

Soft Starter

30 thru 1040 Amps

208-575V 50/60 Hz.



Applications: Controlled ramp start and stop, minimize spillage in material handling, reduced water hammer in pumping, reduced wear on mechanical gears, eliminate high inrush current. Typical applications include: pumps, conveyors, fans, reciprocating compressors and screw and rotary compressors, crushers and mills.

Features: Six SCR three phase voltage control with programmable starting ramp and current limit. Application software allows easy load type selection and starting/stopping parameter settings. Current sensing provides true starting torque control and motor overload protection during starting and running. Open panel design, with quick ship program for enclosed combination starters.

Design Specifications

- MOV protection
- Current feedback
- Microprocessor Control
- Open chassis
- Keypad interface
- Two programmable inputs
- Three programmable form C outputs

Quick Ship

- NEMA 12/4 enclosures with bypass contactor
- Door mounted disconnect
- Input circuit breaker
- 2 wire Hand-Off-Auto switch
- Indicating lights
- Enclosed combination starters, with circuit breaker disconnect

Environmental and Operating Conditions

- Input voltage 3 phase 208-575V
- Control voltage 120VAC
- Input frequency 50/60 Hz
- Humidity 90% RH condensing
- 3000 feet altitude
- 40°C ambient temperature

Protective Features

- Selectable class motor overload
- Starting and running motor overload
- Locked rotor
- Underload
- Current phase imbalance
- High current
- Phase reversal (input voltage)
- Motor PTC input
- Low/high current warning
- Phase loss

Output	Voltage (Ie)	208-460V, 230-575V
	Current (Ie)	30-1040A
	Horsepower	Voltage and application rated, 7.5 Hp @ 208V to 1000 Hp @ 600V
	Short Circuit	Size dependent 10 kA (30A) to 85 kA (1040A)
	Altitude Derate	0.7% per 330 feet above 3300 feet
	Temperature Derate	0.8% per one °C above 40°C up to 50°C
	Starts per Hour	MST-030 - MST-300 – 30 starts; MST-370 - MST-1050 – 10 starts (50% on / 50% off time)
Overload	Normal Duty	400% of motor current for 30 seconds starting capacity and Class 10 motor running protection
	Heavy Duty	350-400% of motor current for 60 seconds starting capacity and Class 30 motor running protection
Input Ratings	Voltage	208 - 575V
	Frequency	50/60 Hz
	Phase	Three Phase
Control Spec	Control Method	Microprocessor controlled full wave, three phase, six thyristor firing
	Start Time	Programmable 1-30 seconds, (Normal Range) 1-120 seconds (Heavy Duty Range)
	Stop Time	Programmable 0-255 seconds
	Voltage Pedestal	Programmable: Start 10-60%, Kick 60-90%, Stop 10-60%
	Current Limit	800% of rated current
	Power Factor	Continuously monitored to eliminate motor over-flux for power optimizing
	Control Power (U _s)	110-130VAC, 50/60 Hz
SCR Spec	Peak Inverse Voltage	460VAC controllers 1400V 575VAC controllers 1600V
	Heat Loss	3.3 Watts per 1 Ampere running current
Ambient Conditions	Temperature	Storage: -13°F to 158°F (-25°C to +70°C) operation; 32°F to 104°F (0°C to +40°C)
	Cooling	Convection / Forced Air included / Additional cooling required when installed in enclosure
	Altitude	3300 feet above sea level
Tools	Simulator	Windows® based application tool for programming simulation and settings navigation learning
	Sizing ProSoft	Windows® based starter selection tool with Baldor motor information to aim with proper rating choice for starter and motor

Soft Starter - Typical Applications

Normal Starting

- Agitator
- Axial Blower
- Axial Fan
- Band Saw
- Centrifugal Pump
- Chiller
- Escalator
- Low Inertia Fan
- Propeller Fan
- Small Pump
- Large Pump
- Circular Saw
- Conveyor, Screw Feeder
- Drilling Press

Open Starter

Normal Starting (Class 10) 400% torque for 30 seconds					UL Amps	IEC Amps	Catalog Number	List Price	Mult. Sym.	Size
HP										
208V	230V	460V	575V							
7.5	10	20	25	28	30	MST-030-CA (1)	\$1,509	E7	A	
10	10	25	30	34	37	MST-037-CA (1)	1,543	E7	A	
10	15	30	40	42	44	MST-044-CA (1)	1,577	E7	A	
15	20	40	50	54	50	MST-050-CA (1)	1,963	E7	A	
20	25	50	60	68	72	MST-072-CA (1)	1,992	E7	A	
25	30	60	75	80	85	MST-085-CA	2,701	E7	B	
30	40	75	100	104	105	MST-105-CA	2,735	E7	B	
40	50	100	125	130	142	MST-142-CA	3,830	E7	B	
50	60	125	150	156	175	MST-175-CA	3,881	E7	C	
60	75	150	200	192	210	MST-210-CA	4,392	E7	C	
75	100	200	250	248	250	MST-250-CA	4,936	E7	C	
100	100	250	300	302	300	MST-300-CA	5,095	E7	C	
125	150	300	350	361	370	MST-370-CA	6,423	E7	D	
150	200	400	500	480	470	MST-470-CA	7,944	E7	D	
200	250	500	600	590	570	MST-570-CA	9,703	E7	E	
250	300	600	700	720	720	MST-720-CA	10,928	E7	E	
300	350	700	800	840	840	MST-840-CA	12,369	E7	E	
400	450	900	1000	1062	1050	MST-1050-CA	20,427	E7	E	

(1) IP10 degree of protection

Enclosed NEMA Type 12/4 Combination Starter with Disconnect (3)

Normal Starting (Class 10) 400% torque for 30 seconds					UL Amps	IEC Amps	Catalog Number	List Price	Mult. Sym.	Approx. Weight (lbs)
HP										
208V	230V	460V	575V							
15	20	40	50	54	50	MST-050-GD	5,973	E7	(Note 2)	
20	25	50	60	68	72	MST-072-GD	6,190	E7	(Note 2)	
25	30	60	75	80	85	MST-085-GD	6,807	E7	(Note 2)	
30	40	75	100	104	105	MST-105-GD	7,477	E7	(Note 2)	
40	50	100	125	130	142	MST-142-GD	8,187	E7	(Note 2)	
50	60	125	150	156	175	MST-175-GD	10,092	E7	(Note 2)	
60	75	150	200	192	210	MST-210-GD	10,669	E7	(Note 2)	
75	100	200	250	248	250	MST-250-GD	11,586	E7	(Note 2)	
100	100	250	300	302	300	MST-300-GD	12,327	E7	(Note 2)	
125	150	300	350	361	370	MST-370-GD	15,427	E7	(Note 2)	
150	200	400	500	480	470	MST-470-GD	17,507	E7	(Note 2)	

(2) Contact Baldor for shipping weight

(3) Included "2-wire" control circuit with "Hand-Off-Auto" selector switch

Shaded ratings indicate Quick Ship

Farm Duty Motors

Definite Purpose Motors

Unit Handling Motors

Brake Motors

200 & 575 Volt Motors

IEC Frame Motors

50 Hertz Motors

Inverter/Vector Motors & Controls

DC Motors and Controls

Soft Starters & Dynamic Brakes

Soft Starter - Typical Applications

Heavy Starting

- Centrifugal Blower
- Centrifugal Fan
- Chipper
- Disintegrator
- Loaded Centrifuge
- Loaded Mixer
- Loaded Screw Compressor
- Loaded Reciprocating Compressor
- Pulverizer
- Rock Crusher
- Separator
- Elevator
- Flywheel Press
- Grinder
- Hammer Press
- High Inertia Fan
- Mill Mixer
- Pelletizer / Pulper
- Positive Displacement Pump
- Reciprocating Compressor
- Vibrating Screen

Open Starter

Heavy Starting (Class 30) 350% torque for 60 seconds					UL Amps	IEC Amps	Catalog Number	List Price	Mult. Sym.	Size
HP										
208V	230V	460V	575V							
7.5	10	20	25	28	37	MST-037-CA (1)	1,543	E7	A	
10	10	25	30	34	44	MST-044-CA (1)	1,577	E7	A	
10	15	30	40	42	50	MST-050-CA (1)	1,963	E7	A	
15	20	40	50	54	72	MST-072-CA (1)	1,992	E7	A	
20	25	50	60	68	85	MST-085-CA	2,701	E7	B	
25	30	60	75	80	105	MST-105-CA	2,735	E7	B	
30	40	75	100	104	142	MST-142-CA	3,830	E7	B	
40	50	100	125	130	175	MST-175-CA	3,881	E7	C	
50	60	125	150	156	210	MST-210-CA	4,392	E7	C	
60	75	150	200	192	250	MST-250-CA	4,936	E7	C	
75	100	200	250	248	300	MST-300-CA	5,095	E7	C	
100	100	250	300	302	370	MST-370-CA	6,423	E7	D	
125	150	300	350	361	470	MST-470-CA	7,944	E7	D	
150	200	400	500	480	570	MST-570-CA	9,703	E7	E	
200	250	500	600	590	720	MST-720-CA	10,928	E7	E	
250	300	600	700	720	840	MST-840-CA	10,928	E7	E	
300	350	700	800	840	1050	MST-1050-CA	20,427	E7	E	

(1) IP10 degree of protection

Enclosed NEMA Type 12/4 Combination Starter with Circuit Breaker Disconnect (3)

Heavy Starting (Class 30) 350% torque for 60 seconds					UL Amps	IEC Amps	Catalog Number	List Price	Approx. Weight (lbs)	Weight lbs.
HP										
208V	230V	460V	575V							
15	20	40	50	54	72	MST-072-GD	6,190	E7	(Note 2)	
25	30	60	75	80	105	MST-105-GD	7,477	E7	(Note 2)	
30	40	75	100	104	142	MST-142-GD	8,187	E7	(Note 2)	
40	50	100	125	130	175	MST-175-GD	10,092	E7	(Note 2)	
50	60	125	150	156	210	MST-210-GD	10,669	E7	(Note 2)	
60	75	150	200	192	250	MST-250-GD	11,586	E7	(Note 2)	
75	100	200	250	248	300	MST-300-GD	12,327	E7	(Note 2)	
100	100	250	300	302	370	MST-370-GD	15,427	E7	(Note 2)	

Severe Duty NEMA Type 4 Combination Starter with Circuit Breaker Disconnect (3)(4)

Heavy Starting (Class 30) 350% torque for 60 seconds					UL Amps	IEC Amps	Catalog Number	List Price	Approx. Weight (lbs)	Weight lbs.
HP										
208V	230V	460V	575V							
40	50	100	125	130	175	MST-175-GS	10,329	E7	(Note 2)	
50	60	125	150	156	210	MST-210-GS	12,327	E7	(Note 2)	
60	75	150	200	192	250	MST-250-GS	11,740	E7	(Note 2)	
75	100	200	250	248	300	MST-300-GS	13,058	E7	(Note 2)	
100	100	250	300	302	370	MST-370-GS	16,992	E7	(Note 2)	
125	150	300	350	361	470	MST-470-GS	19,875	E7	(Note 2)	
150	200	400	500	480	570	MST-570-GS	27,568	E7	(Note 2)	
200	250	500	600	590	720	MST-720-GS	30,822	E7	(Note 2)	
250	300	600	700	720	840	MST-840-GS	38,587	E7	(Note 2)	

(2) Contact Baldor for shipping weight

(3) Included "2-wire" control circuit with "Hand-Off-Auto" selector switch

(4) Included AC-3 rated direct on line starting emergency contactor and redundant Class 30 overload relay.

Shaded ratings indicate Quick Ship

Farm Duty Motors

Definite Purpose Motors

Unit Handling Motors

Brake Motors

200 & 575 Volt Motors

IEC Frame Motors

50 Hertz Motors

Inverter/Vector Motors & Controls

DC Motors and Controls

Soft Start & Dynamic Brakes

Soft Starters - Dimensions

Dimensions

Size	Outside			Mounting		Ap'x. Shpg. Wgt. lbs. (kg)
	Height Inches (mm)	Width Inches (mm)	Depth Inches (mm)	Height Inches (mm)	Width Inches (mm)	
A	10.24 (260)	6.3 (160)	7.7 (196)	9.6 (244)	5.7 (145)	9 (4.1) MST030, MST037 11 (5) MST044 – MST072
B	15.35 (390)	7.32 (186)	10.62 (270)	14.49 (368)	6.1 (155)	27 (12.2) MST085, MST105 33 (15) MST142
C	16.54 (420)	14.17 (360)	10.63 (270)	15.67 (398)	13 (330)	44 (20) MST175 49 (22.2) MST210, MST250 53 (24) MST300
D	18.1 (460)	14.37 (365)	14.21 (361)	17.24 (438)	8.23 (209)	84 (38.1) MST370 93 (42.2) MST470
E	20.28 (515)	17.13 (435)	15 (381)	19.4 (493)	15.95 (405)	97 (44) MST 570 119 (54) MST720 124 (56.2) MST840 137 (62.1) MST1050

Digital Soft Starter Controls - Accessories



External MOV

(Metal Oxide Varistor type voltage surge suppressor)

- Protects from line-to-line voltage spikes
- Recommended for all low line impedance applications

Catalog Number	Volts	List Price	Mult. Sym.
MOV505L	460	118	E7
MOV620EL	575	111	E7



Remote Keypad with Cable

- 32 Character English alphanumeric display
- NEMA 4X indoor enclosure
- Backlit LCD

Catalog Number	Cable Length	List Price	Mult. Sym.
MSTEK	10 ft.	475	E7

ProSoft

Sizing software – www.baldor.com

Simulator

Programming and Setting learning and aid tool – www.baldor.com

Custom

ABS and Coast Guard marine duty, “in-side” delta and custom packages
Contact Baldor for availability

Legacy Analog and Digital Soft Start Products

Contact Baldor for product and parts availability for multipurpose MA & MB and digital MD Series Starters and S & T Series controllers

Farm Duty
Motors

Definite Purpose
Motors

Unit Handling
Motors

Brake Motors

200 & 575 Volt
Motors

IEC Frame
Motors

50 Hertz
Motors

Inverter/Vector
Motors & Controls

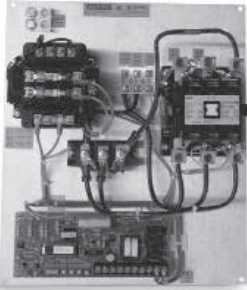
DC Motors
and Controls

Soft Starters &
Dynamic Brakes

Multipurpose Dynamic Brake

5-500 HP
5-600 HP

208-460V 50/60 Hz
230-575V 50/60 Hz



Applications: Stopping coasting loads such as chippers, saws, cutting tools and conveyors. It can also be used to stop windmilling fans before starting.

Features: The Multipurpose Brake is a microprocessor based solid state brake designed to eliminate the problems common to traditional DC injection brakes. To eliminate blown fuses and welded contacts, the microprocessor senses when AC is no longer present before turning "on" the braking. A faster zero speed sensing circuit turns off the braking as soon as the motor stops to reduce motor heating.

Design Specifications

- Microprocessor based control
- SCR/Diode power circuit
- Line contactor
- Motor voltage sensing circuit
- Zero speed sensing
- Four braking time ranges
- Three operating modes
- Two adjustable braking magnitude potentiometers

Environmental and Operating Conditions

- 40 degrees C
- 1000 feet elevation
- Open panel design
- 208, 230, 460, 575 volt input line voltage
- 50/60 Hz input frequency
- Control voltage 120 VAC

Protective Features

- Shorted SCR protection
- Motor terminal voltage sensing
- Time delay to allow motor flux to collapse
- Motor starter interlock contact

Model Number	208/230/460 VAC 50-60 Hz. (a)	BQ7-016-CP	BQ7-030-CP	BQ7-055-CP	BQ7-080-CP	BQ7-135-CP	BQ7-160-CP	BQ7-250-CP	BQ7-420-CP	BQ7-600-CP
Output Ratings	230 VAC	5	10	20	30	50	60	100	150	250
Hp Rating	460 VAC	10	20	40	60	100	125	200	350	500
	575 VAC	10	30	50	75	125	150	250	400	600
Current Rating		16	30	55	80	135	160	250	420	600
Derate	Above 1000m (3300 Ft.) decrease amp rating 1% for each additional 100m (330 ft.) Above 45° (115°F) decrease amp rating 1.5% for additional °C (0.84%/°F)									
Input Rating	Frequency	50-60 Hz. ±5%								
	Voltage	control board 115 VAC +10% to -15%								
	Phase	Three Phase								
Control Spec.	Control Type	Microprocessor Based								
	Control Method	Common Anode SCR and diode to achieve DC								
	Control Power	External control transformer (supplied with certain models) 115 VAC 50-60 Hz. to the control board								
	Power Consumption	1.5 VA by the control board								
	Operating Modes	Master mode (brake controls starting and stopping of motor) Prestop mode (prestop a windmilling load) Basic mode (for replacement of existing dynamic brake)								
	Brake Timer Ranges	1-17 seconds; 15-32 seconds; 30-47 seconds; 45-62 seconds								
	Zero Speed Sensor	Selectable (brake disengages when motor stops rotating)								
	M Contact Rating	10 amp at 125 VAC								
	Brake Magnitudes	Two adjustable brake magnitudes								
	Status LEDs	Power/Ready/Run/Braking								
	Peak Inverse Voltage	460 VAC controls - 1200V; 575 VAC controls - 1600V								
	Heat Loss	1 watt per amp while braking								
Diagnostics	Error Indicators	Improper line voltages; Motor contactor failed to open; Brake contactor failed to open; Improper line frequency								
Dimensions	Height x Width x Depth	14.75" x 12.88" x 5"	14.75" x 12.88" x 6"	21" x 21" x 8"	33" x 33" x 9.75"					
Ambient Conditions	Temperature	Enclosed 0-45°C (32° to 113°F) open/panel 0 to 50°C (32° to 122°F)								

(a) For 50 Hz. applications use the brakes without a transformer and supply a separate 115 VAC supply to the brake control board and contactor. The brake can also be ordered as a BQ9 - XXX - XX for 380/400/415 VAC applications. It will have the control transformer mounted on the panel.

Multipurpose Dynamic Brake

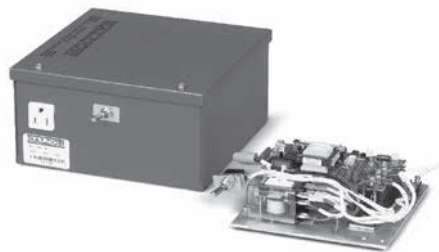
Amp Size	Max Hp at VAC			Catalog Number	List Price	Mult. Sym.
	208	230	460			
Open/Panel						
16	3	5	10	BQ7-016-CP	1,339	E7
30	10	10	25	BQ7-030-CP	1,422	E7
55	15	20	40	BQ7-055-CP	1,875	E7
80	25	30	60	BQ7-080-CP	2,809	E7
135	40	50	100	BQ7-135-CP	4,494	E7
160	50	60	125	BQ7-160-CP	5,273	E7
250	75	100	200	BQ7-250-CP	6,394	E7
420	125	150	350	BQ7-420-CP	8,968	E7
600	200	200	500	BQ7-600-CP	18,245	E7
NEMA 12						
16	3	5	10	BQ7-016-CC	1,509	E7
30	10	10	25	BQ7-030-CC	1,593	E7
55	15	20	40	BQ7-055-CC	2,045	E7
80	25	30	60	BQ7-080-CC	2,981	E7
135	40	50	100	BQ7-135-CC	4,865	E7
160	50	60	125	BQ7-160-CC	5,647	E7
250	75	100	200	BQ7-250-CC	6,769	E7
420	125	150	350	BQ7-420-CC	10,995	E7
600	200	200	500	BQ7-600-CC	20,271	E7

Application Notes

- **Stopping Time** The Baldor Dynamic Brake can stop the motor faster than the motor will start (at full volts). However, this could damage the motor. It is best that the motor should not stop any faster than the motor starts. A dynamic brake should never be set to stop a load faster than the load starts. Stopping the motor too fast or too frequently can cause motor overheating and possible failure.
- **Motor Sizing** Each stop with a dynamic brake should be treated as a start for calculating duty cycle and for sizing the motor. The brake does not have a duty cycle limit.
- **Holding Brake** A solid state brake is not a substitute for a mechanical holding brake.
- **Motor Types** The Multipurpose Brake has been designed to operate on 3-phase induction motors.
- **Brake Sizing** Use the motor FLA and operating voltage to size the brake. All Baldor Multipurpose Brakes can be used on high inertia loads. Extended stopping times are available for use on high inertia loads.

WARNING: A DC injection brake is not a replacement for a mechanical or safety brake for emergency stopping

Single Phase Electronic Motor Brake



Applications: Efficient alternative to mechanical brakes, suitable for woodworking machinery, machine tools, bench grinders and buffers. Ideal for OEM equipment or for retrofitting into an existing application.

Features: Automatic braking for single-phase motors. User adjustable torque and brake time. Prevents restarts after power has been removed for 7 seconds. Accommodates frequent start/stop applications. Available in panel mount for system integration or with line cord, plug and receptacle in a NEMA 1 enclosure for easy installation.

Catalog Number	Horsepower	Amps	Voltage	List Price	Mult. Sym.	Notes (a)
Panel Mount						
BQ1-015-CP	1	15	110-125	\$1,040	E7	33
BQ2-015-CP	2	15	208-230	1,040	E7	33
NEMA 1						
BQ1-015-CC	1	15	110-125	1,397	E7	33
BQ2-015-CC	2	15	208-230	1,397	E7	33

SUFFIX: CP = 6"x5"x3" module without cord, receptacle, switch or enclosure.
CC = 8"x8"x4.5" NEMA 1 enclosure with 9ft. cord, receptacle and switch.

(a) See notes on inside back flap.

Farm Duty Motors
Definite Purpose Motors
Unit Handling Motors
Brake Motors
200 & 575 Volt Motors
IEC Frame Motors
50 Hertz Motors
Inverter/Vector Motors & Controls
DC Motors and Controls
Soft Starters & Dynamic Brakes