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Hardware Reference

The information in this chapter will enable you to:

- Use this chapter as a quick reference tool for most system specifications
- Use this chapter as a quick reference tool for most switch settings
- Use this chapter as a quick reference tool for proper I/O connections

Environmental Specifications

Parameter	Range
Operating temperature	0 to 40°C (32 to 104°F) ambient
Drive temperature	Maximum heatsink temperature 75°C (162°F)
Motor temperature	Maximum motor case temperature 100°C (212°F)
Storage temperature	-40° to 85°C (-40 to 185°F)
Humidity	0 to 95% non-condensing

Drive Electrical Specifications

Input power

Parameter	Low Power	High Power
Voltage	110-130VAC*	100-130VAC, single phase
Frequency	47-66 Hz	47-66 Hz
Current	8.5 amps max continuous (RMS)	8.5 amps max continuous (RMS)

110VAC-130VAC is supplied to the transformer included with the low power Compumotor Plus.

Output Power

Parameter	Low Power	High Power
Voltage	50VDC peak	170VDC peak
Frequency	20 kHz (PWM)	20 kHz (PWM)
Current Continuous	7 amps continuous	7 amps continuous
Current Peak	8.5 amps peak	8.5 amps peak

Connector Summary

Motor & Power Connector, Low-Power Drive

Signal	Name	In/Out	Type	Current	Voltage	Frequency	Wire Color
1	T1	Input	Power	4A	36VAC	50/60 HZ	Brown
2	T2	Input	Power	4A	36VAC	50/60 HZ	Blue
3	GND	Input	Power	4A	Earth	N/A	Grn/yel
4	A+	Output	Motor	8A	50VAC	N/A	Red
5	A-	Output	Motor	8A	50VAC	N/A	Black
6	GND	Output	Motor	8A	0VAC	N/A	Shield
7	B+	Output	Motor	8A	50VAC	N/A	White
8	B-	Output	Motor	8A	50VAC	N/A	Green

Motor & Power Connector, High-Power Drive

Signal	Name	In/Out	Type	Current	Voltage	Timing	Wire Color
1	LINE	Input	Power	6A	115VAC	50/60 HZ	Black
2	NEUT	Input	Power	6A	115VAC	50/60 HZ	White
3	GND	Input	Power	6A	Earth	N/A	Green
4	A+	Output	Motor	10A	150VDC	N/A	Red
5	A-	Output	Motor	10A	150VDC	N/A	Black
6	GND	Output	Motor	10A	Earth	N/A	Shield
7	B+	Output	Motor	10A	150VDC	N/A	White
8	B-	Output	Motor	10A	150VDC	N/A	Green

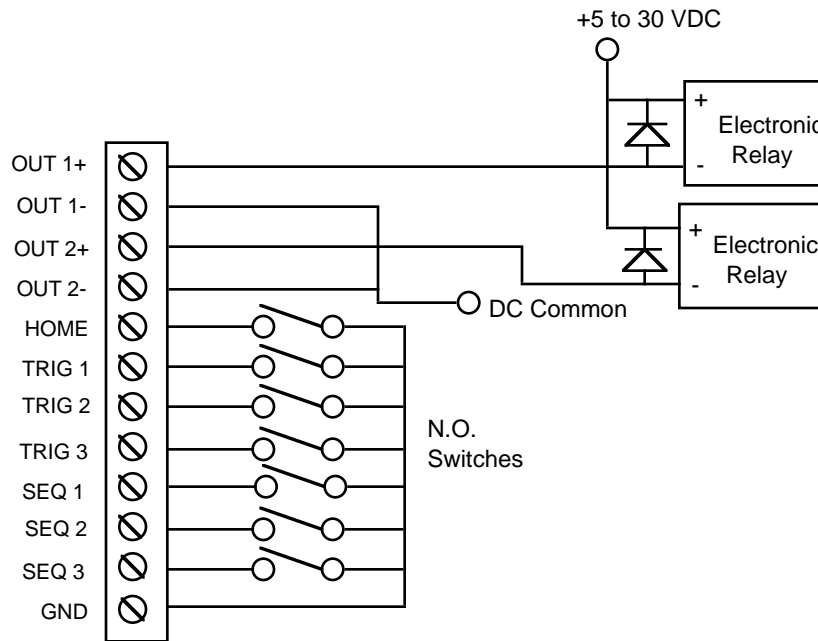
Control Connector, Low Power & High Power Drives

Signal	Name	In/Out	Type	Current (Min)	Voltage (Max)	Timing
1	Rx	Input	RS-232C	-	±15V	9600 Baud (adjustable)
2	Tx	Output	RS-232C	-	±15V	9600 Baud (adjustable)
3	GND	-	GROUND	-	Earth	-
4	ENABLE	Input	SRC	12 mA	12V	DC
5	CW LIMIT	Input	SRC	12 mA	12V	DC
6	CCW LIMIT	Input	SRC	12 mA	12V	DC
7	RESET	Input	SRC	12 mA	12V	DC
8	GND	Input	Ground	-	-	-
9	COMMAND 1+	Input (Step+)	Non-indexing Version Only			
10	COMMAND 1-	Input (Step -)				
11	COMMAND 2+	Input (Dir +)				
12	COMMAND 2-	Input (Dir --)				
13	MONITOR +	Output	Analog	10mA	±10V	
14	MONITOR -	Output				
15	FAULT +	Output	OC	50mA	30V	DC
16	FAULT -	Output	OE			

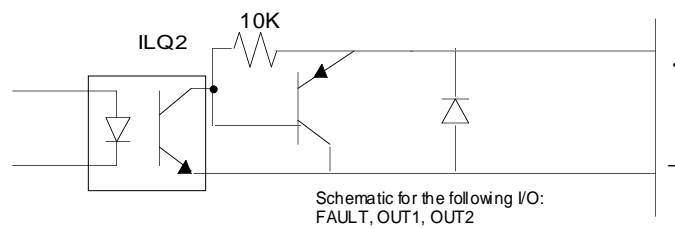
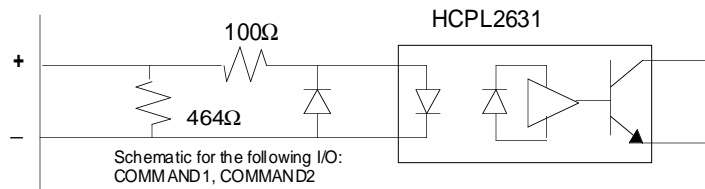
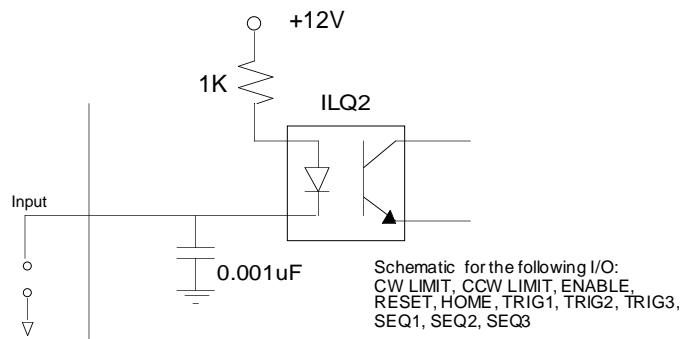
I/O Connector, Low and High Power Drives

Signal	Name	In/Out	Type	Current	Voltage
1	OUT 1+	Output	OC	50 mA (Max)	30V
2	OUT 1-	Output	OE		
3	OUT 2+	Output	OC	50 mA (Max)	30V
4	OUT 2-	Output	OE		
5	HOME	Input	SRC	12 mA (Min)	12V
6	TRIG 1	Input	SRC	12 mA (Min)	12V
7	TRIG 2	Input	SRC	12 mA (Min)	12V
8	TRIG 3	Input	SRC	12 mA (Min)	12V
9	SEQ 1	Input	SRC	12 mA (Min)	12V
10	SEQ 2	Input	SRC	12 mA (Min)	12V
11	SEQ 3	Input	SRC	12 mA (Min)	12V
12	GND	Input	GND		

I/O Diagram



I/O Schematics



I/O Specifications

Position sensor: Accepts position information from the motor's built-in resolver. The cable between the motor and drive is pre-wired at the factory.

CAUTION

The position sensor connector on the low and high power drives are not normally accessed by user. Un-isolated hazardous voltages are present in high power units. Various length cables are available (consult the factory).

Input power: Input power for the drive-high-power: 110VAC, low-power drive: 36VAC. The low-power drive is provided with a pre-wired 110VAC input, 36VAC output transformer.

T1 One phase of the input power (Brown)

T2 Second phase of the input power (Blue)

GND Earth ground (Green/Yellow)

Motor connections: Output power to the motor. Up to 150VDC for the high-power drive and 50VDC (pulsed) for the low power drive.

A+ Plus side of motor phase A (Red)

A- Minus side of motor phase A (Black)

GND Shield ground

B+ Plus side of motor phase B (White)

B- Minus side of motor phase B (Green)

RS-232C Connections

The RS-232C transmits and receives connections. It accepts standard EIA RS-232C signals from +15V to -15V. The baud rate is selectable. Eight data bits, no parity, and one stop bit are fixed parameters. The unit is optically isolated.

Tx, Rx and Gnd The RS-232 connections are labeled Tx for transmit, Rx for receive and Gnd for ground.

Discrete Control Connections

These input and output signals control various dedicated functions of the Compumotor Plus as explained below. The unit is optically isolated.

Enable	Enable Input. Enables the drive. Must be connected to isolated signal ground for drive operation.
CW LIMIT	CW end-of-travel limit. This input must be connected to ground to be inactive.
CCW LIMIT	CCW end-of-travel limit. This input must be connected to ground to be inactive.
RESET	When the reset line is connected to ground, the reset line of the microprocessor is pulled low and the system resets.
GND	Isolated signal ground or common
COMMAND 1+	Step Input: The step pulse input to the step/direction Compumotor Plus Drive. Not used in the Indexer version.
COMMAND 1-	Step Return: The step pulse input return for the Step/Direction Compumotor Plus Drive. Not used in the Indexer version.
COMMAND 2+	Direction Input: The direction signal input for the Step/Direction Compumotor Plus Drive. Not used in the Indexer version.
COMMAND 2-	Direction Input: The direction signal input for the Step/Direction Compumotor Plus Drive. Not used in the Indexer version.
MONITOR +	Bipolar analog output (+10V) providing analog velocity report. -10V equates to -50 revolutions per second, 0V equates to zero speed, and +10V equates to +50 revolutions per second.
MONITOR -	Isolated ground for monitor output.
FAULT+	Fault indication output plus. Turns off (no current) to indicate fault condition. (Collector of optically isolated transistor.)
FAULT-	Fault indication output minus. (Emitter of optically isolated transistor.)

Discrete
Input/Output
connections

Inputs and outputs that affect program control. They are optically isolated.

OUT 1+	General purpose output #1 plus. Controlled by O and IO command (collector of optically isolated transistor).
OUT 1-	General purpose output #1 minus (emitter of optically isolated transistor).
OUT 2+	General purpose output #2 plus. Controlled by O and IO command (collector of optically isolated transistor).
OUT 2-	General purpose output #2 minus (emitter of optically isolated transistor).
HOME	Home input. Indicates home position. Used in conjunction with the Go Home command (GH).
TRIG 1	General purpose input #1. Used in conjunction with the trigger commands (TR, TS) and sequence inputs in IM2.
TRIG 2	General purpose input #2. Used in conjunction with the trigger commands (TR, TS) and sequence inputs in IM2.
TRIG 3	General purpose input #3. Used in conjunction with the trigger commands (TR, TS) and sequence inputs in IM2.
SEQ 1	Sequence control input. Commands a specific sequence number to be executed. Refer to the Execute (X) commands.
SEQ 2	Sequence control input. Commands a specific sequence number to be executed. Refer to the Execute (X) commands.
SEQ 3	Sequence control input. Commands a specific sequence number to be executed. Refer to the Execute (X) commands.
GND	Logic ground.

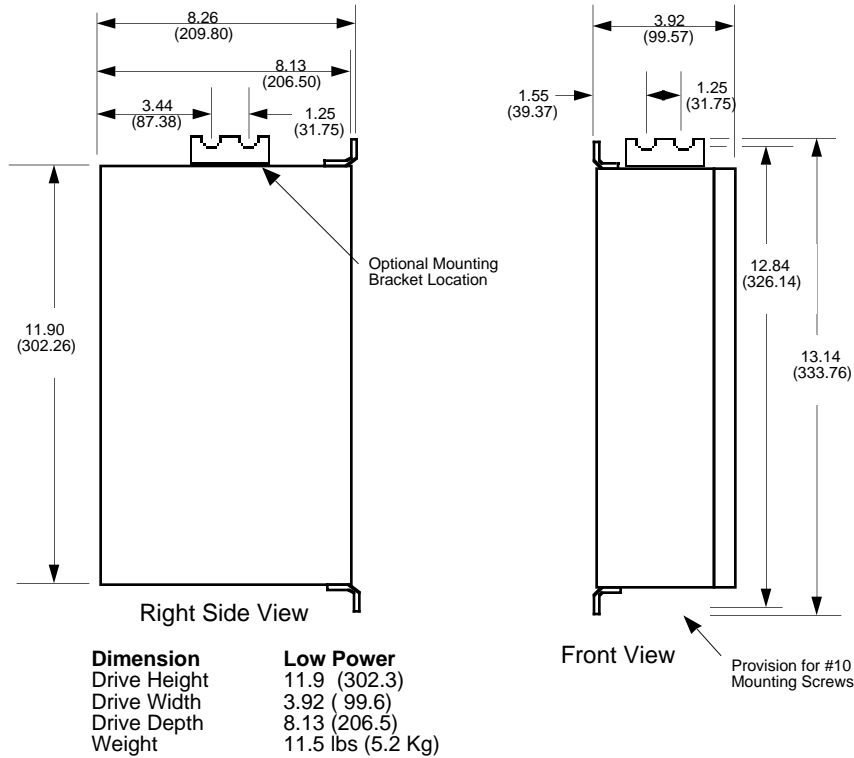
Input Output
Specifications
Quick Reference

The types of Compumotor Plus inputs and outputs are listed in the table below.

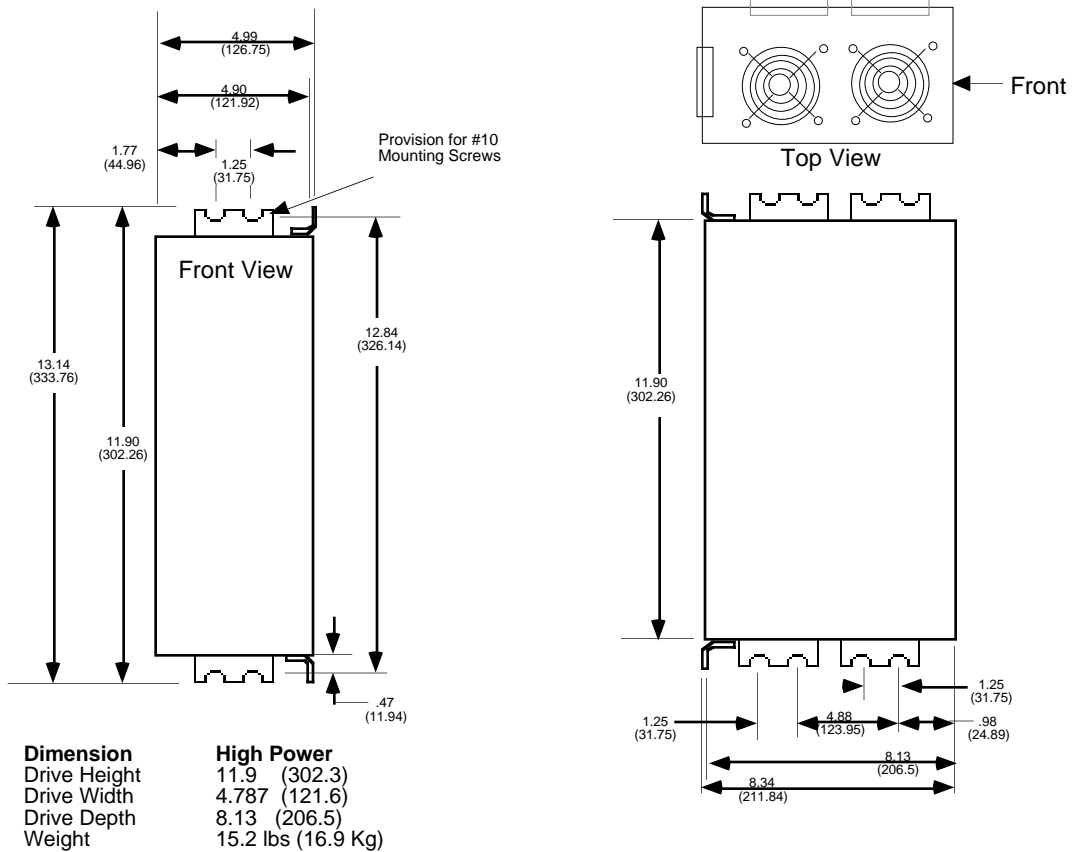
Type	Description
BLNCD	Balanced input. Requires both a plus and minus to activate
GROUND	Isolated ground for logic signals
RS-232C	Standard RS-232C I/O. Optically isolated.
SNK	Sinking input. Optically isolated, requires a ground to activate
OC	Open collector output. Optically isolated
OE	Open emitter output. Optically isolated. Used with open collector output

Dimensional Drawings

CPL, CPLX

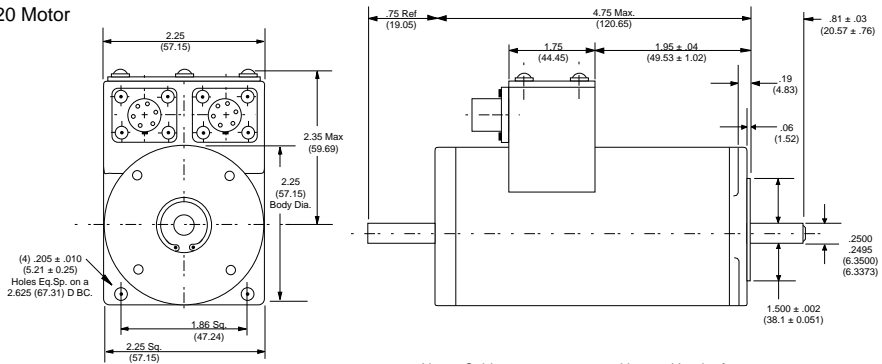


CPH & CPHX



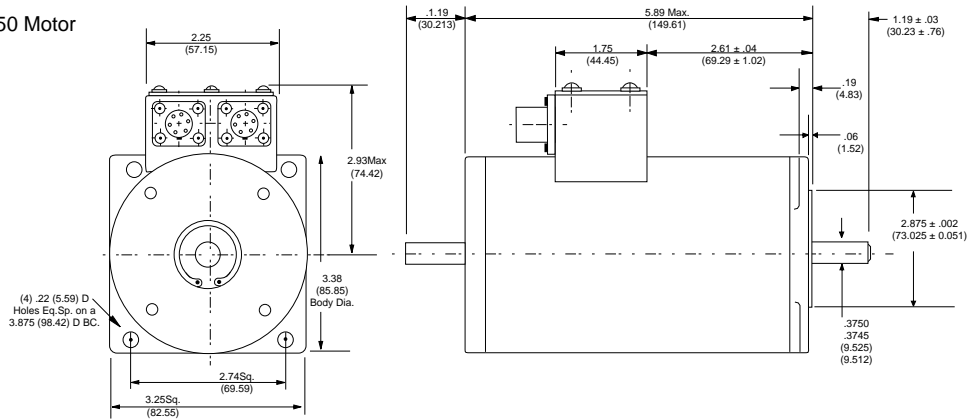
Motor Dimensions

CP57-120 Motor

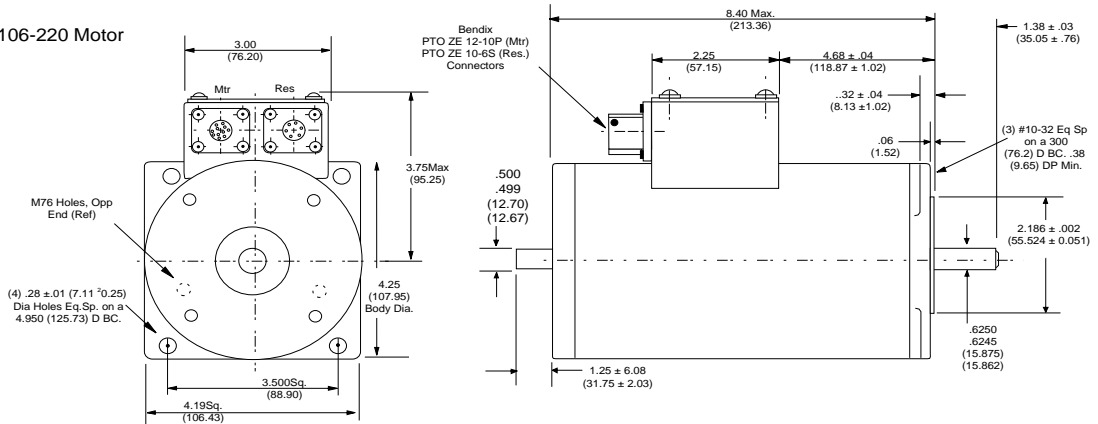


Note: Cable connectors extend beyond back of motor

CP83-150 Motor



CP106-220 Motor



Motor Specifications

Specification	CPL57-120	CPL83-150	CPH83-150	CPH106-210
Torque (continuous)	130	370	370	1100 in-oz
Torque (peak)	160	420	420	1400 in-oz
Max continuous speed	3600	3600	3600	3600 rpm
Rotor Inertia	0.0042	0.0239	0.0239	0.1393 oz-in-sec ²

System Specifications

Accuracy & Repeatability

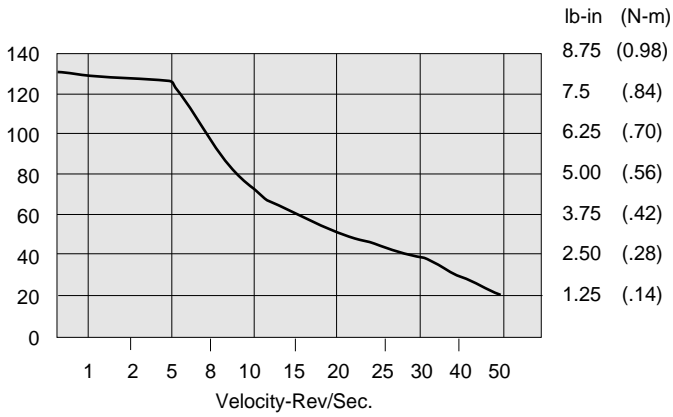
Description	Value
Repeatability	± 2 arc min. (0.0334°)
Accuracy	± 12 arc min. (0.200°) Bi-directional, loaded at 80% of total torque. (With proper tuning)

Physical

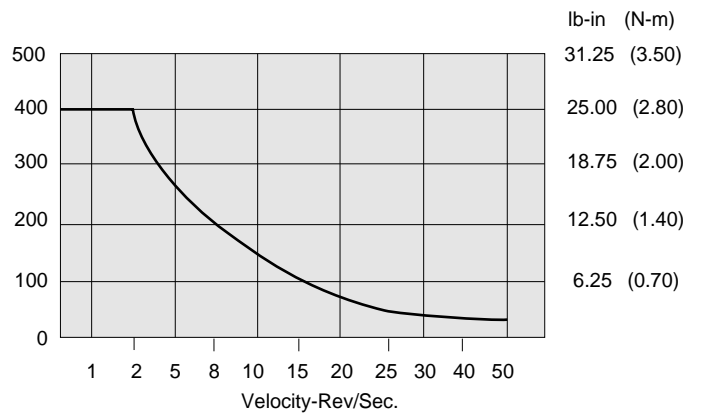
Description	CPL57-120	CPL83-150	CPH83-150	CPH106-210
Motor Weight	3.2	7.7	7.7	21.7
Shipping Weight	20.0	25.0	25.0	45.0

Torque/Speed Curves

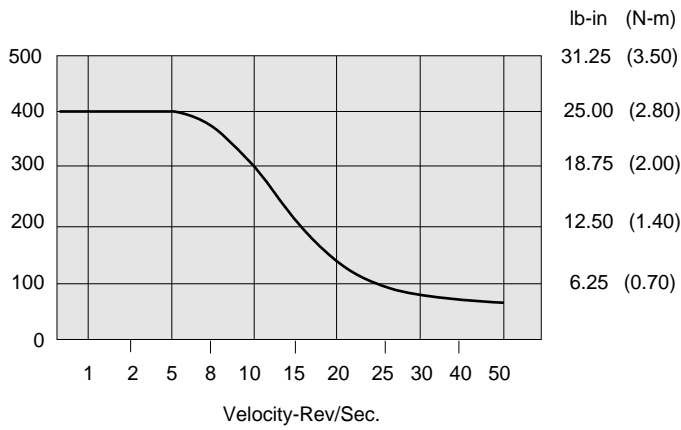
CPL57-120
or
CPLX57-120



CPL83-150
or
CPLX83-150



CPH83-150
or
CPHX83-150



CPH106-220
or
CPHX106-220

