>	28.1	25.0	22.3	19.9										



- Burgundy Silks
- Nickel-Iron Roundwound Strings
- Exposed Core on E & B Strings
- Higher Output, Punchy, Aggressive Tone

## By Available Sets

### Long Scale Plus (38" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
XL8000 Extra Light	124.0		PRB35	PRB55	PRB75	PRB95	
L8000 Light	153.3		PRB40	PRB60	PRB80	PRB100	
M8000X Medium	179.7		PRB45	PRB65	PRB85	PRB106	
SL8000 Light, 5 String	180.7		PRB40	PRB60	PRB80	PRB100	PRB126

### Standard Long Scale (36.5" Winding Length)

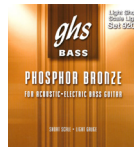
Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
M8000 Medium	179.7		PRB45	PRB65	PRB85	PRB105	
5M8000 Medium, 5 String	211.2		PRB45	PRB65	PRB85	PRB105	PRB130

# Phosphor Bronze - Tension

## By Individual String

### Standard Long Scale (36.5" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0				
PHB40	.00027654	50.4 44.9 40.0 35.7							<b>31.8</b>	28.3	25.2	22.5	20.0	17.8	15.9																									
PHB56	.00053857	55.1 49.1 43.8 39.0												<b>34.7</b>	30.9	27.6	24.6	21.9	19.5	17.4	15.5																			
PHB76	.00095707	55.0 49.0 43.6 38.9																		<b>34.6</b>	30.8	27.5	24.6	21.8	19.4	17.3	15.4													
PHB96	.00146752	53.1 47.3 42.2 37.6 33.5																				<b>29.8</b>	26.6	23.7	21.1	18.8	16.7	14.9												
PHB123	.00290778	59.1 52.7 46.9 41.9 37.2																								<b>33.2</b>	29.5	26.3	23.4	20.8										



- NO Silks
- Phosphor Bronze Roundwound Strings
- Perfect for Acoustic/Electric Bases

### Short Scale (32.75" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0			
9201 (.040)	.00033299	53.1 47.3 42.1 37.5 33.4						<b>29.8</b>	26.5	23.7	21.1	18.8	16.7																										
9202 (.058)	.00044341	56.1 50.0 44.5 39.7 35.3										31.5	28.0	25.0	<b>22.3</b>	19.9	17.7	15.7																					
9203 (.076)	.00098392	55.5 49.4 44.0 39.2 34.9 31.2																		<b>27.7</b>	24.7	22.0	19.6	17.5	15.6														
9204 (.096)	.00147683	52.4 46.8 41.6 37.1 33.0 29.5 26.2																								<b>23.4</b>	20.8	18.5	16.6										

## By Available Sets

### Standard Long Scale (36.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
L9000 Light	130.9		PHB40	PHB56	PHB76	PHB96	

### Short Scale (32.75" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
L9200 Light	103.2		9201 (.040)	9202 (.058)	9203 (.076)	9204 (.096)	



# Balanced Nickels - Tension



- Green Silk
- Pure Nickel over a Round Core Wire
- Balanced Wraps from String to String
- Tonally even across entire Fretboard

## By Individual String

### Universal Long Scale (37.25" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
NB40	.00037608									54.5	48.5	43.2	38.5	34.3	30.6	27.2	24.3	21.6	19.3	17.2	15.3																
NB44	.00041369									59.9	53.3	47.5	42.4	37.7	33.6	30.0	26.7	23.8	21.2	18.9	16.8																
NB56	.00066571														54.1	48.2	42.9	38.3	34.1	30.4	27.1	24.1	21.5	19.1	17.1	15.2											
NB60	.00071326														57.9	51.7	46.1	40.9	36.5	32.5	29.0	25.2	20.5	18.3	16.3												
NB76	.00120125																				54.8	48.8	43.5	38.7	34.5	30.8	27.4	24.4	21.8	19.4	17.3	15.4					
NB80	.00126442																				57.8	51.4	45.8	40.8	36.3	32.4	28.8	25.7	22.9	20.4	18.2	16.2					
NB101	.00210063																																				
NB106	.00220462																																				
NB126	.00262059																																				
NB130	.00270378																																				

### Short Scale (32.75" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
4701 (.044)	.00041369									58.8	52.3	46.6	41.5	37.0	33.0	29.4	26.2	23.3	20.8	18.5	16.5																
4702 (.060)	.00071326														56.9	50.7	45.1	40.2	35.8	31.9	28.4	24.4	22.6	20.1	17.9	15.9											
4703 (.080)	.00126442																																				
4704 (.106)	.00220462																																				

## By Available Sets

### Universal Long Scale (37.25" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
4L-NB Light	172.3		NB40 43.2	NB56 42.9	NB76 43.5	NB101 42.7	
4M-NB Medium	184.2		NB44 47.5	NB60 46.1	NB80 45.8	NB106 44.8	
5L-NB Light, 5 String	202.2		NB40 43.2	NB56 42.9	NB76 43.5	NB101 42.7	NB126 29.9
5M-NB Medium, 5 String	215.0		NB44 47.5	NB60 46.1	NB80 45.8	NB106 44.8	NB130 30.8

### Short Scale (32.75" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
4700 Medium	143.3		4701 (.044) 37.0	4702 (.060) 35.8	4703 (.080) 35.6	4704 (.106) 34.9	

# Brite Flats™ - Tension



- Dark Blue Silks
- Light Blue Silks (Medium, Short Scale)
- Nickel-Iron Groundwound Strings
- Mellow sound, with definition and sustain

## By Individual String

### Long Scale Plus (38" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0		
BF27	.00016294		52.3	47.2	42.0	37.4	33.4	29.7	26.4	23.6	21.0	18.7	16.7																									
BF45	.00033286							54.1	48.2	42.9	38.3	34.1	30.4	27.0	24.1	21.5	19.2	17.0	15.2																			
BF49	.00037284								54.0	48.1	42.8	38.2	34.0	30.3	27.0	24.0	21.4	19.1	17.0	15.2																		
BF52	.00045956									59.3	52.8	47.1	41.9	37.3	33.3	29.6	26.4	23.5	20.9	18.7	16.3																	
BF56	.00055712											57.0	50.8	45.3	40.4	35.9	32.0	28.5	25.4	22.7	20.2	18.0	16.0															
BF62	.00068278												55.5	49.5	44.0	39.2	34.9	31.1	27.8	24.7	22.0	19.6	17.5	15.6														
BF65	.00074284													53.8	47.9	42.7	38.0	33.9	30.2	26.9	23.9	21.3	19.1	16.9														
BF77	.00108720																55.7	49.6	44.2	39.3	35.0	31.3	27.9	24.8	22.1	19.7	17.5											
BF84	.00136654																		55.6	49.5	44.0	39.3	35.1	31.1	27.7	24.7	22.0	19.7	17.5									
BF98	.00191153																				54.9	49.0	43.6	38.8	34.6	30.8	27.5	24.5	21.8	19.4	17.3	15.4						
BF103	.00206683																				59.4	53.0	47.1	42.0	37.4	33.3	29.8	26.4	23.6	21.0	18.7	16.7						
BF108	.00220740																					56.6	50.3	44.8	40.0	35.6	31.8	28.2	25.2	22.4	20.0	17.8	15.9					
BF129	.00319394																											51.5	46.0	40.8	36.4	32.5	28.9	25.8	22.9			

### Medium Scale (35.5" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0		
3066 (.049)	.00045345									58.2	51.8	46.2	41.2	36.6	32.7	29.1	25.9	23.1	20.6	18.3	16.4																	
3067 (.062)	.00069298												56.0	49.8	44.5	39.6	35.3	31.4	28.0	24.9	22.2	19.8	17.6	15.7														
3068 (.084)	.00120910																	54.8	48.8	43.6	38.8	34.5	30.8	27.5	24.4	21.7	19.4	17.3	15.4									
3069 (.108)	.00218012																					55.5	49.5	44.0	39.2	34.9	31.1	27.8	24.7	22.0	19.6	17.4						

### Short Scale (32.75" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0		
3071 (.049)	.00047964									54.1	48.2	42.9	38.2	34.1	30.3	27.0	24.1	21.5	19.1	17.0																		
3072 (.062)	.00072449												57.7	51.4	45.8	40.9	36.4	32.4	28.9	25.7	23.0	20.4	18.2	16.2														
3073 (.084)	.00125724																	56.3	50.1	44.6	39.8	35.4	31.6	28.1	25.1	22.3	19.9	17.7	15.8									
3074 (.108)	.00218012																					54.7	48.8	43.5	38.7	34.5	30.7	27.4	24.5	21.7	19.4	17.2	15.4					

## By Available Sets

### Long Scale Plus (38" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
L3075 Light	152.3		BF45 38.3	BF56 35.9	BF77 39.3	BF98 38.8	
ML3075 Medium Light	192.2		BF52 52.8	BF65 47.9	BF84 49.5	BF103 42.0	
M3075 Medium	181.1		BF49 42.8	BF62 44.0	BF84 49.5	BF108 44.8	
M3075-5 Medium, 5 String	217.5		BF49 42.8	BF62 44.0	BF84 49.5	BF108 44.8	BF129 36.4

### Medium Scale (35.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
3065 Regular	155.2		3066 (.049) 46.2	3067 (.062) 39.6	3068 (.084) 38.8	3069 (.108) 30.6	

### Short Scale (32.75" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
3070 Regular	149.7		3071 (.049) 42.9	3072 (.062) 36.4	3073 (.084) 35.4	3074 (.108) 35.5	

# Precision Flats™ - Tension



- Purple Silks
- Stainless Steel Polished Flatwound
- Dark, thick, thumpy tone

## By Individual String

### Long Scale Plus (38" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
FB28	.0016859		54.8	48.8	43.5	38.7	34.5	30.7	27.3	24.4	21.7	19.4	17.3	15.4																							
FB45	.00036100							58.6	52.3	46.5	41.5	36.9	32.9	29.3	26.1	23.3	20.7	18.5	16.5																		
FB55	.00059573													54.3	48.4	43.2	38.4	34.2	30.5	27.2	24.2	21.6	19.2	17.1	15.3												
FB60	.00072062													58.6	52.2	46.5	41.4	36.9	32.9	29.3	26.1	23.2	20.7	18.5	16.4												
FB65	.00078579													56.9	50.7	45.2	40.2	35.8	31.9	28.4	25.3	22.6	20.2	17.9	15.9												
FB70	.00096566																55.5	49.4	44.0	39.3	34.9	31.1	27.7	24.8	22.0	19.6	17.5	15.6									
FB75	.00106341																54.4	48.5	43.3	38.5	34.3	30.5	27.3	24.2	21.6	19.3	17.1	15.3									
FB80	.00123933																56.5	50.4	44.9	39.9	35.6	31.8	28.3	25.2	22.4	20.0	17.9	15.9									
FB85	.00141525																57.6	51.2	45.6	40.7	36.3	32.3	27.7	25.6	22.8	20.4	18.1	16.1									
FB90	.00157079																56.9	50.6	45.1	40.3	35.8	31.9	28.4	25.3	22.6	20.1	17.9	15.9									
FB95	.00180706																58.2	51.9	46.4	41.0	36.7	32.7	29.1	26.0	23.1	20.6	18.3	16.4									
FB105	.00203172																58.4	52.1	46.3	41.2	36.8	32.8	29.3	26.0	23.2	20.6	18.4	16.4									
XLFB126	.00301768																																				

### Medium Scale (35.5" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
3121 (.045)	.00034470							55.7	49.6	44.2	39.4	35.1	31.3	27.8	24.8	22.1	19.7	17.5	15.6																		
3122 (.060)	.00068894													55.7	49.6	44.2	39.4	35.0	31.2	27.8	24.8	22.1	19.7	17.5	15.7												
3123 (.075)	.00103342													59.0	52.6	46.9	41.7	37.2	33.1	29.5	26.3	23.5	20.9	18.6	16.6												
3124 (.095)	.00172236																55.3	49.2	43.8	39.1	34.8	31.0	27.6	24.6	21.9	19.5	17.4	15.5									

### Short Scale (32.75" Winding Length)

Cat. No.	Unit Weight	F3	E3	D#3	D3	C#3	C3	B2	A#2	A2	G#2	G2	F#2	F2	E2	D#2	D2	C#2	C2	B1	A#1	A1	G#1	G1	F#1	F1	E1	D#1	D1	C#1	C1	B0	A#0	A0	G#0	G0	
3021 (.045)	.00041594							59.1	52.6	46.9	41.7	37.2	33.2	29.5	26.3	23.4	20.9	18.6	16.6																		
3022 (.060)	.00066346											59.4	52.9	47.1	41.9	37.4	33.3	29.7	26.4	23.6	21.0	18.7	16.6														
3023 (.075)	.00097376													54.9	48.9	43.6	38.8	34.6	30.8	27.4	24.4	21.8	19.5	17.3	15.4												
3024 (.095)	.00153294																54.4	48.5	43.2	38.5	34.3	30.6	27.2	24.3	21.6	19.2	17.2	15.3									

## By Available Sets

### Long Scale Plus (38" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
3025 Light	163.2		FB45 41.5	FB60 46.5	FB75 38.5	FB95 36.7	
CM3050 Custom Medium	174.1		FB45 41.5	FB60 46.5	FB80 44.9	FB105 41.2	
M3050 Medium	184.6		FB45 41.5	FB65 50.7	FB85 51.2	FB105 41.2	
3050 Regular	229.1		FB55 68.8	FB70 62.2	FB90 56.9	FB105 41.2	
M3050X-5 Medium, 5 String	219.0		FB45 41.5	FB65 50.7	FB85 51.2	FB105 41.2	XLFB126 34.4

### Universal Long Scale (37.25" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
M3050-5 Medium, 5 String	219.0		FB45 41.5	FB65 50.7	FB85 51.2	FB105 41.2	FB126 34.4

### Medium Scale (35.5" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
3120 Light	138.6		3121 (.045) 35.1	3122 (.060) 39.4	3123 (.075) 33.1	3124 (.095) 31.0	

### Short Scale (32.75" Winding Length)

Cat. No.	TOTAL	High C	1-G	2-D	3-A	4-E	5-B
3020 Light	122.2		3021 (.045) 37.2	3022 (.060) 33.3	3023 (.075) 27.4	3024 (.095) 24.3	

## Final Thoughts

This tension guide is just that; a guide. You're the expert at your own personal playing style and needs; if something doesn't feel/sound right, change it! Music is a very organic art form, so while you can start with science, you perfect it by touch and feel.

If you're perfectly happy with playing a pre-packaged set of strings, *GREAT!*

If you're excited about putting together that balanced tension set, *GREAT!*

If you want to try a set with less/more tension than what you're used to, *GREAT!*

You're playing. You're learning. That's the important part. We'll provide the strings; you provide the inspiration.



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