



SSW-04 and SSW-03

Soft-Starters are electronic starters designed to accelerate, decelerate and protect three-phase induction motors. The control of the voltage applied to the motor, by means of thyristor firing angle variation, allows smooth starting and stopping.

With proper adjustments it is possible to optimize the motor starting torque so that starting current remains as low as possible.

WEG Soft-Starters are microprocessor based with state-of-the-art design for best starting performance of induction motors and a low cost complete solution.

The Operator Interface provides parameters adjustment for fast and trouble-free start-up.

A Pump Control feature prevents pumps running at no load and eliminates pipeline waterhammer.

Soft Starters SSW-04 and SSW-03

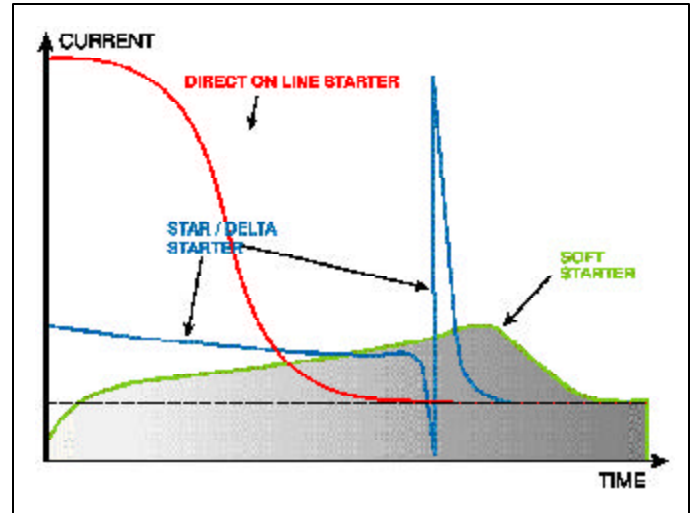
Benefits

- Thermal Image Motor Protection (TIMP)
- Built-in Electronic Overload Relay
- Built-in Operator Interface (Keypad)
- Kick Start Function for High Break-away torque loads
- Pump Control Feature for Intelligent Control of Pumping Systems
- Pump Waterhammer prevention
- Current Inrush Limitation
- Line Voltage Drop Limitation
- Mechanical Shock Elimination
- Stress Reduction on couplings and other transmission devices (Gear Boxes, Sheaves, Belts, etc)
- Increased Motor and Mechanical Parts Life
- Automatic Energy Consumption Optimization for Reduced Load Applications
- Multi-motor Starting Capability (Parallel or Cascade)
- Ease of Operation, Programming and Troubleshooting via Operator Interface (Keypad)
- Electrical Wiring Simplification
- Built-in RS-232 Serial Communication
- Full Digital / 16 Bit Microprocessor
- Operation in ambient temperatures up to 55°C (122 °F)

Main Applications

- Centrifugal Pumps (Wastewater / Irrigation / Oil)
- Fans / Exhausts / Blowers
- Air Compressors / HVAC (Screw / Piston)
- Mixers / Aerators
- Centrifuges
- Crushers / Grinders
- Wood Chippers
- Paper Refiners
- Rotating Kilns
- Saws and Planers
- Ball Mills / Hammer Mills
- Load Transportation
 - * Conveyors / Belts / Chains
 - * Roller Tables
 - * Monorails
 - * Escalators
 - * Baggage Conveyors (Airports)
- Bottling Lines

Starting Methods Comparison



Operator Interface (Keypad)

IHM-3P

LED Indicates Starting or Stopping Process

LED Indicates Soft Starter Status

- Acceleration
- Deceleration
- Full Voltage

- Enable Soft Starter / Accelerate Motor
- Disable Soft Starter / Decelerate Motor
Soft Starter Fault Reset
- Increment Parameter Number or Content
- Decrement Parameter Number or Content
- Toggles Between Parameter Number and Content

◆IHM-3P ➔ Detachable Operator Interface (Keypad) with Remote Installation Possibility (up to 3m (10 ft))

Product Selection - Chassis

SSW-03 and SSW-04

Voltage Supply	Model	Catalog (Amps) 40°C		Motor Rating 40°C		Dimensions inches (mm)			Weight Lb. (kg)
		Nom. ¹	Max. ² Cont.	V	HP ³	H	W	D	
220 / 230 / 240 / 380 / 400 / 415 / 440 V	SSW040163D	16	17.6	230 Volts	5	11 (279)	6 (152)	8 (203)	11 (5)
	SSW040303D	30	33		10				
	SSW040453D	45	49.5		15				
	SSW040603D	60	68		20				
	SSW040853D	85	96		30				
	SSW031203D	120	144		50				
	SSW031703D	170	204		75				
	SSW032053D	205	246		75	19 (483)	9 (229)	10 (254)	44 (20)
	SSW032553D	255	306		100				
	SSW032903D	290	348		100	21 (533)	21 (533)	12 (305)	93 (42)
	SSW033403D	340	408		125				
	SSW034103D	410	492		150	24 (610)	21 (533)	13 (330)	110 (50)
	SSW034753D	475	570		200				130 (59)
	SSW035803D	580	696		250	26 (660)	14 (356)	159 (72)	
	SSW036703D	670	804		250	28 (711)			
	SSW038003D	800	960		350	34 (864)	27 (686)	16 (406)	331 (150)
	SSW039503D	950	1140		400	42 (1067)			
	SSW0311003D	1100	1320		450	500	27 (686)	16 (406)	331 (150)
SSW0314003D	1400	1680	500						

- Notes:**
- 1) Nominal Current rating for SSW-04: 300% Start for 20 sec. 10 starts/hour.
SSW-03: 300% Start for 30 sec. 10 starts/hour. 500% Start for 60 sec.
 - 2) Maximum continuous current.
 - 3) HP rating based on "average FLA values". Use as a guide only. Motor FLA may vary with speed and manufacturer. Always compare motor FLA to NOM and MAX CONT. amps of starter.

Models:



Product Selection - Chassis

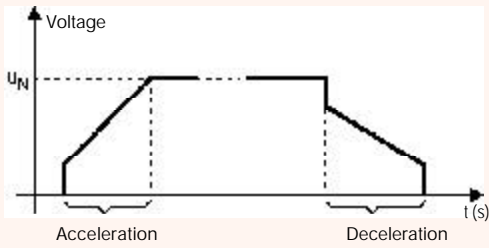
SSW-03 and SSW-04

Voltage Supply	Model	Catalog (Amps) 40°C		Motor Rating 40°C		Dimensions inches (mm)			Weight Lb. (kg)			
		Nom. ¹	Max. ² Cont.	V	HP ³	H	W	D				
460 / 480 / 575 V	SSW040163G	16	17.6	460 Volts	10	11 (279)	6 (152)	8 (203)	11 (5)			
	SSW040303G	30	33		25							
	SSW040453G	45	49.5		30							
	SSW040603G	60	68		50							
	SSW040853G	85	96		75							
	SSW031203G	120	144		100	15 (381)	9 (229)	10 (254)	37 (17)			
	SSW031703G	170	204		150	19 (483)		10 (254)	44 (20)			
	SSW032053G	205	246		150	21 (533)	21 (533)	12 (305)	93 (42)			
	SSW032553G	255	306		200							
	SSW032903G	290	348		250							
	SSW033403G	340	408		300							
	SSW034103G	410	492		350					24 (610)	13 (330)	110 (50)
	SSW034753G	475	570		400					130 (59)		
	SSW035803G	580	696		500					26 (660)		141 (64)
	SSW036703G	670	804		600					28 (711)		159 (72)
	SSW038003G	800	960		700					34 (864)	14 (356)	159 (72)
	SSW039503G	950	1140	800	42 (1067)					27 (686)	16 (406)	331 (150)
	SSW0311003G	1100	1320	900								
	SSW0314003G	1400	1680	1000								
		SSW040163G	16	17.6	575 Volts	15	11 (279)	6 (152)	8 (203)	11 (5)		
		SSW040303G	30	33		30						
		SSW040453G	45	49.5		40						
		SSW040603G	60	68		60						
		SSW040853G	85	96		75						
		SSW031203G	120	144		125	15 (381)	9 (228)	10 (254)	37 (17)		
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Always compare motor FLA to NOM and MAX CONT. amps of starter.

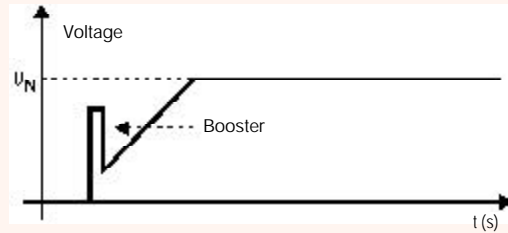
Main Features

RAMPS



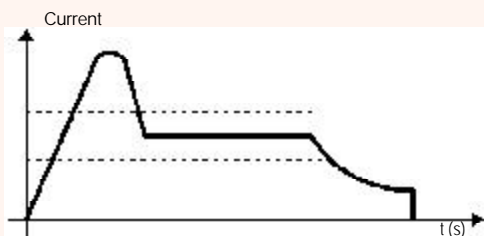
Allow smooth acceleration and deceleration. For acceleration a Pedestal Voltage can be adjusted. For deceleration a Step Down Voltage can be adjusted. Deceleration ramp avoids waterhammer in pumps.

KICK START



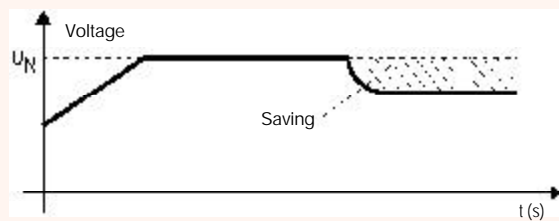
Initial voltage pulse which generates a torque peak necessary to start high break-away torque loads.

UNDER / OVER CURRENT PROTECTION



Adjustable maximum and minimum current levels for complete motor protection. Undercurrent protection is ideal to protect pumps from running at no load.

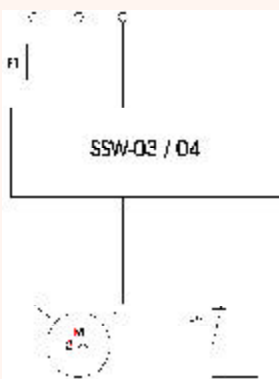
ENERGY SAVING



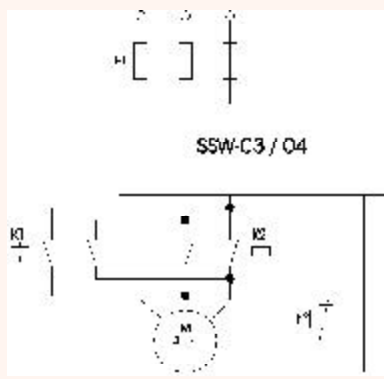
Reduces motor air gap losses saving energy when motor runs at no or low load.

Typical Drive Configurations

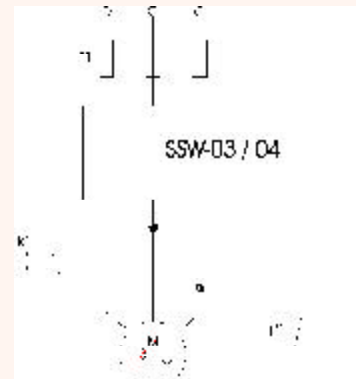
Basic / Standard



Run FWD / Run REV



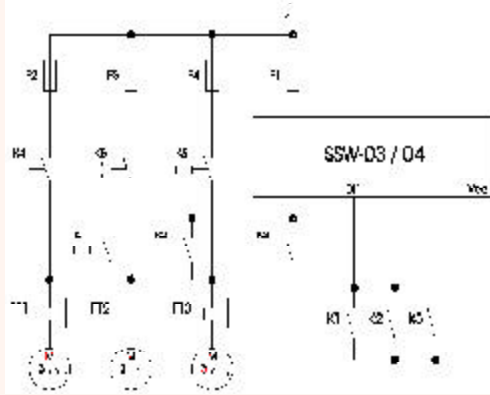
DC Braking



By-Pass



Multimotors / Cascade



Technical Data

POWER SUPPLY	Voltage	Model D: 220 / 230 / 240 / 380 / 400 / 415 / 440 V (+ 10 % , - 15 %) Model G: 460 / 480 / 575 V (+ 10 % , - 15 %)			
	Frequency	50 / 60 Hz +/- 5 Hz (45 ... 65 Hz)			
	Control / Ventilation	120 VAC			
DEGREE OF PROTECTION	Metallic Cabinet	IP 20 (SSW-04) : IP 00 (SSW-03)			
CONTROL	Method	Motor Voltage Variation			
	Power Supply	Switched Mode Power Supply (SSW-04) : Linear Power Supply (SSW-03)			
	CPU	16 Bit Microprocessor			
STARTING DUTY CYCLE		300 % (3 x Rated Current) during 20 sec (SSW-04) and 30 sec (SSW-03) (10 Starts/hour) 500% (2 starts for 60 sec.)			
INPUTS	Digital	4 Programmable Isolated Inputs: 24 VDC			
	Analog	1 Programmable Differential Input (10 bits): 0...10VDC, 0...20mA or 4...20mA (Except SSW-04)			
OUTPUTS	Relay	2 Programmable Outputs (NO) : 250 V / 1 A 1 Output (Reversing (FORM:C)) : 250 V / 1 A – Fault Indication)			
	Analog	1 Programmable (8 bits) : 0...10 VDC (Except for SSW-04)			
COMMUNICATION	Serial Interface	RS-232			
SAFETY	Protection	Thermal Image Motor Protection (TIMP)			
		Motor Immediate Over Current	Power Supply Phase Loss		
		Motor Immediate Under Current	Motor Phase Loss		
		Motor Overload – I ² t	Thyristor Fault		
		Thyristors/Heatsink Over Temperature	CPU Error (Watchdog)		
		Phase Sequence	Programming Error		
		External Fault	Serial Communication Error		
FUNCTIONS / RESOURCES	Standard	Built-in Operator Interface (keypad) Detachable – 7 Segment LED Display			
		Programming Enabling Password			
		Fault Auto-Diagnosis			
		PUMP CONTROL Feature (Waterhammer Protection for Pumps)			
		ENERGY SAVING Feature			
		BY-PASS Relay			
		FWD / REV Feature via Digital Input (Needs External Contactor)			
		RS-232 Serial Interface			
		Programmable Pedestal Voltage	25 ... 90 % of Rated Voltage		
		Programmable Acceleration Ramp	1 ... 240 seconds		
		Programmable Deceleration Ramp	OFF, 2 ... 240 seconds		
		Programmable Step Down Voltage for Deceleration	100 ... 40 % of Rated Voltage		
		Programmable Starting Current Limit	OFF, 150 ... 500 % of Rated Current		
		Programmable Immediate Overcurrent Level	105 ... 200 % of Rated Current		
		Programmable Immediate Overcurrent Time	OFF, 1 ... 20 seconds		
		Programmable Immediate Undercurrent Level	25 ... 95 % of Rated Current		
		Programmable Immediate Undercurrent Time	OFF, 1 ... 30 seconds		
		Kick Start	Level : 70 ... 90 % of Rated Voltage		
			Time : OFF, 0.2 ... 2 seconds		
		DC Braking (DC Current Injection)	Level : 30 ... 50 % of Rated Voltage		
			Time : 1 ... 10 seconds		
		Programmable Motor Overload Protection	OFF, 50 ... 120 % of Rated Current		
		JOG Function	25 ... 50 % of Rated Voltage		
		Programmable Fault Auto Reset	OFF, 10 ... 600 seconds		
		Programmable Motor Thermal Memory Auto-Reset	OFF, 1 ... 600 seconds		
		Motor Thermal Overload Protection Class	5, 10, 15, 20, 25 and 30		
		Motor Service Factor	0.80 ... 1.50		
		Programmable Line Voltage	220 ... 440 V and 460 ... 575 V		
		Optional	Remote Operator Interface (LED's)		
			EMC Filter (SSW-04 only)		
		OPERATOR INTERFACE (Keypad)	Command	Start, Stop / Reset and Programming	
				Increment and Decrement Parameters Content	
Display Readings	Output Current (Motor) – [A]		Output Voltage – [0...100 % Rated Voltage]		
	Output Current (Motor) – [% of Rated]		Load Cos φ – [0.00 ... 0.99]		
	Load Active Power – [kW]		Last 4 faults history		
	Load Apparent Power – [kVA]		Soft Starter Software Version		
	Thermal Protection Status – [0 ... 250 %]		Heatsink Temperature (SSW-04) – [°C]		
AMBIENT	Temperature	0 ... 40 °C (32 ... 104 °F) – Standard Operation at Rated Current 40 ... 55 °C (104 ... 131 °F) – With Output Current Derating			
	Humidity	0 ... 90 % , Non Condensing			
	Altitude	0 ... 1000 m (3,300 ft) – Standard Operation at Rated Current Up to 4000 m (13,200 ft) – With Current Derating (1%/100 m(328 ft) above 1000 m (13,200 ft))			
FINISHING	Color	Cover: Light Grey RAL 7032	Cabinet: Dark Grey RAL 7022		
CONFORMITIES	Safety	UL 508 Standard – Industrial Control Equipment			
	Low Voltage	EN 60947-4-2 Standard ; LVD 73 / 23 / EEC – Low Voltage Directive			
	EMC	EMC Directive 89 / 336 / EEC – Industrial Environment (With Additional Filter for SSW-04)			
CERTIFICATIONS	UL(USA)/UL(Canada)	Underwriters Laboratories Inc. – USA (models 1100 and 1400 pending)			
	CE (Europe)	Certified by ITS – UK (models 1100 and 1400 pending)			



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