MIDI ● Solutions

Velocity Converter

OPERATING INSTRUCTIONS

MIDI Solutions Velocity Converter Operating Instructions M409-100

INTRODUCTION

Thank you for purchasing the MIDI Solutions Velocity Converter.

The MIDI Solutions Velocity Converter allows various velocity curves to be applied to Note-On velocities. Curves can be selected from 40 preset curves or one user-definable curve, and each MIDI channel can be assigned a unique curve. The MIDI Solutions Velocity Converter is MIDI-powered and requires no batteries or power supply to operate.

MIDI Indicator LED
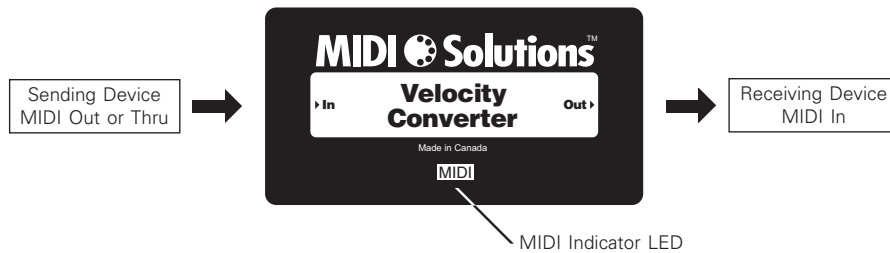
CONNECTIONS

To program the Velocity Converter connect the MIDI Out from your MIDI interface to the MIDI **In** of the Velocity Converter. The MIDI **Out** of the Velocity Converter can be left disconnected during programming.

Once the Velocity Converter is programmed, it can be inserted wherever it is required in your MIDI setup. Connect the MIDI Out or Thru of the sending device to the MIDI **In** of the Velocity Converter, and the MIDI **Out** of the Velocity Converter to the MIDI In of the receiving MIDI device. It is recommended that the number of MIDI Solutions products powered by a single MIDI Out or Thru be limited to four.

PROGRAMMING

The Velocity Converter is programmed by sending it MIDI System Exclusive programming commands from a computer with a MIDI interface. These commands are described in detail on the MIDI Solutions website, however **the Programming Tools software creates these commands automatically** (see www.midisolutions.com/support.htm).

Upon receipt of a programming command, the Velocity Converter's MIDI indicator LED flashes rapidly for about one second to indicate that the setting has been stored. Settings are retained after power is removed, and the unit can then be inserted wherever it is required in your MIDI setup.

OPERATION

The Velocity Converter's MIDI Indicator LED will light as soon as the sending device is turned on, and flashes whenever MIDI data passes through the unit. Note-On velocities are modified according to the Velocity Converter's programmed settings, all other MIDI messages are sent unchanged to the MIDI Out.

PROGRAMMING COMMANDS

CLEAR SETTINGS

To clear all of the Velocity Converter's settings, send it the following System Exclusive programming command:

▶ **F0 00 00 50 09 00 F7**

It is recommended to send the Clear Settings command to the Velocity Converter prior to programming the unit to ensure that all previous settings are cleared.

DUMP SETTINGS

To dump all of the Velocity Converter's current settings, send it the following System Exclusive message:

▶ **F0 00 00 50 09 10 F7**

Upon receipt of this command the Velocity Converter will dump its current settings to the MIDI Out.

CURVE ASSIGN

To assign a velocity curve to a particular MIDI channel, send the Velocity Converter the following System Exclusive programming command:

▶ **F0 00 00 50 09 01 aa cc F7**

    All bytes must be in Hexadecimal format (see hexadecimal conversion table at end)

        aa = curve# (see charts on following pages), set **aa** = 00 to specify user curve

        cc = MIDI channel (see MIDI channel table at end)

Example

To program the Velocity Converter to apply curve #11 to all incoming velocities on channel 1, set **aa** = 0B for curve #11 and set **cc** = 00 for channel 1. These values result in the following System Exclusive programming command:

F0 00 00 50 09 01 **0B 00** F7

USER CURVE

To program the user curve, first send the Velocity Converter the following System Exclusive programming command:

▶ **F0 00 00 50 09 02 F7**

Upon receipt of this command the LED will flash rapidly, indicating that the user curve values are expected in the form of Note or Controller data. The first 127 Note or Controller values received after this are stored sequentially as the user curve (corresponding to input velocities 1 through 127).

Example

To program the Velocity Converter to assign a velocity of 1 to all input velocities under 30 and a velocity of 64 to all other input velocities, send F0 00 00 50 09 02 F7 followed by 29 Note or Controller messages with value 1, followed by 98 Note or Controller messages with value 64.

CONTROL CHANGE VELOCITY CONTROL

To set the velocity to follow a MIDI Control Change value, send the Velocity Converter the following System Exclusive Programming command:

▶ **F0 00 00 50 09 03 aa bb cc F7**

All bytes must be in Hexadecimal format (see hexadecimal conversion table at end)

aa = Control Change#

bb = Offset added to incoming Control Change value

cc = MIDI channel (see MIDI channel table at end)

The Velocity Converter will accept one of these commands. If the offset value (**bb**) added to the incoming Control Change value exceeds 127, then output velocities are assigned a value of 127.

Example

To program the Velocity Converter to assign the value of MIDI volume on channel 1 to velocities, with an offset of 20, set **aa** = 07 (volume is MIDI CC #7), **bb** = 14 (see hexadecimal conversion table at end), and **cc** = 00 for MIDI channel 1. As volume is increased, velocities will be increased. As volume is decreased, velocities will be decreased. The minimum output velocity value will be 20, due to the offset. The above values result in the following System Exclusive programming command:

F0 00 00 50 09 03 **07 14 00** F7

PRESET VELOCITY CURVES

CURVE #1 (01 Hexadecimal)

Constant output velocity 1
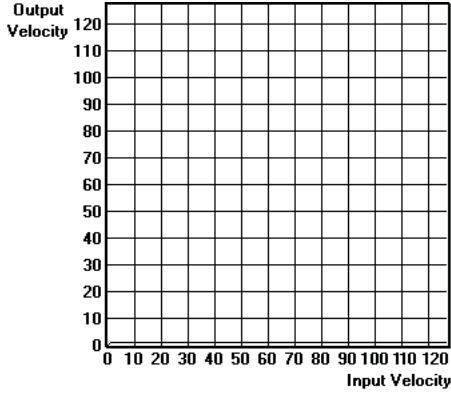
CURVE #2 (02 Hexadecimal)

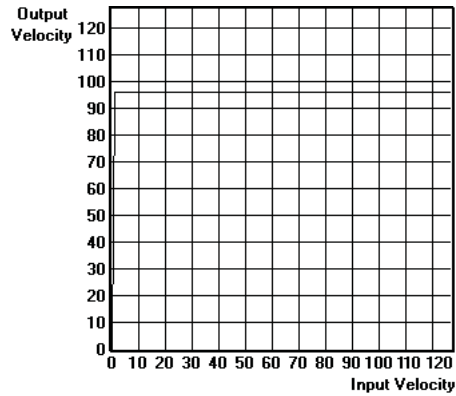Constant output velocity 32
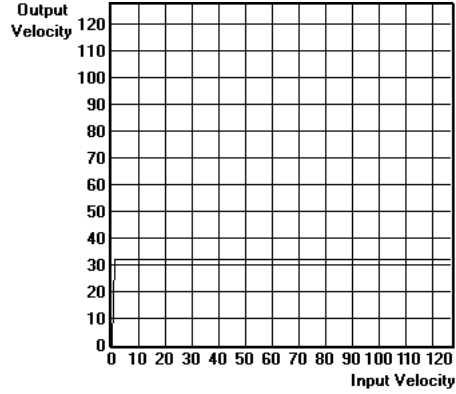
CURVE #3 (03 Hexadecimal)

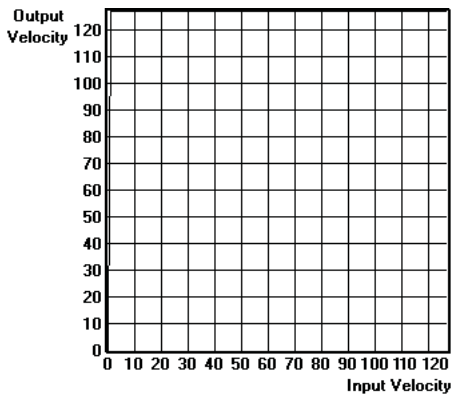Constant output velocity 64
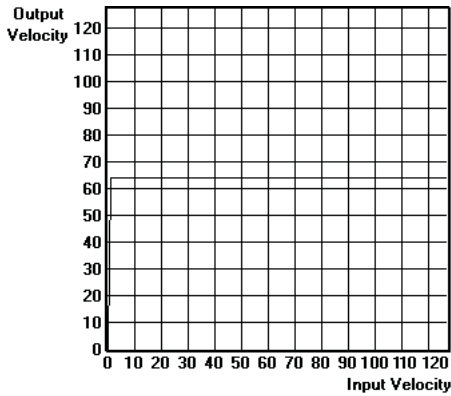
CURVE #4 (04 Hexadecimal)

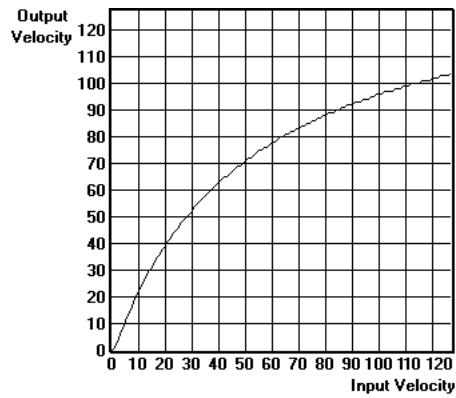Constant output velocity 96

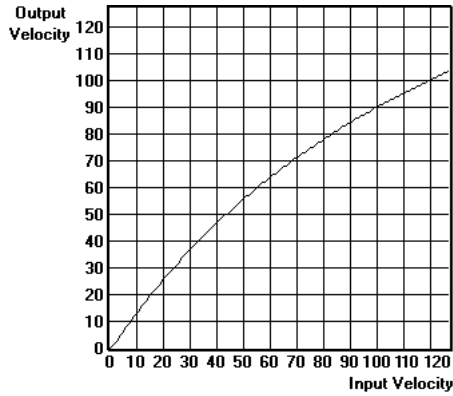### CURVE #5 (05 Hexadecimal)

Constant output velocity 127

CURVE #6 (06 Hexadecimal)

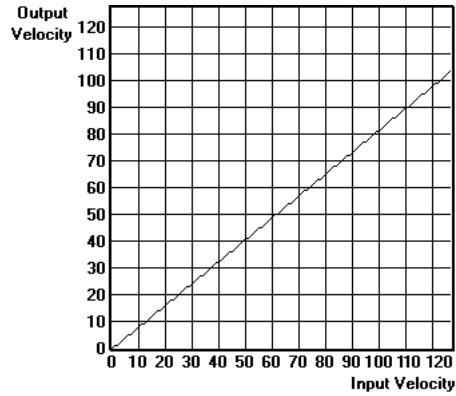Maximum velocity 104, strong upward curvature

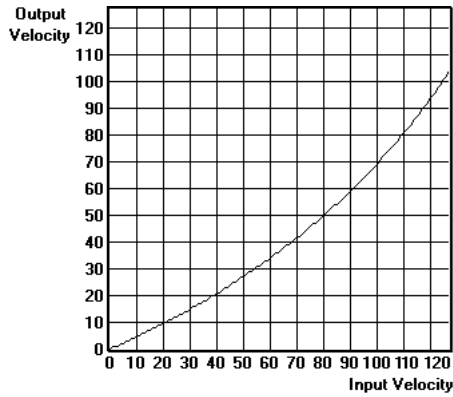## CURVE #7 (07 Hexadecimal)

Maximum velocity 104, weak upward curvature

CURVE #8 (08 Hexadecimal)

Maximum velocity 104, no curvature

CURVE #9 (09 Hexadecimal)

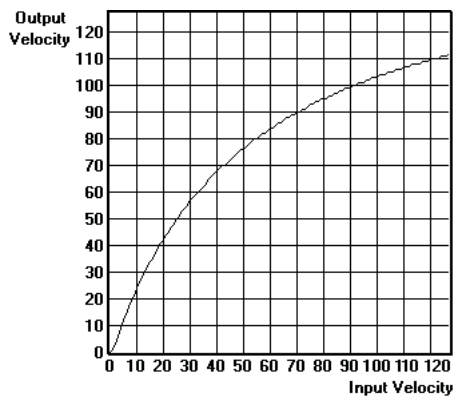Maximum velocity 104, weak downward curvature

CURVE #10 (0A Hexadecimal)

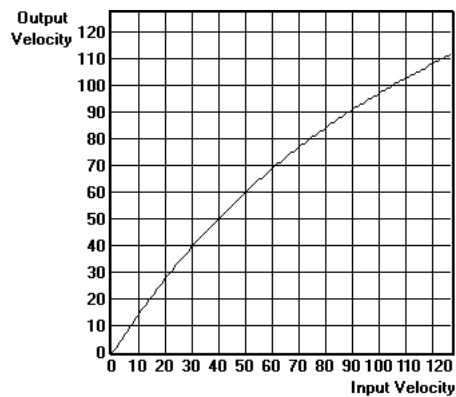Maximum velocity 104, strong downward curvature
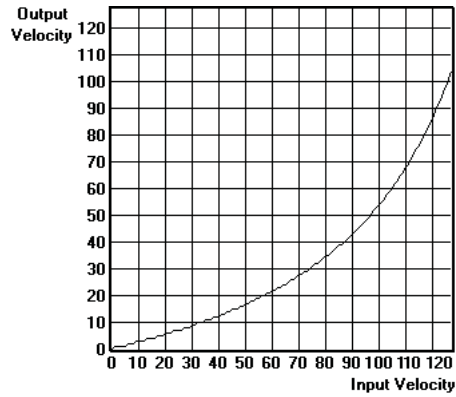
CURVE #11 (0B Hexadecimal)

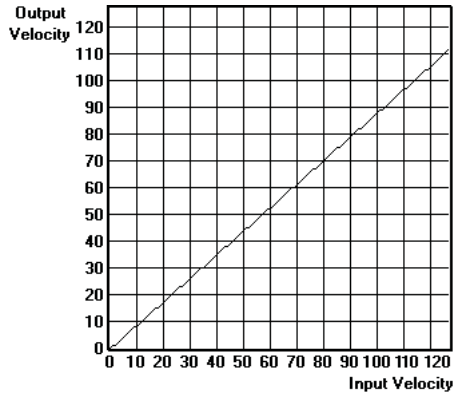Maximum Velocity 112, strong upward curvature

CURVE #12 (0C Hexadecimal)
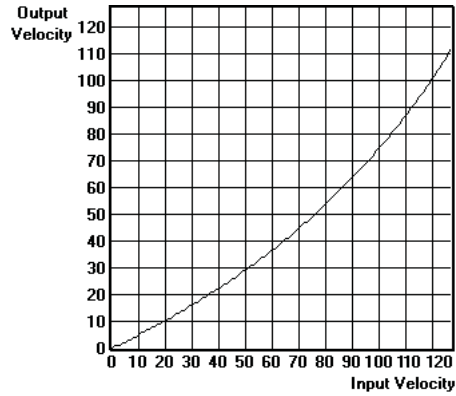
Maximum Velocity 112, weak upward curvature

CURVE #13 (0D Hexadecimal)

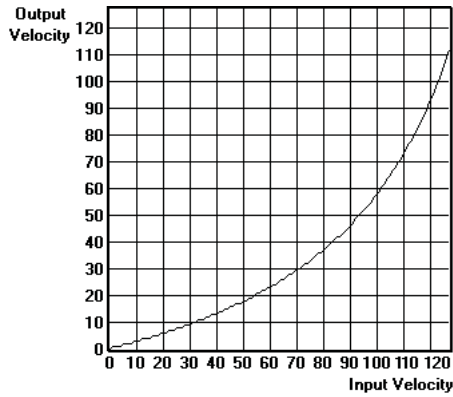Maximum velocity 112, no curvature

CURVE #14 (0E Hexadecimal)

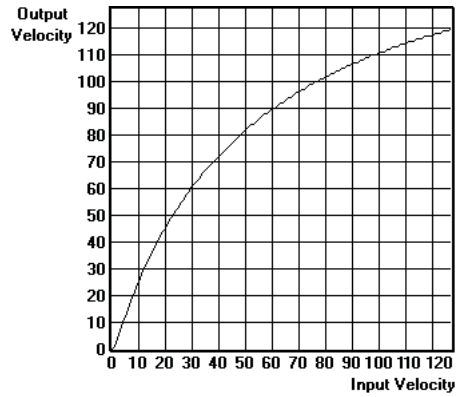Maximum velocity 112, weak downward curvature

CURVE #15 (0F Hexadecimal)
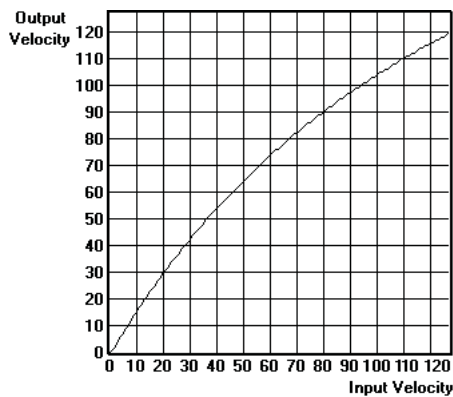
Maximum velocity 112, strong downward curvature

CURVE #16 (10 Hexadecimal)
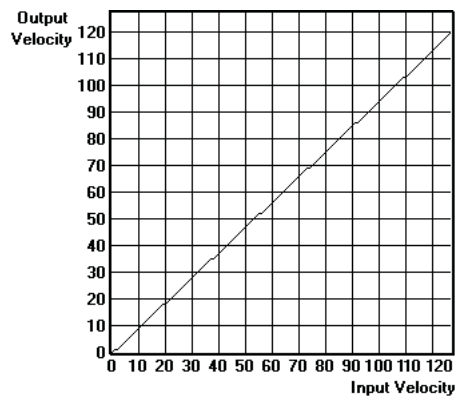
Maximum velocity 120, strong upward curvature

CURVE #17 (11 Hexadecimal)
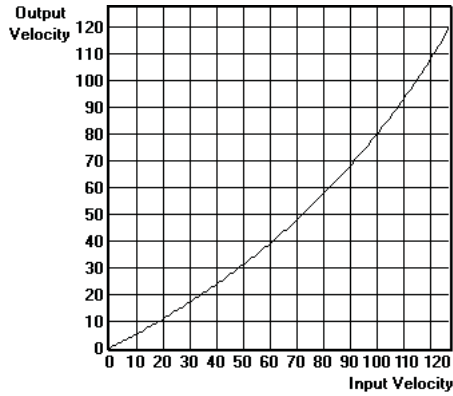
Maximum Velocity 120, weak upward curvature

CURVE #18 (12 Hexadecimal)
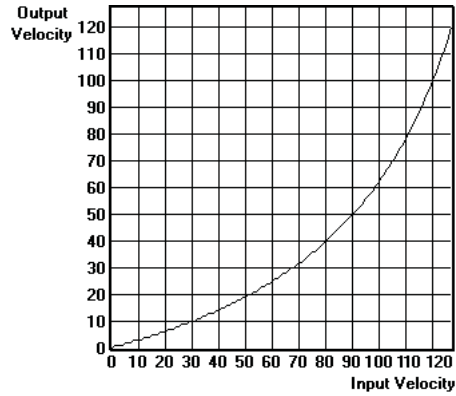
Maximum Velocity 120, no curvature

CURVE #19 (13 Hexadecimal)

Maximum velocity 120, weak downward curvature
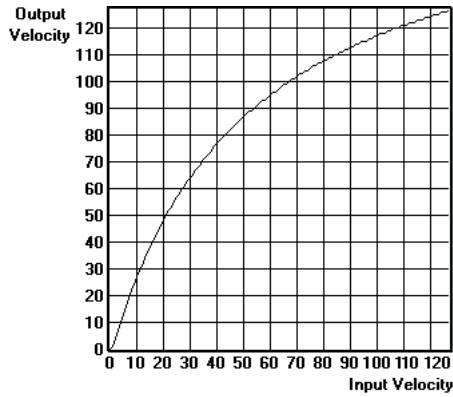

CURVE #20 (14 Hexadecimal)

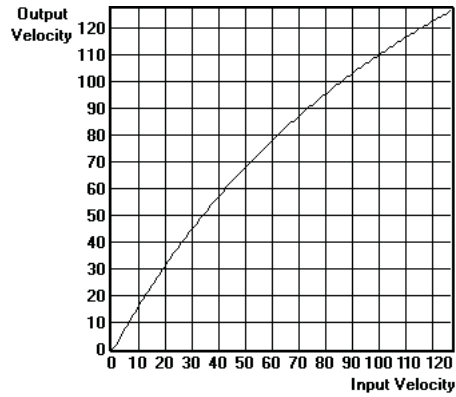Maximum velocity 120, strong downward curvature

CURVE #21 (15 Hexadecimal)

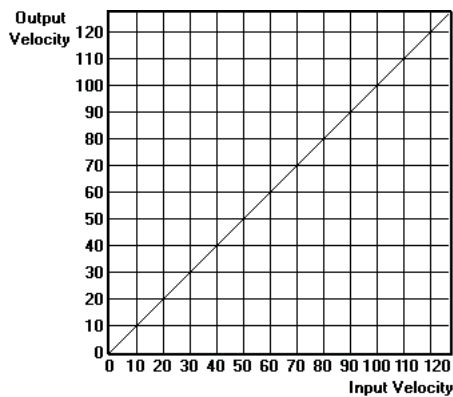Full scale, strong upward curvature

CURVE #22 (16 Hexadecimal)

Full scale, weak upward curvature

CURVE #23 (17 Hexadecimal)

Full scale, no curvature

CURVE #24 (18 Hexadecimal)

Full scale, weak downward curvature
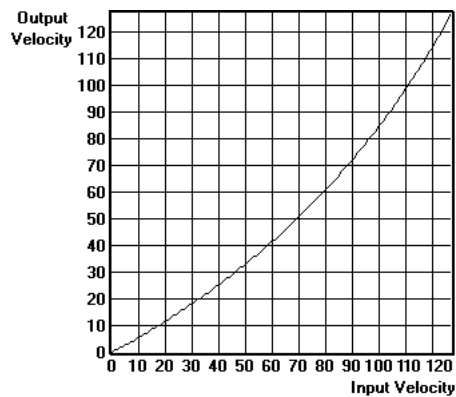
CURVE #25 (19 Hexadecimal)

Full scale, strong downward curvature
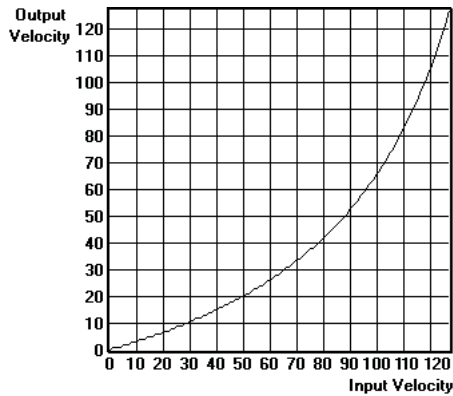
CURVE #26 (1A Hexadecimal)

Cutoff velocity 120, strong upward curvature
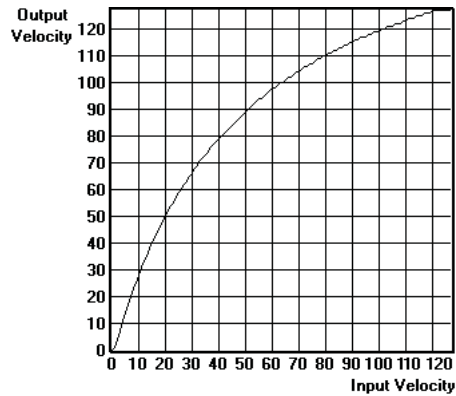
CURVE #27 (1B Hexadecimal)

Cutoff velocity 120, weak upward curvature

CURVE #28 (1C Hexadecimal)

Cutoff velocity 120, no curvature

CURVE #29 (1D Hexadecimal)

Cutoff Velocity 120, weak downward curvature

CURVE #30 (1E Hexadecimal)

Cutoff Velocity 120, strong downward curvature

CURVE #31 (1F Hexadecimal)

Cutoff velocity 112, strong upward curvature

CURVE #32 (20 Hexadecimal)

Cutoff velocity 112, weak upward curvature

CURVE #33 (21 Hexadecimal)

Cutoff velocity 112, no curvature

CURVE #34 (22 Hexadecimal)

Cutoff velocity 112, weak downward curvature

CURVE #35 (23 Hexadecimal)

Cutoff velocity 112, strong downward curvature

CURVE #36 (24 Hexadecimal)

Cutoff velocity 104, strong upward curvature

CURVE #37 (25 Hexadecimal)

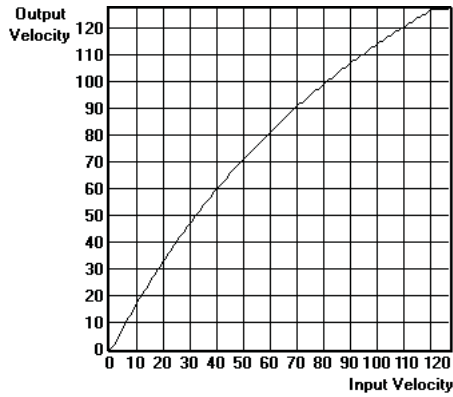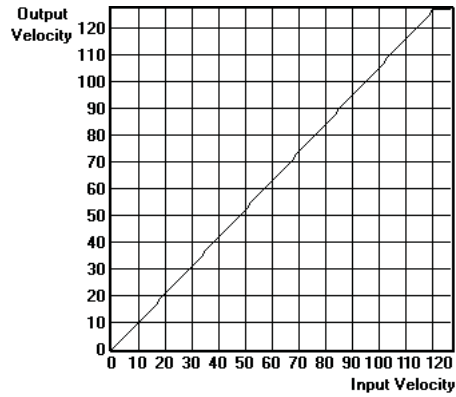Cutoff velocity 104, weak upward curvature
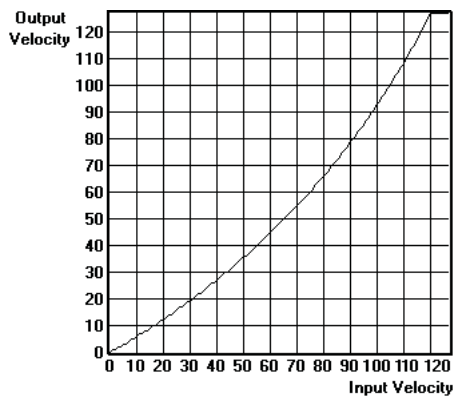

CURVE #38 (26 Hexadecimal)

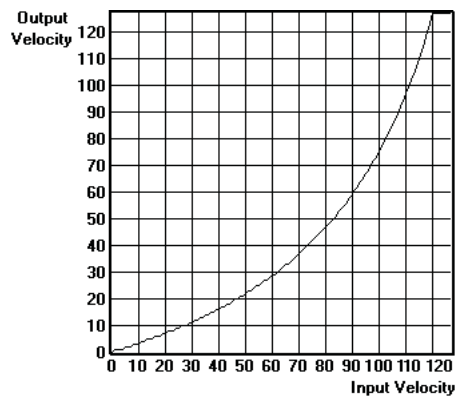Cutoff velocity 104, no curvature

CURVE #39 (27 Hexadecimal)
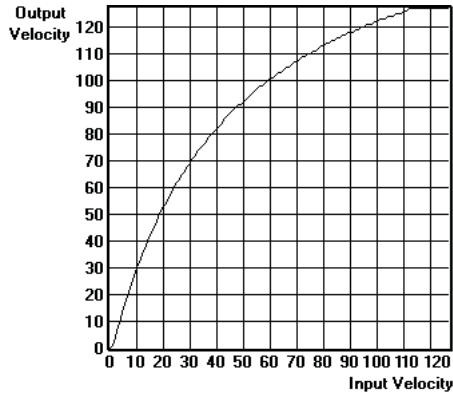
Cutoff velocity 104, weak downward curvature

CURVE #40 (28 Hexadecimal)
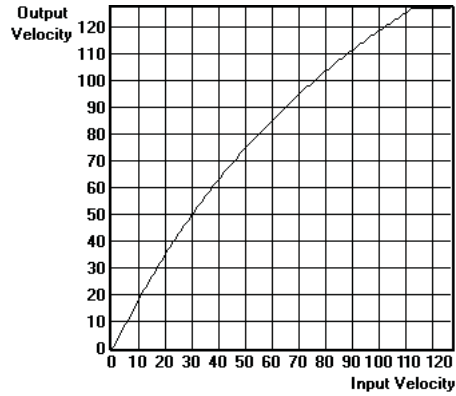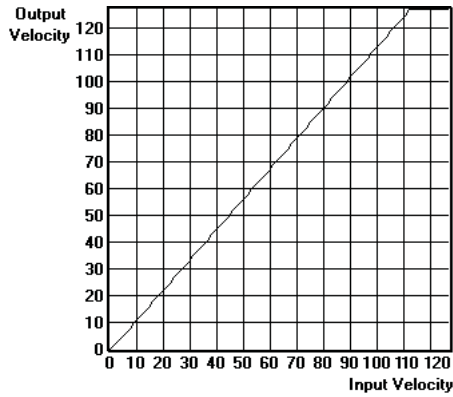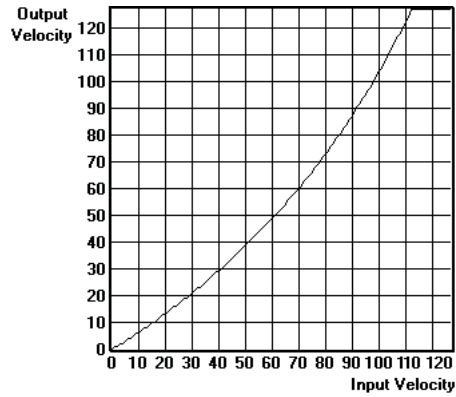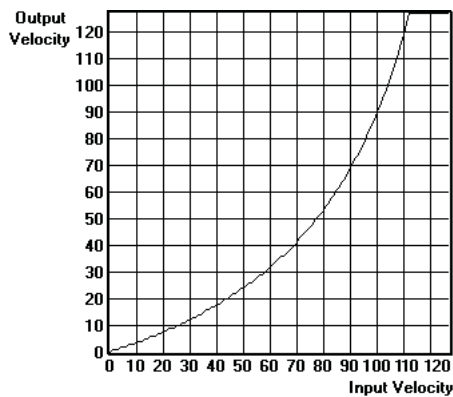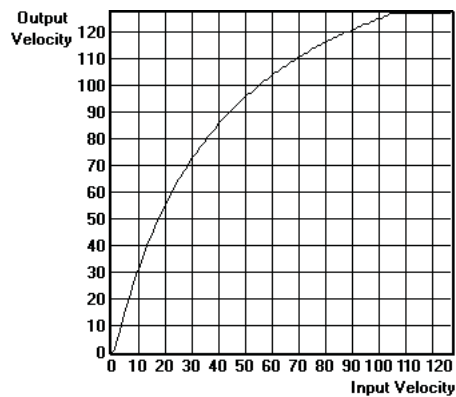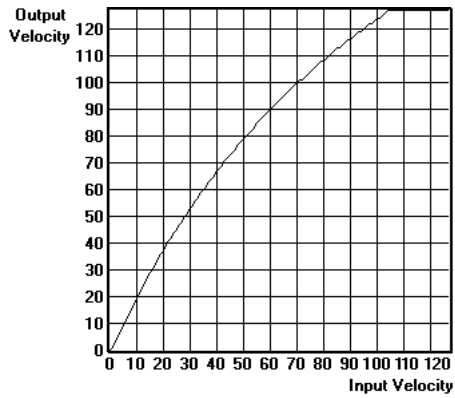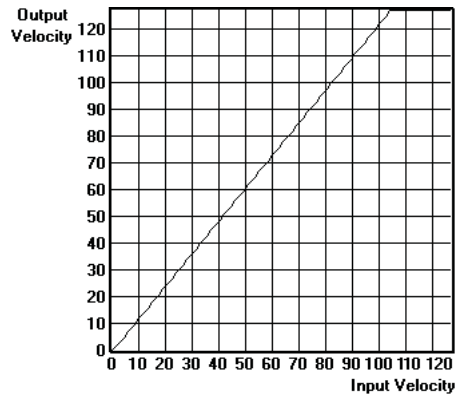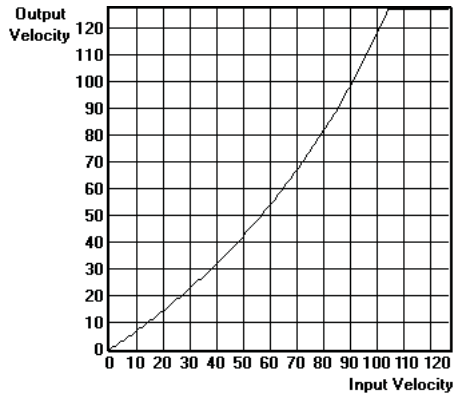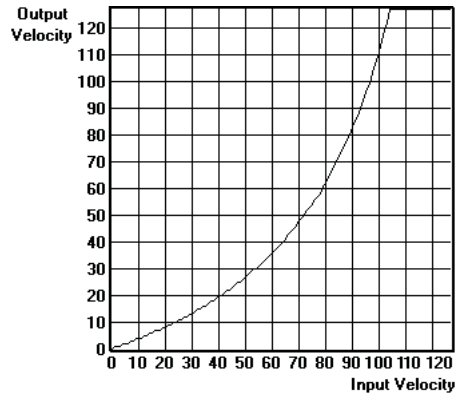
Cutoff velocity 104, strong downward curvature

MIDI CHANNEL TABLE

The value **cc** in the programming commands is assigned according to the following table:

MIDI Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ALL
cc	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	7F

MIDI CONTROL CHANGE TABLE

Decimal	Hexadecimal	Control Function
0	00	Bank Select
1	01	Modulation wheel or lever
2	02	Breath Controller
3	03	Undefined
4	04	Foot controller
5	05	Portamento time
6	06	Data entry MSB
7	07	Channel Volume
8	08	Balance
9	09	Undefined
10	0A	Pan
11	0B	Expression Controller
12-13	0C-0D	Effect Controls 1-2
14-15	0E-0F	Undefined
16-19	10-13	General Purpose Controllers (#'s 1-4)
20-31	14-1F	Undefined
32-63	20-3F	LSB values for 0-31
64	40	Damper pedal (sustain)
65	41	Portamento On/Off
66	42	Sostenuto
67	43	Soft pedal
68	44	Legato Fsw (vv=00-3F: Normal, 40-7F: Legato)
69	45	Hold 2
70	46	Sound Controller 1 (default: Sound Variation)
71	47	Sound Controller 2 (default: Timbre/Harmonic Content)
72	48	Sound Controller 3 (default: Release Time)
73	49	Sound Controller 4 (default: Attack Time)
74	4A	Sound Controller 5 (default: Brightness)
75-79	4B-4F	Sound Controllers 6-10 (no defaults)
80-83	50-53	General Purpose Controllers (#'s 5-8)
84	54	Portamento Control
85-90	55-5A	Undefined
91	5B	Effects 1 Depth (formerly External Effects Depth)
92	5C	Effects 2 Depth (formerly Tremolo Depth)
93	5D	Effects 3 Depth (formerly Chorus Depth)
94	5E	Effects 4 Depth (formerly Celeste (Detune) Depth)
95	5F	Effects 5 Depth (formerly Phaser Depth)
96,97	60,61	Data increment, Data decrement
98,99	62,63	Non-Registered Parameter Number LSB, MSB
100,101	64,65	Registered Parameter Number LSB, MSB
102-119	66-77	Undefined
120-127	78-7F	Reserved for Channel Mode Messages

HEXADECIMAL CONVERSION TABLE

Dec/Hex															
0	00	16	10	32	20	48	30	64	40	80	50	96	60	112	70
1	01	17	11	33	21	49	31	65	41	81	51	97	61	113	71
2	02	18	12	34	22	50	32	66	42	82	52	98	62	114	72
3	03	19	13	35	23	51	33	67	43	83	53	99	63	115	73
4	04	20	14	36	24	52	34	68	44	84	54	100	64	116	74
5	05	21	15	37	25	53	35	69	45	85	55	101	65	117	75
6	06	22	16	38	26	54	36	70	46	86	56	102	66	118	76
7	07	23	17	39	27	55	37	71	47	87	57	103	67	119	77
8	08	24	18	40	28	56	38	72	48	88	58	104	68	120	78
9	09	25	19	41	29	57	39	73	49	89	59	105	69	121	79
10	0A	26	1A	42	2A	58	3A	74	4A	90	5A	106	6A	122	7A
11	0B	27	1B	43	2B	59	3B	75	4B	91	5B	107	6B	123	7B
12	0C	28	1C	44	2C	60	3C	76	4C	92	5C	108	6C	124	7C
13	0D	29	1D	45	2D	61	3D	77	4D	93	5D	109	6D	125	7D
14	0E	30	1E	46	2E	62	3E	78	4E	94	5E	110	6E	126	7E
15	0F	31	1F	47	2F	63	3F	79	4F	95	5F	111	6F	127	7F

WARRANTY

MIDI Solutions Inc. warrants this product to be free from defects in material and workmanship for a period of one (1) year from date of purchase. This warranty is void if the product has been damaged by accident, misuse, alteration, unauthorized repairs or other causes not arising out of defects in material or workmanship. Under no circumstances will MIDI Solutions be liable for any loss of profits, benefits, time, interrupted operation, commercial loss, or consequential damages arising out of the use or inability to use the product. MIDI Solutions specifically disclaims any implied warranties of merchantability and fitness for a particular purpose. If the product requires service, a Return Merchandise Authorization (RMA) number must be obtained from MIDI Solutions and the product must be shipped prepaid to a specified Service Center. MIDI Solutions will repair or replace the product at our discretion and will pay return shipping fees. The customer is responsible for any damage or loss sustained during shipment in any direction.