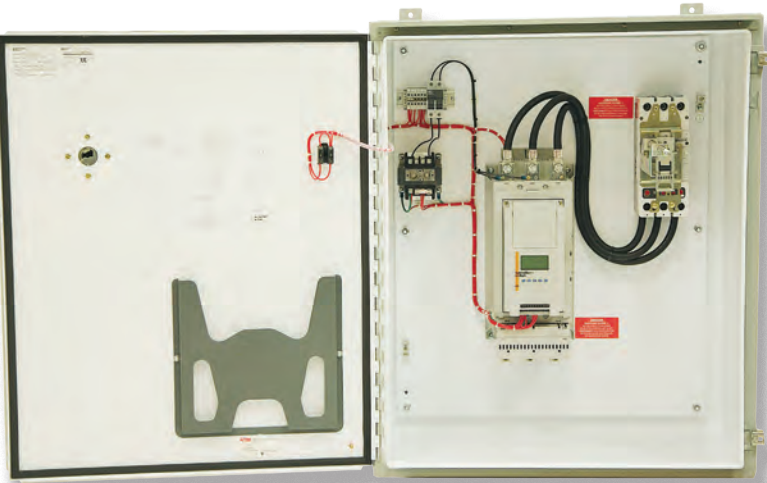


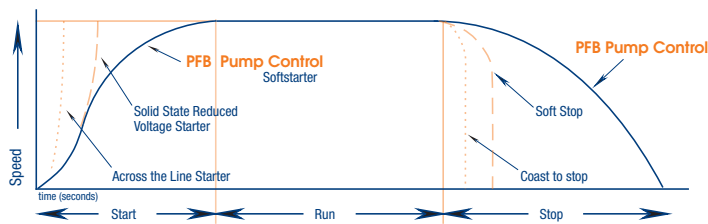
PFB Enclosed Combo Pump Control Softstarters

- Type 3R Outdoor Enclosure
- Thermal Magnetic Circuit Breaker Protection
- Internal PFB Bypass & Motor Overload Protection
- Hand-Off-Auto Selector Switch
- Reduces Surges & Water Hammering
- Advanced Monitoring & Diagnostics
- Simplified Installation & Setup

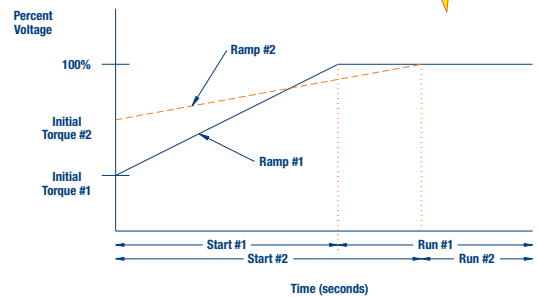
Your Enclosed Combo Pump Control Softstarter Solution



PFB Pump Controller



PFS Standard Controller Unit - Dual Ramp



Sprecher+Schuh Pump Control Enclosed Circuit Breaker Combination Softstarters are specifically designed for smooth starting and stopping of centrifugal pumping systems and can eliminate the damaging pressure surges known as "water hammer" that are common with other starting techniques.

At the heart of every Series PF Enclosed Combination Softstarter is a microprocessor controller that automatically senses the actual speed of the motor and adjusts the starter to provide the optimum starting and stopping curve... eliminating water hammer completely. Sophisticated software and sensing techniques ensure that the motor delivers precisely the right amount of torque to the pump for smooth acceleration and deceleration. No other softstarter on the market today provides the features and advanced starting techniques necessary for safe and dependable pumping installations.

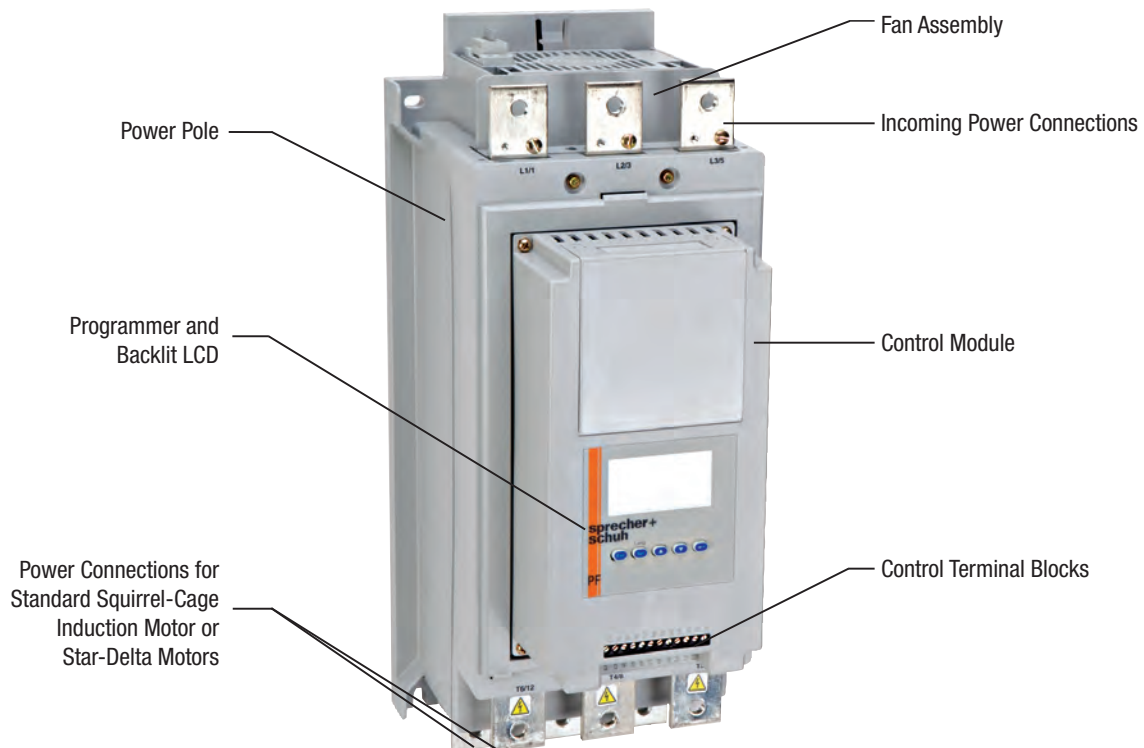
Sprecher+Schuh PFB Pump Control Softstarters are available in a range of sizes between a 1/2 and 500HP. They can be also purchased "Open-style," or Non-combination starters in a variety of enclosures. Standard Series PF Softstarters (without Pump Control) are also available for most industrial applications.

Sprecher + Schuh also offers a standard PFS Softstarter which provides Dual Ramp starting capabilities (this feature is not available in PFB). Dual Ramp starting method is useful on applications with varying loads, starting torque, and start time requirements. Dual Ramp Start offers the user the ability to select between two separate start profiles with separately adjustable ramp times and initial torque settings.

A Brief Word on the PF Softstarter

The PF Softstarter Controller provides intelligence, unmatched performance, flexibility, and diagnostics in a modular compact design for controlling either a standard squirrel-cage induction motor or a star-delta motor. Seven standard, and two optional modes of operation are available within a single controller.

The PF Softstarter is available for motors rated 1...480A (up to 400Hp@480V AC), 200....600V AC, 50 and 60Hz.



Product Features

- Intelligent microprocessor controlled starting for 3Ø centrifugal pumps up to 500HP @460V
- Microprocessor analyzes motor variables and adjusts starting parameters accordingly
- Self calibrating for various line voltages, frequencies and currents - eliminating installation errors
- Digital settings by slide and rotary switches - set and forget!
- LED display of operating status and diagnostics
- Selectable auxiliary contact that operates as either an instantaneous or up-to-speed contact

Pump System Advantages

- Provides smooth motor starting and stopping of pumps
- Reduced current surges on weak electrical systems
- Reduced starting torque of the motor helps to reduce mechanical stress on system components
- Helps meet both local and regional electrical codes when reduced voltage starting is a requirement
- The elimination of the voltage and current spikes associated with traditional wye-delta (star-delta) starters
- Maximize the life of the motor with reduced electrical strain
- Reduces general system maintenance requirements for improved uptime.

Standard Modes of Operation

- Built-in SCR Bypass/Run Contactor
- Built-in Electronic Motor Overload Protection
- Built-in CT on each phase
- LCD Display
- Keypad programming
- Four programming Auxiliary Contacts

Combo Circuit Breaker PFB Softstarters

PF Pump Control Enclosed Combination Includes:

- A thermal magnetic circuit breaker with external operating handle
- A 120V control power transformer with fused primary and secondary
- PF built-in electronic motor overload protection
- PF built-in SCR bypass/run contactor
- UL Type 3R Enclosure
- Hand-Off-Auto Selector Switch

Rated Voltage [V AC]	Hp 60 Hz	Controller Current Rating	Type 3R ① Industrial Dusttight	
			Catalog Number	List Price
230	0.5	5 A	PFB-0005-BAD33R7	8380
	0.75	5 A	PFB-0005-BAD34R7	8380
	1	5 A	PFB-0005-BAD35R7	8380
	1.5	25 A	PFB-0025-BAD36R7	8554
	2	25 A	PFB-0025-BAD37R7	8554
	3	25 A	PFB-0025-BAD38R7	8554
	5	25 A	PFB-0025-BAD39R7	8554
	7.5	25 A	PFB-0025-BAD40R7	8554
	10	43 A	PFB-0043-BAD41R7	8727
	15	43 A	PFB-0043-BAD42R7	8727
	20	60 A	PFB-0060-BAD43R7	9263
	25	85 A	PFB-0085-BAD44R7	9901
	30	85 A	PFB-0085-BAD45R7	9901
	40	108 A	PFB-0108-BAD46R7	12,885
	50	135 A	PFB-0135-BAD47R7	14,276
	60	201 A	PFB-0201-BAD48R7	17,507
	75	201 A	PFB-0201-BAD49R7	17,507
	100	251 A	PFB-0251-BAD50R7	18,666
	125	317 A	PFB-0317-BAD51R7	20,260
	150	361 A	PFB-0361-BAD52R7	21,998
200	480 A	PFB-0480-BAD54R7	26,634	
250	625 A	PFB-0625-BAD56R7	33,588	

Rated Voltage [V AC]	Hp 60 Hz	Controller Current Rating	Type 3R ① Industrial Dusttight	
			Catalog Number	List Price
480	0.5	5 A	PFB-0005-BBD33R7	8380
	0.75	5 A	PFB-0005-BBD34R7	8380
	1	5 A	PFB-0005-BBD35R7	8380
	1.5	5 A	PFB-0005-BBD36R7	8380
	2	5 A	PFB-0005-BBD37R7	8380
	3	5 A	PFB-0005-BBD38R7	8380
	5	25 A	PFB-0025-BBD39R7	8554
	7.5	25 A	PFB-0025-BBD40R7	8554
	10	25 A	PFB-0025-BBD41R7	8554
	15	25 A	PFB-0025-BBD42R7	8554
	20	43 A	PFB-0043-BBD43R7	8727
	25	43 A	PFB-0043-BBD44R7	8727
	30	43 A	PFB-0043-BBD45R7	8727
	40	60 A	PFB-0060-BBD46R7	9263
	50	85 A	PFB-0085-BBD47R7	9901
	60	85 A	PFB-0085-BBD48R7	9901
	75	108 A	PFB-0108-BBD49R7	12,885
	100	135 A	PFB-0135-BBD50R7	14,276
	125	201 A	PFB-0201-BBD51R7	17,507
	150	201 A	PFB-0201-BBD52R7	17,507
200	251 A	PFB-0251-BBD54R7	18,866	
250	317 A	PFB-0317-BBD56R7	20,260	
300	361 A	PFB-0361-BBD57R7	21,998	
350	480 A	PFB-0480-BBD58R7	26,634	
400	480 A	PFB-0480-BBD59R7	26,634	
500	625 A	PFB-0625-BBD61R7	33,588	

Please contact your Sprecher + Schuh representative for other horse-power, voltage and PF softstarter models not shown.

Approximate Enclosure Dimensions (inches) ①

Controller Rating (A)	Type 3R Enclosure		
	Height	Width	Depth
Combination Controllers with Circuit Breaker			
5	610 (24)	508 (20)	254 (10)
25	610 (24)	508 (20)	254 (10)
43	610 (24)	508 (20)	254 (10)
60	610 (24)	508 (20)	254 (10)
85	610 (24)	508 (20)	254 (10)
108	914 (36)	762 (30)	406 (16)
135	914 (36)	762 (30)	406 (16)
201	1219 (48)	914 (36)	406 (16)
251	1219 (48)	914 (36)	406 (16)
317	1524 (60)	914 (36)	406 (16)
361	1524 (60)	914 (36)	406 (16)
480	1524 (60)	914 (36)	406 (16)

① All enclosures are Type-12 with a drip shield.



PF Softstarter Modular

Modular and Compact Softstarter

The PF Softstarter reduces both product size and the total cost to the customer. As standard, the PF Softstarter includes electronic overload, integral bypass and motor starting capabilities for both star-delta and standard squirrel-cage induction motors, advanced protection and diagnostics in a compact maintainable modular, cost-effective package.

Large or small HP and options for any application

The basic PF Controller combines large horsepower capacity with the most popular starting modules (up to 400HP @ 460V, 3-wire). Even in middle and low horsepower applications, PF Softstarters can be configured to provide exactly the right starting and stopping profile.

Precise programming set-up with built-in keypad & LCD display

The PF Controller comes equipped with a built-in keypad and LCD display for programming the controller parameter settings for the specific industrial application. The three-line 16-character backlit LCD display provides parameter identification using clear informative text. Parameters are arranged in an organized four-level menu structure for ease of programming and fast access to parameters which allows the PF Softstarters set-up to be performed quickly and easily.

PF Softstarter Overview

Modular Design

The PF Softstarter provides intelligence, unmatched performance, flexibility and diagnostics in a modular compact design for controlling either a standard squirrel-cage induction motor or a star-delta motor.

Compact Size

The PF Softstarter integrates a bypass to minimize heat generation during run time. The bypass automatically closes when the motor reaches its nominal speed, resulting in a cooler-running component and reduction in enclosure size.

Voltage Range

200...600V AC, 50/60 Hz

Control Range

100...240V AC or 24V AC/DC

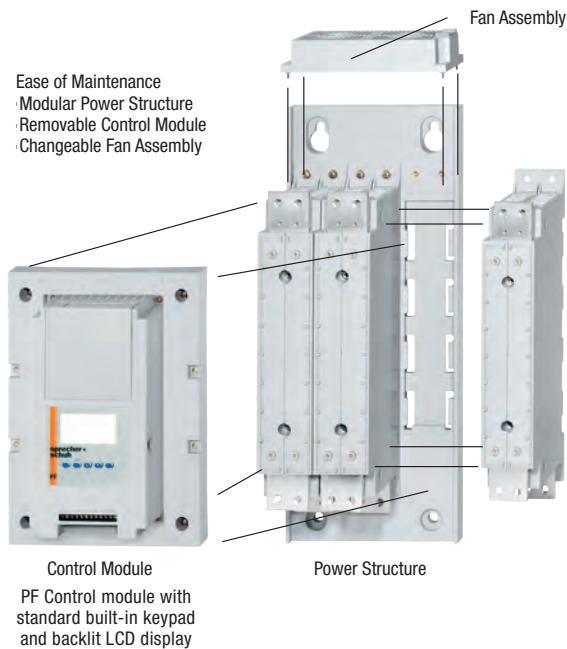
Horsepower Range

0.5...500Hp@480V AC

0.5...700Hp@480V AC
(Delta Connected)

Current Range - 12 Models

Product Rating	Line Current	Delta Current
5	5	9
25	25	43
43	43	74
60	60	104
85	85	147
108	108	187
135	135	234
201	201	348
251	251	435
317	317	549
361	361	625
480	480	831
625	625	850



Starting / Stopping Modes

	PFB Pump Control	PFS Standard
Soft Start	X	X
Current Limit	X	X
Full Voltage	X	X
Kick Start	X	X
Pump Start and Stop	X	
Dual Ramp		X
Linear Speed Start and Stop		X
Preset Slow Speed		X

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