

Softstarter PN Options

Revised 3/05

Important User Information

This document is a supplementary guide for the Softstarter PN. It is intended to be used with the installation manual.

This guide contains the information pertaining to the factory settings for the optional versions of the Softstarter PN (24 through 1000 Amp).

Other information specific to the operation and maintenance of the Softstarter PN is given in the installation manual: PNM.

Precautionary Notes

In this manual you will see the following types of precautionary statements:

Paragraphs headed **IMPORTANT** point out specific areas of concern that are critical to your understanding or use of the product.



ATTENTION: Identifies information about practices or circumstances that can led to personal injury or death, property damage, or economic loss.

Attentions help you:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT: Identifies information that is especially important for successful application and understanding of the product.

Soft Stop Option

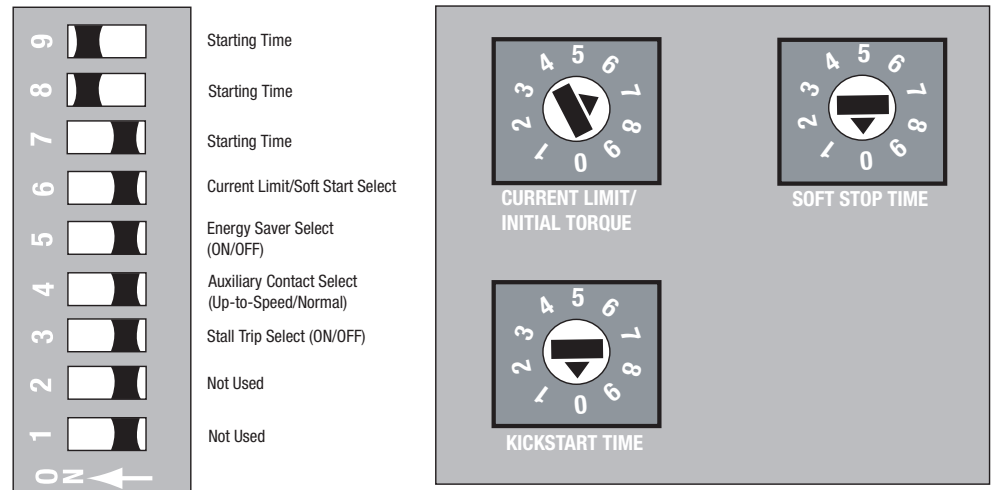
Factor Settings

The controller has been factory-set for the following as shown in Figure 1.1.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Stall feature “OFF”
- initial torque 70%
- Kickstart “OFF”
- Soft Stop “OFF”

Note: Soft Stop feature is deactivated with factory settings.

Figure 1.1 Soft Stop Option Factory Settings



With the soft stop option, pressing the soft stop push-button signals the controller to initiate a ramp down. The RUNNING LED turns off and the STOPPING LED turns on. When the logic completes the ramp down sequence, the latch circuit across terminal 30 and 40 is released, the form C auxiliary contacts reset (terminals 70, 80 and 90) and the STOPPING LED turns off. The controller logic resets. If “up-to-speed” auxiliaries are selected, the contacts reset when the motor begins to decelerate.

If the stop push-button is pressed, a normal (coast to rest) stop is initiated.

Soft Stop Option

Figure 1.2 Soft Stop Option

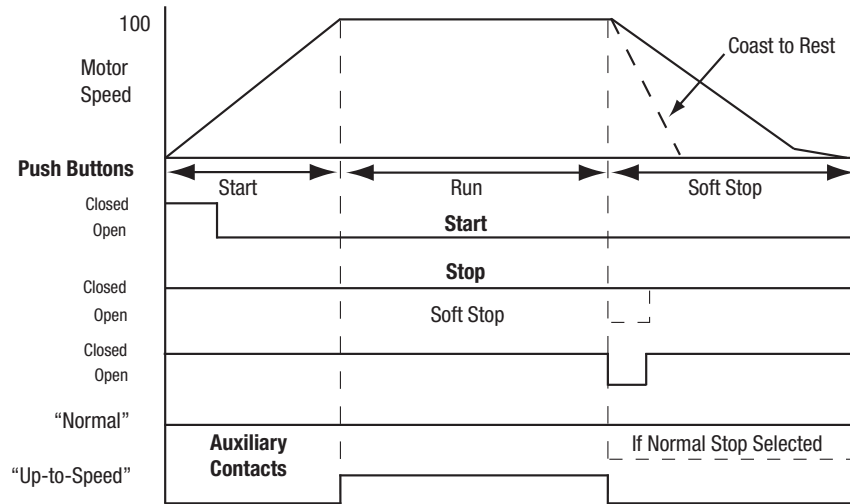
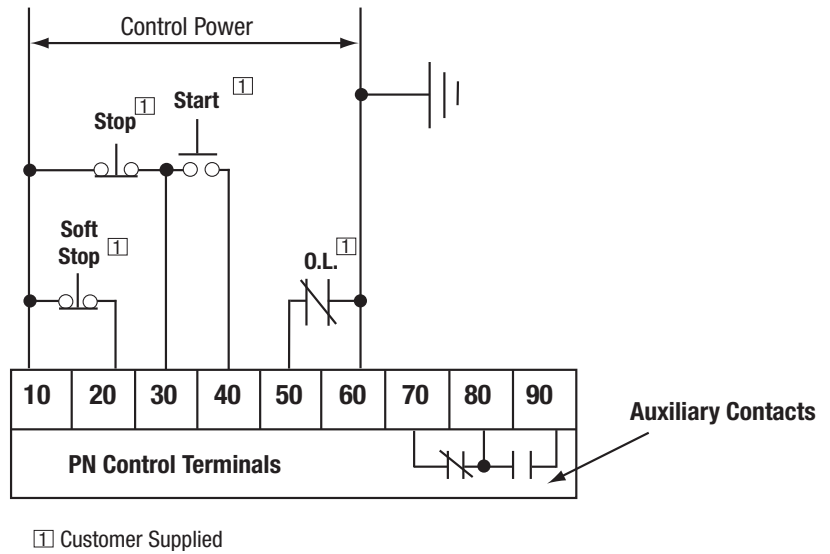


Figure 1.3 Soft Stop Terminal Wiring



WARNING: Soft Stop is not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.

Pump Control Option

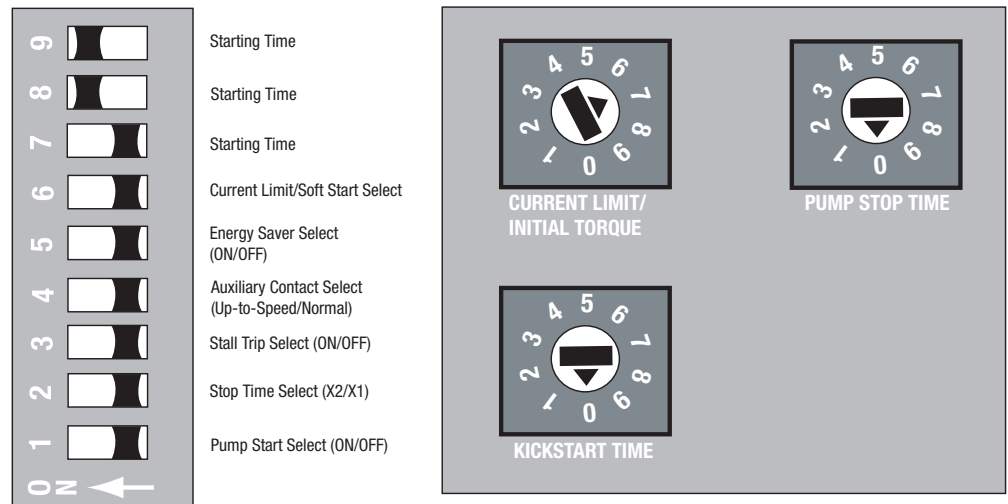
Factory Settings

The controller has been factory-set for the following as shown in Figure 1.4.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Stall feature “OFF”
- initial torque 70%
- Kickstart “OFF”
- Pump Start “OFF”
- Pump Stop “OFF”

Note: Pump Control feature is deactivated with factory settings.

Figure 1.4 Pump Control Option Factory Settings



This function is used to reduce surges in a pumping system during starting and stopping of a centrifugal pump by smoothly accelerating and decelerating the motor at a selectable rate. The microcomputer analyzes the motor variables and generates control commands which control the motor in such a way to reduce the possibility of surges occurring in the system.

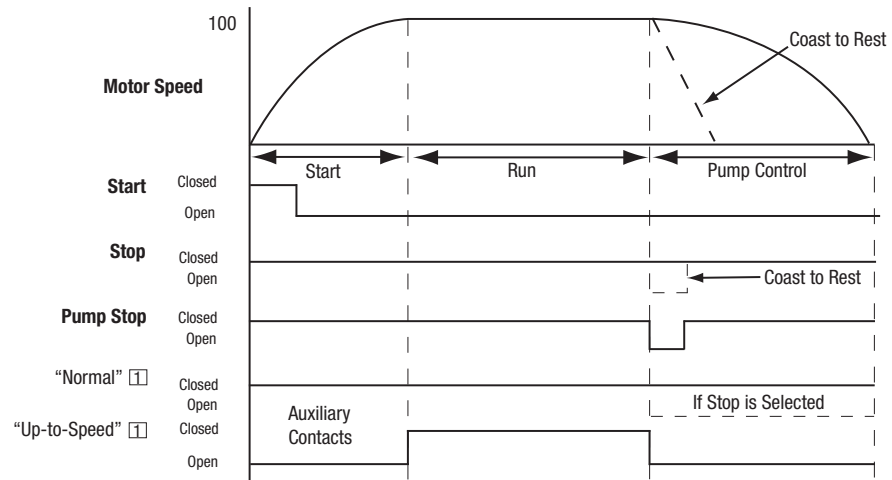
With the pump control option, pressing the start push-button signals the controller to initialize the start sequence. The STARTING LED turns on. When it has effectively reached full speed, the RUNNING LED is illuminated and the STARTING LED extinguishes.

By pressing the pump stop push-button, the controller will decrease the motor voltage as a function of pump loading. It will decrease the voltage until the pump has stopped. When this occurs, the controller logic will automatically shut off. Some applications may cause the pump to be rotating (i.e., backspin situations) even if the logic has commanded the pump to shut off.

If the stop push-button is pressed, a normal (coast to rest) stop is initiated.

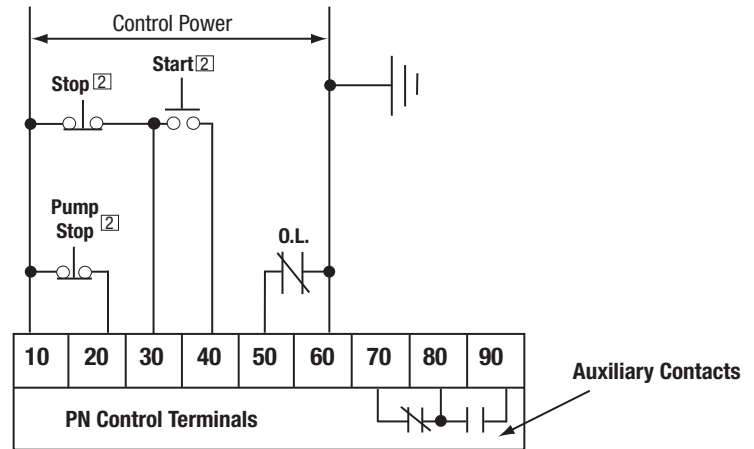
Pump Control Option

Figure 1.5 Pump Control



☐ Only the normally open auxiliary contact is being illustrated.

Figure 1.6 Typical Pump Control Terminal Wiring



☐ Customer Supplied



WARNING: Pump Stop is not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.

Preset Slow Speed Option

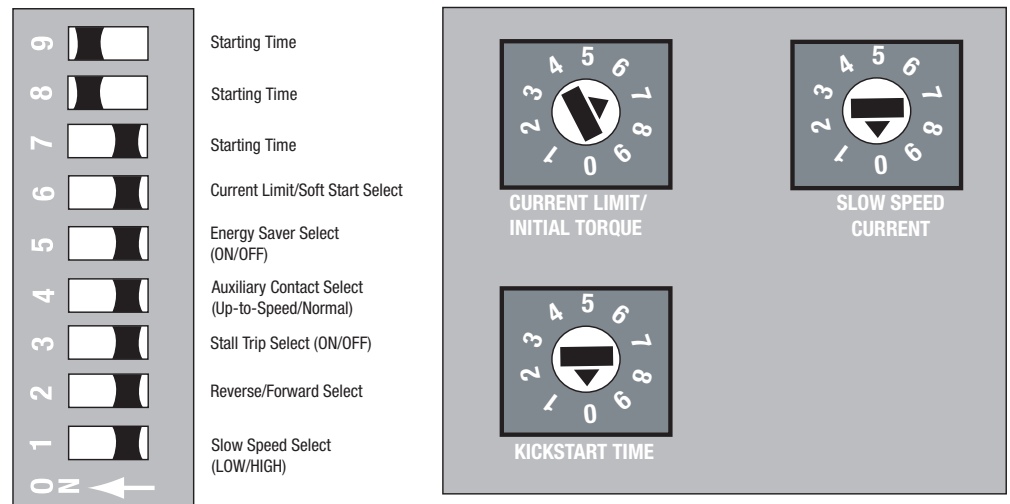
Factory Settings

The controller has been factory-set for the following as shown in Figure 1.7.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Slow Speed Current Adjustment “OFF”
- Preset Speed set for “FORWARD” direction and “HIGH” speed
- Kickstart “OFF”
- Initial torque 70%
- Stall feature “OFF”

Note: Preset Slow Speed feature is deactivated with factory settings.

Figure 1.7 Preset Slow Speed Option Factory Settings



With the preset slow speed feature, pressing and holding in the slow speed push-button will allow the motor to operate at the selected slow speed. The RUNNING LED will flash indicating this preset slow speed operation. By releasing the slow speed pushbutton, the RUNNING LED turns off and the motor will coast to rest. If the start pushbutton is pressed, the motor will accelerate to full speed based on the starting mode selected.

Preset Slow Speed Option

Figure 1.8 Preset Slow Speed Option

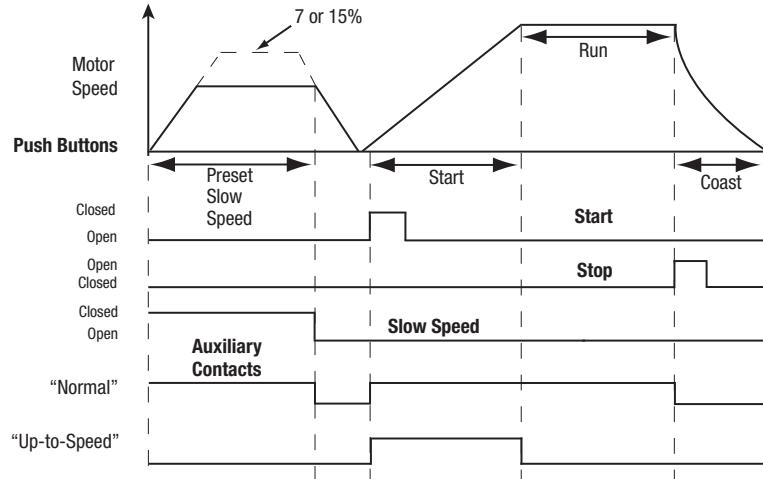
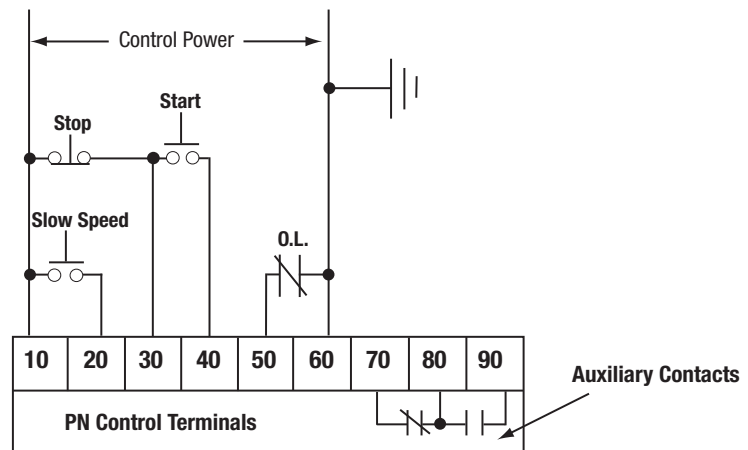


Figure 1.9 Preset Slow Speed Terminal Wiring



CAUTION: Slow Speed running is not intended for continuous operation due to heat produced in the motor and reduced motor cooling. Therefore, select the lowest slow speed current setting that will accelerate and drive the load.

Intelli-Brake Option

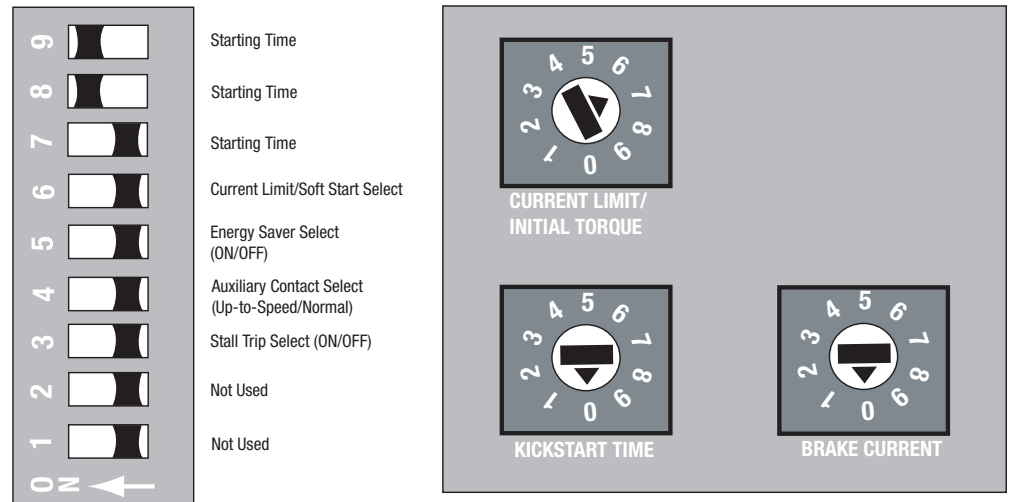
Factory Settings

The controller has been factory-set for the following as shown in Figure 1.10.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Brake Current “OFF”
- Kickstart “OFF”
- Initial torque 70%
- Stall feature “OFF”

Note: Intelli-Brake feature is deactivated with factory settings.

Figure 1.10 Intelli-Brake Option Factory Settings



This function provides motor braking for applications which require the motor to stop faster than a coast to rest. It is a microcomputer based braking system which applies three phase braking current to a standard squirrel cage induction motor. The strength of the braking current is adjustable from 150% to 400% of full load current.



WARNING: This option is used to decrease motor coasting time. It is not intended to be used as an emergency or safety stop.

In case of power loss, the motor will coast to a stop.

Note: Depending on the application, the Intelli-Brake, Intelli-Stop and Slow Speed with Braking options may cause some vibration or noise during the stopping cycle and this may be minimized by lowering the braking current. If this is a concern in your application, consult the factory prior to applying these options.

With the Intelli-Brake option, pressing the brake pushbutton signals the controller to implement the brake. The RUNNING LED turns off and the STOPPING LED flashes. Braking will occur until the near-zero is detected, at which point the control will turn off and reset. This is accomplished without the use of a tachometer or zero speed switch or timer.

Intelli-Brake Option

Figure 1.11 Intelli-Brake Option

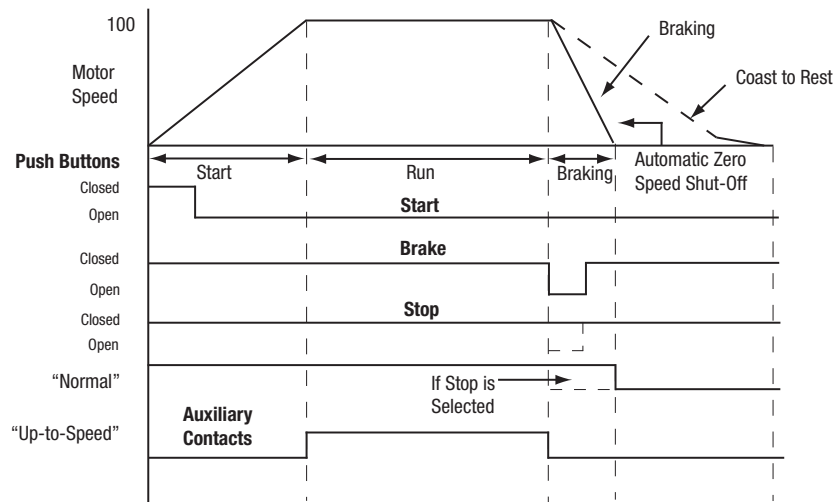
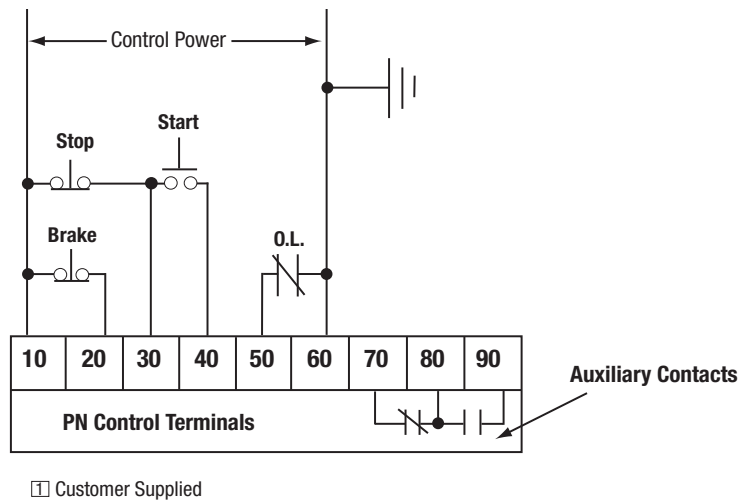


Figure 1.12 Intelli-Brake Terminal Wiring



WARNING: Intelli-Brake is not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.



CAUTION: Braking may cause motor heating depending on braking current, frequency of braking and duration of braking cycle. Therefore, select the lowest brake current setting that will brake satisfactorily.

Intelli-Stop Option

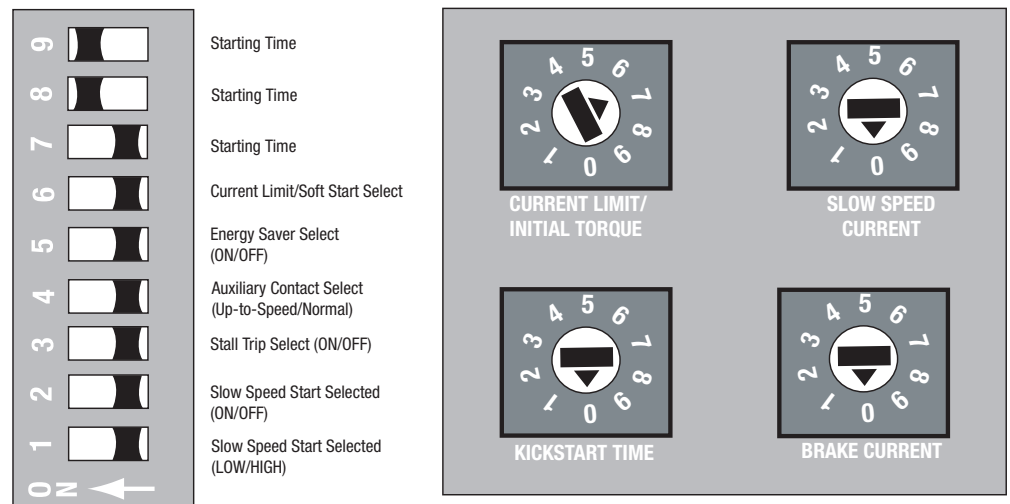
Factory Settings

The controller has been factory-set for the following as shown in Figure 1.13.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Brake Current “OFF”
- Slow Speed Current “OFF”
- Kickstart “OFF”
- Initial torque 70%
- Stall feature “OFF”
- Slow Speed “HIGH”
- Slow Speed Start “OFF”

Note: Intelli-Stop feature is deactivated with factory settings.

Figure 1.13 Intelli-Stop Option Factory Settings



The Intelli-Stop function can control loads which have no more than five times motor inertia measured at the motor shaft. Operation is not recommended for loads with greater than five times motor inertia reflected to motor shaft.



WARNING: The Intelli-Stop is not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.

Note: Depending on the application, the Intelli-Brake, Intelli-Stop and Slow Speed with Braking options may cause some vibration or noise during the stopping cycle and this may be minimized by lowering the braking current. If this is a concern in your application, consult the factory prior to applying these options.



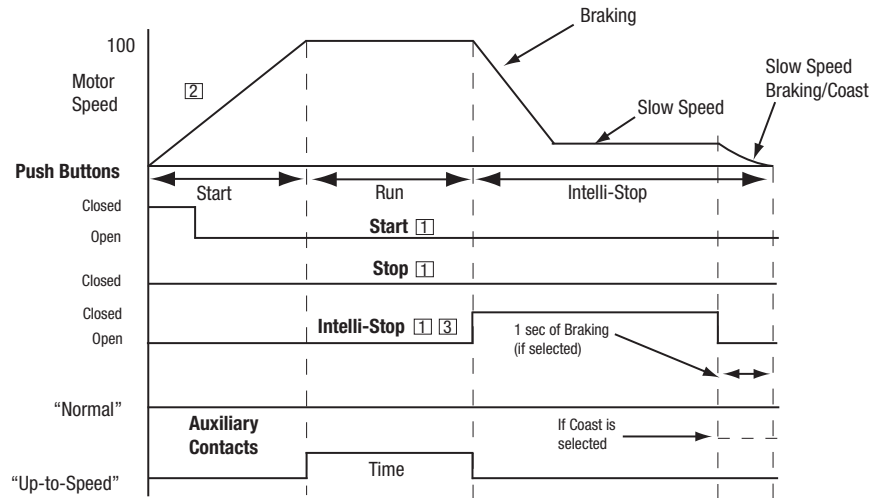
CAUTION: Slow speed running is not intended for continuous operation due to heat produced in the motor and reduced motor cooling. Therefore, select the lowest slow speed current setting that will accelerate and drive the load.

Intelli-Stop Option

This function provides motor braking and preset slow speed. The Intelli-Stop option provides a method to brake a motor from full speed to a slow speed, and to stop for positioning, as shown in Figure 1.14. Braking current is adjustable from 150% to 400%. Slow speed current is adjustable from 50% to 450% of full load current. Slow speed can be selected for either 7% (LOW) or 15% (HIGH) operation.

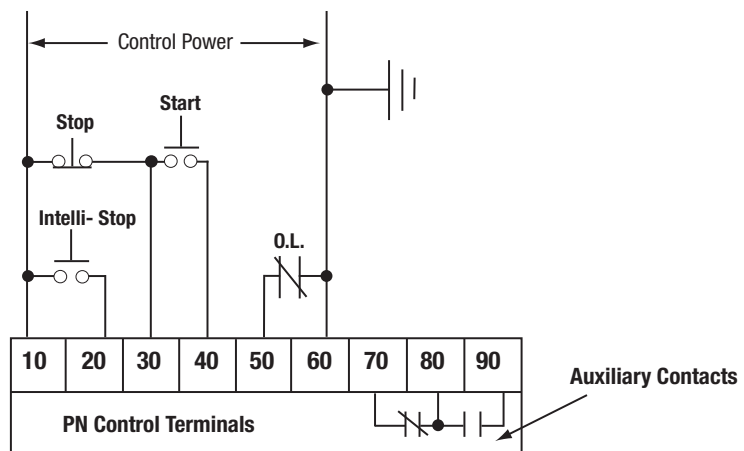
Referring to Figure 1.14 and Figure 1.15, to start the motor press the Start pushbutton and the motor will accelerate to full speed as selected. For stopping the motor, press and hold the Intelli-Stop pushbutton.

Figure 1.14 Intelli-Stop Option



- ① Refer to Figure 1.15 for Wiring Diagram
- ② Slow Speed Start Select (DIP switch 2 "OFF")
- ③ When Intelli-Stop pushbutton is closed, start/stop function is disabled

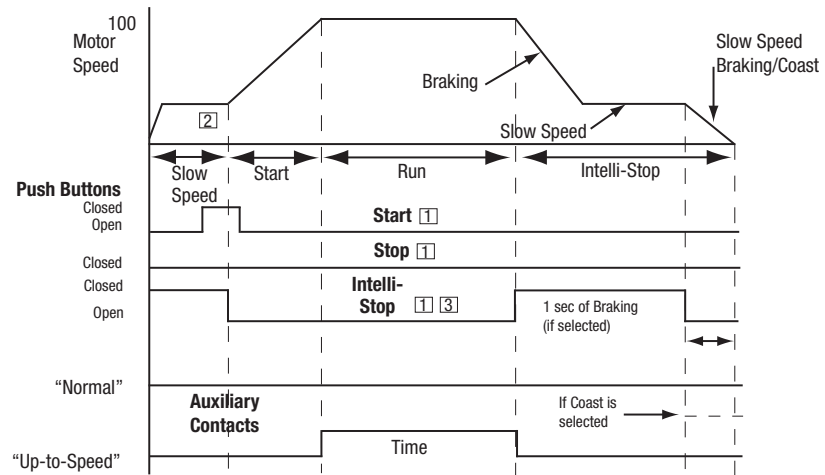
Figure 1.15 Intelli-Stop Terminal Wiring



Intelli-Stop Option with Slow Speed at Start

The motor will brake to slow speed and operate until the Intelli-Stop pushbutton is released. If the motor does not operate at slow speed, then increase the slow speed current settings. After the Intelli-Stop pushbutton is released, the motor will brake for one second or coast as selected.

Figure 1.16 Intelli-Stop Option with Slow Speed at Start



1 Refer to Figure 1.15 for Wiring Diagram

2 Slow Speed Start Select "ON"

3 When Intelli-Stop pushbutton is closed, start/stop function is disabled

Slow Speed with Braking

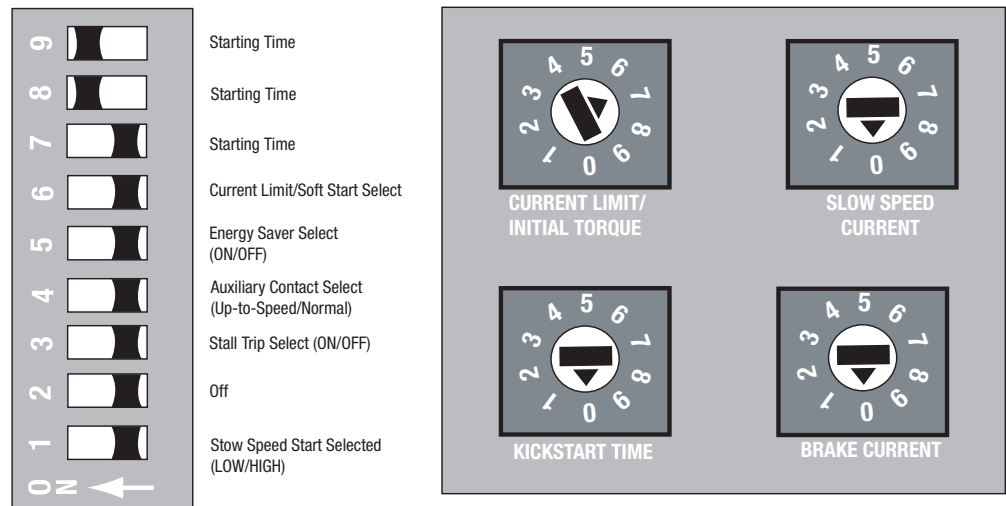
Factory Settings

The controller has been factory-set for the following as shown in Figure 1.7.

- 10 second ramp
- Energy Saver “OFF”
- Auxiliary Contacts “OFF” (Normal)
- Slow Speed Running Current “OFF”
- Slow Speed Acceleration Current 50%
- Braking Current “OFF”
- Initial torque 70%
- Stall feature “OFF”
- Slow Speed “HIGH”

Note: Slow Speed with Braking feature is deactivated with factory settings.

Figure 1.17 Slow Speed with Braking Option Factory Settings



WARNING: The Slow Speed with Braking option is not intended to be used as an emergency stop. Refer to the applicable standards for emergency stop requirements.



CAUTION: Slow speed running is not intended for continuous operation due to heat produced in the motor and reduced motor cooling.



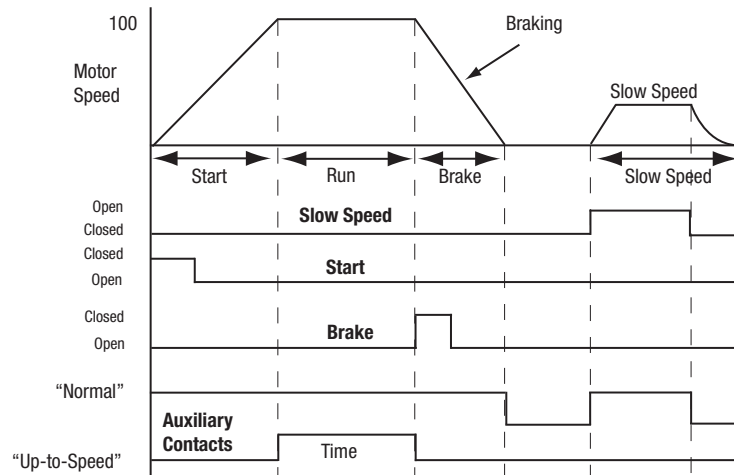
CAUTION: Braking may cause motor heating depending on braking current, frequency of braking and duration of braking cycle. Therefore, select the lowest brake current setting that will brake satisfactorily.

Slow Speed with Braking

Note: Depending on the application, the Intelli-Brake, Intelli-Stop and Slow Speed with Braking options may cause some vibration or noise during the stopping cycle and this may be minimized by lowering the braking current. If this is a concern in your application, consult the factory prior to applying these options.

Referring to Figure 1.18 and Figure 1.20, to start the motor press the Start pushbutton and the motor will accelerate to full speed as selected. For stopping the motor, press Brake pushbutton. The motor will brake to a stop. To operate in slow speed, press the Slow Speed button. If motor does not operate at all, increase Slow Speed acceleration current. If motor tends to stall, increase slow speed running current.

Figure 1.18 Slow Speed with Braking

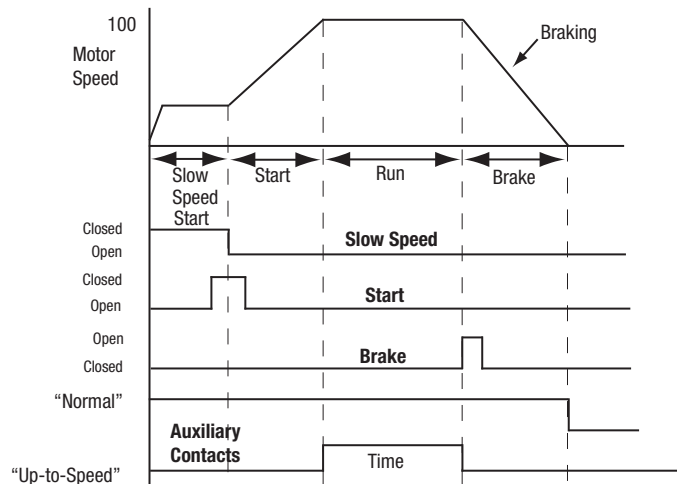


Note: Refer to Figure 1.20 for Wiring Diagram.

Referring to Figure 1.19 and Figure 1.20, if the Slow Speed pushbutton is pressed and held, the motor will operate at slow speed.

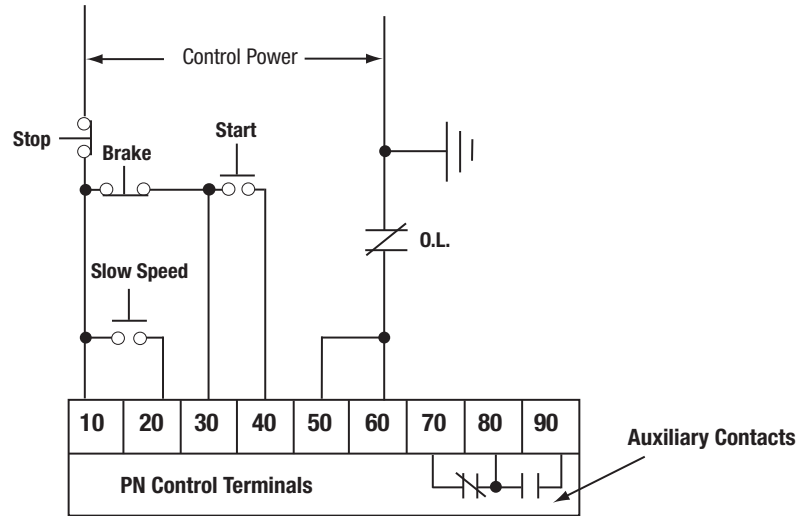
To go from slow speed to full speed, press the Start pushbutton and then release the Slow Speed push-button. For stopping the motor, press the Brake button. The motor will brake to stop.

Figure 1.19 Slow Speed with Braking with Slow Speed at Start



Slow Speed with Braking

Figure 1.20 Slow Speed with Braking Terminal Wiring



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