

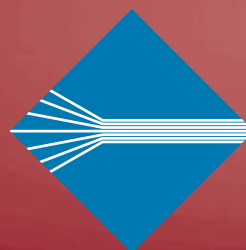
OVERVIEW

RediStart™ Contactors, Overload Relays and Full Voltage Starters

with mission critical reliability designed in



- Complete family of NEMA/IEC contactors
- Complete family of modular accessories
- Complete family of overload relays
- Global standards compliance
- Global reliability leadership
- Prepackaged stock full voltage starters
- PREDATOR™ QuickShip starters
- Engineered products and systems
- 24/7 service and support



BENSHAW

Contactors - UL / IEC / NEMA

RSC SERIES

660 VAC CONTACTORS

RATINGS

NEMA:	Size 00 - 7
IEC:	9 - 800 AMP
UL:	1 - 600 HP

IEC / NEMA contactor highlights:

Benshaw contactors are used for controlling single and three phase motors and for switching resistive or inductive loads up to 660 VAC.

The RediStart™ contactor line is built and tested to world leading electrical and mechanical standards.



Standard features:

- ◆ Din rail mountable to 85 amps
- ◆ Full product family to 800 amps
- ◆ Direct mount overload relays
- ◆ Draw out cassette coils above 85 amps
- ◆ Integral coil surge suppression above 85 amps
- ◆ Low coil power consumption
- ◆ Phase barriers supplied standard
- ◆ Uni-directional mounting
- ◆ Extremely long lifespan
- ◆ Compact size
- ◆ Unit identification marker

RSC-9~85

- ◆ Finger proof design
- ◆ DIN rail or screw mountable
- ◆ Top/side mount accessories
- ◆ Small physical size
- ◆ Dual auxiliary contacts above 22A
- ◆ Integral voltage barriers

RSC-100~800

- ◆ Draw out cassette type coil
- ◆ Wide voltage range coils
- ◆ Integral coil surge suppression
- ◆ Dual auxiliary contacts

Key Advantages:

- ◆ World's longest electrical and mechanical lifespan
- ◆ UL/CSA, IEC, NEMA, BS, EN, VDE ratings
- ◆ Direct mount thermal overload relays
- ◆ Full line of field installable, modularized accessories
- ◆ Device marking strip
- ◆ AC or DC coil options



Guaranteed ... for two full years.

Only Benshaw has a two year guarantee. Every Benshaw Contactor is guaranteed for two full years. Other manufacturers limit their warranties to just one year. But at Benshaw, we believe that, because we build them better, we can guarantee them longer. We call that "the Benshaw Promise."



Contactors Technical Information



Specification		Contactors Type	RSC 9	RSC 12	RSC 18	RSC 22	RSC 32	RSC 40	RSC 50	RSC 65	RSC 75	RSC 85	RSC 100	RSC 125	RSC 150	RSC 180	RSC 220	RSC 300	RSC 400	RSC 600	RSC 800				
IEC-947	AC 1 Duty		20A	25A	30A	32A	50A	60A	80A	100A	110A	135A	160A	160A	210A	230A	275A	350A	450A	660A	840A				
	AC 2B Duty	200-240V	11A	13A	18A	22A	32A	40A	55A	65A	75A	85A	100A	125A	150A	180A	220A	300A	400A	630A	800A				
		380-440V	9A	12A	18A	22A	32A	40A	50A	60A	75A	85A	100A	120A	150A	180A	220A	300A	400A	630A	800A				
		500-550V	7A	12A	13A	22A	28A	32A	43A	60A	64A	75A	80A	90A	140A	180A	200A	250A	350A	500A	720A				
	AC 3 Duty	200-240V	11A	13A	18A	22A	32A	40A	55A	65A	75A	85A	105A	125A	150A	180A	250A	300A	400A	630A	800A				
		380-440V	9A	12A	18A	22A	32A	40A	50A	65A	75A	85A	105A	120A	150A	180A	250A	300A	400A	630A	800A				
		500-550V	7A	12A	13A	22A	28A	32A	43A	60A	64A	75A	85A	90A	140A	180A	200A	250A	350A	500A	720A				
	AC 4 Duty	200-220V	8A	11A	18A	18A	20A	25A	35A	50A	55A	65A	80A	93A	125A	150A	180A	220A	300A	400A	630A				
		380-440V	6A	9A	9A	13A	17A	24A	32A	47A	52A	62A	75A	90A	110A	150A	180A	220A	300A	400A	630A				
	UL-508	MAX. HP	115V (1PH)	0.5	0.5	1	2	2	3	3	5	5	7.5	7.5	10	15	15	15							
			230V (1PH)	1	2	3	3	5	5	7.5	10	15	15	15	20	25	30	40							
			208V (3PH)	2	3	5	7.5	7.5	10	10	15	20	25	30	40	40	60	60	100	125	150	200			
240V (3PH)			2	3	5	7.5	10	10	15	20	25	30	30	40	50	60	75	100	150	200	250				
480V (3PH)			5	7.5	10	10	20	25	30	40	50	50	60	75	100	125	150	200	300	400	600				
600V (3PH)			7.5	10	15	15	20	25	30	40	50	50	60	75	100	125	150	200	300	400	600				
UL (Ith)		20A	25A	30A	32A	45A	50A	70A	80A	90A	100A	160A	160A	210A	230A	275A	350A	450A	660A	840A					
NEMA	MAX. HP	SIZE	00		0		1	1P	2			3		4			5		6	7					
		115V (1PH)	0.33		1		2	3	3			7.5													
		230V (1PH)	1		3		3	5	7.5			15													
		200V (3PH)	1.5		3		7.5		10			25			40			75		150	250				
		230V (3PH)	1.5		3		7.5		15			30			50			100		200	300				
		460/575V (3PH)	2		5		10		25			50			100			200		400	600				
LIGHTING DUTY	120-690V	11A	13A	18A	22A	32A	40A	50A	65A	75A	85A	105A	120A	150A	180A	250A	300A	400A	630A	800A					
CAPACITOR SWITCH	120-690V	6A	9A	12A	15A	25A	32A	45A	50A	58A	60A	64A	76A	92A	110A	152A	182A	242A	382A	485A					
RATED LIFE (X10,000)	ELECTRICAL	250	250	250	250	200	200	200	200	200	200	100	100	100	100	100	100	100	50	50	50				
	MECHANICAL	2500	2500	2500	2500	1500	1500	1000	1000	1000	1000	500	500	500	500	500	500	500	500	500	500				
INSULATION RATING		8000V																							
AMBIENT TEMPERATURE RANGE		-5 TO 50°C OPERATION, -40 TO 65°C STORAGE WITHOUT DERATING																							
OPERATING TIMES	CLOSING ms	10-18/50				11-20/50				16-25/25				30-50				37-60		45-60		45-68		66-70	
	OPENING ms	6-9/8-15				6-10/8-15				9-16/13-20				49-67				44-52		41-45		43-52		45-55	
RESISTANCE TO SHOCK		5g/ms OPERATION, 50g/ms MECHANICAL																							
CONDUCTOR SIZE (MAX.)		#10 AWG				#6 AWG		#4	#1 AWG				LIMITED ONLY BY CRIMP SIZE												
SWITCHING FREQUENCY (OP/HR) AC3		1800	1800	1800	1800	1800	1800	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200				
INTERRUPT CURR. @ 460 VAC		5KA	5KA	5KA	5KA	5KA	5KA	5KA	5KA	5KA	10KA	10KA	10KA	10KA	10KA	10KA	10KA	18KA	18KA	30KA	30KA				
MAXIMUM MAKE CURRENT (A)	240V, AC3	132	156	216	240	312	420	600	780	900	960	1050	1250	1500	1800	2500	3000	4000	6300	8000					
	480V, AC3	90	120	180	240	320	400	576	780	900	960	1050	1200	1500	1800	2500	3000	4000	6300	8000					
MAXIMUM BREAK CURRENT (A)	240V, AC3	110	130	180	200	260	350	500	650	750	800	1050	1250	1500	1800	2500	3000	4000	6300	8000					
	480V, AC3	70	90	130	200	250	320	480	650	750	800	1050	1200	1500	1800	2500	3000	4000	6300	8000					

Select the modular accessories that fit your control and operational requirements...



Auxiliary Contact Blocks

Type	Description	Pole	Contact Configuration	Contactor
RSC-A2	TOP MOUNT	2	1 NO, 1 NC	RSC-9 THRU 85
RSC-A4	TOP MOUNT	4	2 NO, 2 NC	RSC-9 THRU 85
RSC-A1	SIDE MOUNT	2	1 NO, 1 NC	RSC-9 THRU 85
RSC-A100	SIDE MOUNT	2	1NO, 1 NC	RSC-100 THRU 800



Auxiliary Contact Ratings

Auxiliary Module	AC 1 Duty	Rated Current															
		AC 12 Duty				DC 12 Duty				AC 15 Duty				DC 15 Duty			
		110V	220V	440V	550V	24V	48V	110V	220V	110V	220V	440V	550V	24V	48V	110V	220V
RSC-A1																	
RSC-A2	16	10	8	5	5	5	3	2.5	1	6	3	1.5	1.2	3	1.5	.55	.27
RSC-A4																	
RSC-A100	16	10	10	5	5	5	3	1.5	.25	6	5	3	3	6	3	1.2	.2



Performance/Lifespan

Auxiliary Module	Operating Frequency (Op/Hr.)	Mechanical Lifespan (x 10,000)	Electrical Lifespan (x 10,000)					
			AC 15 Duty		AC 12 Duty		DC 12 & 13 Duty	
			220V	440V	220V	440V	24 thru 220V	
RSC-A1	1800	2500	50	50	25	25	50	
RSC-A2	1800	2000	50	50	25	25	50	
RSC-A4	1800	2000	50	50	25	25	50	
RSC-A100	1800	1000	50	50	25	25	50	



Universal Coils/Voltage Ranges

Coil	RSC-100 thru 400		RSC-600 thru 800	
	AC 50/60 Hz	DC	AC 50/60 Hz	DC
U24	24 - 25V	24V	N/A	N/A
U48	48 - 50V	48V	N/A	N/A
U100	N/A	N/A	100 - 127V	100 - 110V
U120	100 - 240V	100 - 220V	N/A	N/A
U240	N/A	N/A	200 - 240V	200 - 220V
U300	265 - 347V	N/A	265 - 347V	N/A
U400	380 - 450V	N/A	380 - 450V	N/A
U500	440 - 575V	N/A	440 - 575V	N/A

Mechanical Interlock Modules

Description	Contactor Range (Amp)	Part No.
MECHANICALLY INTERLOCKS CONTACTORS SO THAT WHEN CONTACTOR A IS ENERGIZED CONTACTOR B CANNOT BE CLOSED, AND VICE VERSA.	RSC-9 THRU 85	RSC-M85
	RSC-100 THRU 150	RSC-M150
	RSC-180 THRU 400	RSC-M400



Mechanical Latch Modules

Description	Contactor Range (Amp)	Part No.
MECHANICALLY LATCHES THE CONTACTOR WHEN ENERGIZED. RELEASES THE CONTACTOR WHEN 120V AC CONTROL VOLTAGE IS APPLIED TO THE LATCH.	RSC-9 THRU 40	RSC-L40
	RSC-50 THRU 85	RSC-L85
	RSC-100 THRU 125	RSC-L125
	RSC-150	RSC-L150
	RSC-180 THRU 220	RSC-L220
	RSC 300 THRU 400	RSC-L400



Surge Suppressors

Description	Coil Voltage	Part No.	Coil Voltage	Part No.
RC+VARISTOR	AC 24 - 48V	RSC-AS48	DC 24 - 48V	RSC-DS48
	AC 100 - 125V	RSC-AS125	DC 100 - 125V	RSC-DS125
	AC 200 - 240V	RSC-AS240	DC 200 - 220V	RSC-DS220



Separate Mount Overload Relay Bases

Description	Overload Frame	Part No.
SEPARATE MOUNT BASES ARE USED TO PANEL OR DIN-RAIL MOUNT SP OVERLOAD RELAYS. SPO-100 THRU 150 RELAYS MAY BE PANEL MOUNTED WITHOUT A SEPARATE MOUNT BASE.	SPO-22	SPO-B22
	SPO-40	SPO-B40
	SPO-85	SPO-B85
	SPO-100 THRU 150	NOT REQUIRED



External Overload Resets

Description	Length	Overload Frame	Part No.	NEMA Type
CABLE RESET BUTTON	16"	SPO-22 THRU 85	SPO-RC16	N1
CABLE RESET BUTTON	20"	SPO-22 THRU 85	SPO-RC20	N1
CABLE RESET BUTTON	24"	SPO-22 THRU 85	SPO-RC24	N1
RESET PUSH BUTTON (30MM)	2-4"	SPO-22 THRU 800	SPO-RB	N1
RESET PUSH BUTTON (30MM)	2-4"	SPO-22 THRU 800	SPO-RB4	N1,12,3R,4,4X



Modular 3-Pole Contactors

RMSC SERIES

FOR MOTOR CONTROL UP TO 45KW AT 480V IN CATEGORY AC-3



Snap together with an RMSP motor starter protector to make a complete electro-mechanical combination starter



RMSC contactor highlights:

IEC contactors can be used to control Benshaw's RMSP manual starters, or may be used in other continuous duty control applications where high durability in a compact design is important.

RMSC Series contactors are built and tested to world leading electrical and mechanical standards.

Key Advantages:

- ◆ Clip-on mounting on 35mm rail or screw fitting
- ◆ RMSC-65 to RMSC-95 types are mountable on 70mm DIN rail
- ◆ 60Hz units: 208, 277, 480, 600V in stock for immediate shipping
- ◆ 50/60Hz units: 24, 120, 240, 380, 415V in stock for immediate shipping
- ◆ Other units are available by special order

Standard features:

- ◆ IEC AC-3 rated
- ◆ Durable, compact design
- ◆ DIN rail mountable
- ◆ Conforms to UL, CSA, IEC947-4-1
- ◆ Voltage rating 200-690VAC 50/60HZ
- ◆ Universal AC coils 50/60HZ rated
- ◆ Finger safe, screw clamp terminals
- ◆ Direct mount to RMSP for a complete motor starter
- ◆ High interrupt capacity when used with RMSP
- ◆ Full line of field installable, easy add-on accessories
- ◆ Direct mount to RMSO O/L

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Overloads to suit contactors can be found on page 1-42.

Accessories can be found on page 1-19.

RMSC Contactor Specifications



Specification		Type	RMSC 9	RMSC 12	RMSC 18	RMSC 25	RMSC 32	RMSC 35	RMSC 40	RMSC 50	RMSC 63	RMSC 65	RMSC 75	RMSC 85	RMSC 95		
CONNECTION BY SCREW CLAMP TERMINAL			•	•	•	•	•	•	•	•	•	•	•	•	•		
CONNECTION BY LUGS			-	-	-	-	-	•	•	•	•	•	•	•	•		
NUMBER OF POLES			3	3	3	3	3	3	3	3	3	3	3	3	3		
RATED OPERATIONAL VOLTAGE, Ue			690V	690V	690V	690V	690V	690V	690V	690V	690V	690V	690V	690V	690V		
RATED INSULATION VOLTAGE, Ui		IEC947-4-1	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V	1000V		
		UL, CSA	600V	600V	600V	600V	600V	600V	600V	600V	600V	600V	600V	600V	600V	600V	
RATED IMPULSE WITHSTAND VOLTAGE, Uimp			8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV		
DEGREE OF POLLUTION (IEC60529)			IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20	IP20		
RATED OPERATIONAL CURRENT (0 ≤ 55°C)		AC 1 Duty	Ue max. 690V		25A	25A	40A	40A	50A	55A	60A	70A	75A	100A	110A	135A	140A
		AC 3 Duty	200/240V	11A	13A	18A	25A	32A	35A	40A	55A	63A	65A	75A	85A	95A	
			380/400V	9A	12A	18A	25A	32A	35A	40A	50A	63A	65A	75A	85A	95A	
			415V	9A	12A	18A	25A	32A	35A	40A	50A	63A	65A	75A	85A	95A	
			480V	9A	12A	18A	25A	32A	35A	40A	50A	63A	65A	75A	85A	95A	
			500V	7A	12A	13A	22A	28A	30A	32A	43A	45A	60A	64A	75A	85A	
690V	5A	9A	9A	18A	20A	21A	23A	28A	30A	35A	42A	45A	50A				
RATED OPERATIONAL POWER (0 ≤ 55°C)		AC 3 Duty	200/240V	2.5kW	3.5kW	4.5kW	5.5kW	7.5kW	11kW	11kW	15kW	15kW	18.5kW	22kW	25kW	25kW	
			380/400V	4kW	5.5kW	7.5kW	11kW	15kW	18.5kW	18.5kW	22kW	25kW	30kW	37kW	45kW	45kW	
			415V	4kW	5.5kW	7.5kW	11kW	15kW	18.5kW	18.5kW	22kW	25kW	30kW	37kW	45kW	45kW	
			480V	4kW	5.5kW	7.5kW	11kW	15kW	18.5kW	18.5kW	22kW	25kW	30kW	37kW	45kW	45kW	
			500V	4kW	7.5kW	7.5kW	15kW	18.5kW	22kW	22kW	30kW	30kW	33kW	37kW	45kW	50kW	
			690V	4kW	7.5kW	7.5kW	15kW	18.5kW	22kW	22kW	30kW	30kW	33kW	37kW	45kW	45kW	
IEC947-4-1 RATED MAKING CAPACITY [AC3 Duty]			250V	250V	250V	250V	250V	250V	250V	250V	250V	250V	250V	250V	250V		
IEC947-4-1 RATED BREAKING CAPACITY [AC3 Duty]			200V	200V	200V	200V	200V	200V	200V	200V	200V	200V	200V	200V	200V		
MECHANICAL DURABILITY (millions of cycles)			15	15	15	15	15	12	12	12	12	12	12	12	12		
MAXIMUM OPERATING RATE (cycles per hour)			1800	1800	1800	1800	1800	1200	1200	1200	1200	1200	1200	1200	1200		
ELECTRICAL DURABILITY (millions of cycles)			2.5	2.5	2.5	2.5	2.5	2	2	2	1.3	2	2	2	2		
BUILT-IN AUXILIARY CONTACT		NO	-	-	-	-	-	-	-	-	-	-	-	-	-		
		NC	-	-	-	-	-	-	-	-	-	-	-	-	-		
WEIGHT (KG)			0.45	0.45	0.45	0.45	0.45	0.94	0.94	0.94	0.94	1.82	1.82	1.82	1.82		
WIDTH (MM)			45	45	45	45	45	55	55	55	55	70	70	70	70		
HEIGHT (MM)			83	83	83	83	83	106	106	106	106	140	140	140	140		
DEPTH (MM)			93	93	93	93	93	122	122	122	122	137	137	137	137		

Overload Relays - Bimetallic - CLASS 10 & 20

SPO SERIES

Simple, fully adjustable overload relays.

Extended Part No.	Setting Range Min (A) Max (A)	Overload Frame (Contactor Mount)
0.14	0.1 TO 0.16	SPO-22 (RSC-9 - 22)
0.21	0.16 TO 0.25	
0.33	0.25 TO 0.4	
0.52	0.4 TO 0.63	
0.82	0.63 TO 1	
1.3	1 TO 1.6	SPO-40 (RSC-32 - 40)
2.1	1.6 TO 2.5	
3.3	2.5 TO 4	
5	4 TO 6	
6.5	5 TO 8	
7.5	6 TO 9	SPO-85 (RSC-50 - 85)
8.5	7 TO 10	
11	9 TO 13	
15	12 TO 18	
19	16 TO 22	
22	18 TO 26	SPO-150 (RSC-150)
30	24 TO 36	
34	28 TO 40	
42	34 TO 50	
55	45 TO 65	
65	54 TO 75	SPO-220 (RSC-180 - 220)
74	63 TO 85	
80	65 TO 100	
107	85 TO 125	
130	100 TO 160	
150	120 TO 180	SPO-400 (RSC-300 - 400)
200	160 TO 240	
250	200 TO 300	
350	260 TO 400	
500	400 TO 600	
660	520 TO 800	SPO-800 (RSC-600 - 800)

Benshaw SP overload relays integrally mount to RS contactors and provide thermal overload protection.



The SurProtex Overload Relay

The SurProtex overload relay can be mounted directly to the magnetic contactors without additional brackets.



Safety Cover

A "finger-proof" safety cover prevents any contact with live parts.



Simple Adjustments

Overload adjustments are easy to access and straightforward to set.



Trip/Reset Indicator

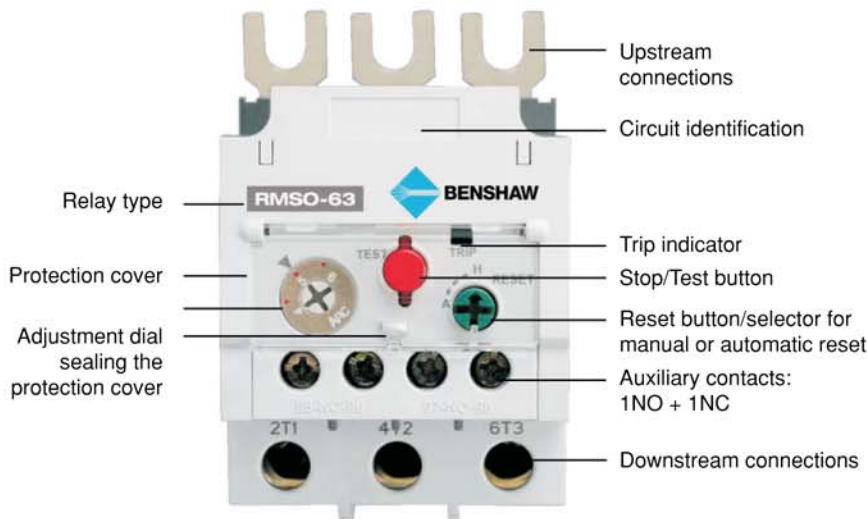
Each overload relay has a manual trip operator and indicator flag.

NOTE: Direct mount to RSC Series contactors only.

Modular Overload Relays

RMSO SERIES

FOR MOTOR CONTROL UP TO 45KW AT 480V IN CATEGORY AC-3



	STOP	TEST/TRIP	RESET
NC 95-96			
NO 97-98			

RMSO overload relay highlights:

RMSO Series overload relays are bimetallic-style and are designed to protect AC circuits and motors against overloads, phase failure, long starting times and prolonged stalling of the motor.

Key Advantages:

- ◆ Meet EN 60947-1, EN 60947-4-1 standards
- ◆ CE, CSA, UL certified
- ◆ Trip indicator
- ◆ Reset button/selector for manual or auto reset
- ◆ Finger safe terminals
- ◆ Differential type phase failure protection
- ◆ Add-on accessories available
- ◆ Close couple to RMSC contactors (see page 1-16)

Standard features:

- ◆ IP 20 protection (IEC 60 529)
- ◆ Trip indicator
- ◆ Reset button/selector for manual or auto reset
- ◆ Test trip device
- ◆ Finger safe terminals
- ◆ Overload adjustment dial cover
- ◆ 1 NO and 1 NC auxiliary contacts
- ◆ Identification labels
- ◆ Temperature compensation
- ◆ -60°C to +70°C storage temperature range
- ◆ -5°C to +55°C operating temperature range
- ◆ Differential type phase loss protection
- ◆ 6kV dielectric strength at 50HZ (IEC 25505)
- ◆ 6KV impulse withstand voltage (IEC 801-5)

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Modular Overload Relay Specifications

RMSO SERIES

ELECTRICAL CHARACTERISTICS OF POWER CIRCUIT

Specification	RMSO32	RMSO63	RMSO95
DIFFERENTIAL TYPE (Phase failure protection)	RMSO32/3K	RMSO63/3K	RMSO95/3K
TRIPPING CLASS (IEC 60947-4-1)	10A	10A	10A
TERMINAL TYPE	SCREW CLAMP	SCREW CLAMP	SCREW CLAMP
NUMBER OF POLES	3	3	3
RATED OPERATIONAL VOLTAGE (Ue)	UP TO 690V	UP TO 690V	UP TO 690V
RATED INSULATION VOLTAGE (Ui)	690V	690V	690V
RATED IMPULSE VOLTAGE (Uimp)	6kV	6kV	6kV
SETTING RANGE	0.1-32A	4-65A	7-95A
DEGREE OF PROTECTION (IEC 60 529)	IP20	IP20	IP20
TEMPERATURE COMPENSATION (°C)	-5 ~ +40	-5 ~ +40	-5 ~ +40
TRIP INDICATING FUNCTION	•	•	•
STOP FUNCTION	•	•	•
TEST FUNCTION	•	•	•
MANUAL/AUTOMATIC RESET FUNCTION	•	•	•
APPLIED CONTACTORS	RMSC-9, 12, 18, 25, 32	RMSC-35, 40, 50, 63	RMSC-65, 75, 85, 95

DETAIL SETTING RANGE AND CONNECTION CABLE

10A	20A	10A, 20	10A, 20	CURRENT SETTING RANGE (A)	MM2	AWG	TYPE	CONDUCTORS	SHORT CIRCUIT "R"
•				0.1-0.16	1	18	65/75°C Cu-Wire only	2	-
•				0.16-0.25	1	18		2	-
•				0.25-0.4	1	18		2	-
•				0.4-0.63	1	18		2	-
•				0.63-1	1	18		2	-
•	•			1-1.6	1	18		2	1kA
•	•			1.6-2.5	1	18		2	1kA
•	•			2.5-4	1	18		2	1kA
•	•	•		4-6	1	18		2	1kA
•	•	•		5-8	1	18		2	1kA
•	•	•		6-9	1	18		2	1kA
•	•	•	•	7-10	1-1.5	18-16		2	1kA
•	•	•	•	9-13	1.5-2.5	16-14		2	3kA
•	•	•	•	12-18	2.5	14-12		2	3kA
•	•	•	•	16-22	2.5-4	12-10		2	3kA
•	•	•	•	18-25	2.5-4	12-10		2	3kA
•	•			22-32	4-6	10		2	3kA
		•	•	24-36	4-10	10-8		2	3kA
		•	•	28-40	6-10	10-8		2	3kA
		•	•	34-50	10	8		2	3kA
		•	•	45-65	10-16	8-6	2	5kA	
			•	54-75	16-25	6-4	2	5kA	
			•	63-85	16-25	6-4	2	5kA	
			•	70-95	25-35	4-3	2	5kA	

Select the SurProtex electronic motor protection relay to meet your toughest, most critical applications...

SurProtex™ Electronic Overload Relay

SPE relays offer enhanced motor protection in a separate mountable package, including:

- ◆ Adjustable overload class (1-30)
- ◆ Wide range current adjustment
- ◆ Wide range control voltage (100-260 VAC, 50/60 HZ)
- ◆ 1 NO and 1NC auxiliary contact
- ◆ Current imbalance detection
- ◆ Phase loss detection
- ◆ Phase reversal protection
- ◆ “Trip free” design
- ◆ Test function/trip indication



SPE Electronic Overload Relay

SurProtex™ Digital Motor Protection Relay

SPD relays provide extended motor and systems monitoring and protection in a separate mountable package, including:

- ◆ Adjustable overload class (1-60)
- ◆ Wide range current adjustment
- ◆ Alarm and trip output contacts
- ◆ Four segment, panel-mountable LED display/keypad
- ◆ Easy view thermal content bar graph
- ◆ Three-phase current display
- ◆ Current imbalance detection
- ◆ Phase loss detection
- ◆ Phase reversal protection
- ◆ Stalled motor detection
- ◆ Locked rotor detection
- ◆ Optional ground fault protection (personnel, 100 thru 2500 mA)



SPD Digital Motor Protection Relay, Door Mounted

Motor Starter Protectors

RMSP SERIES - EFFICIENT FUNCTIONALITY ... COMPACT DESIGN



RMSP Series motor starter protector highlights:

RMSP Series manual starters meet or exceed all universal standards and offer efficient motor starting functionality in a compact design.

Protection functions include protection of group installation, protection of circuits, motor protection, starter protection and phase failure protection. RMSP starters provide a wide range of ambient temperature compensation. Couples directly to RMSC Series contactors for a complete electro-mechanical combination starter.

Key Advantages:

- ◆ 45mm width up to 32 amps
- ◆ 55mm width up to 63 amps
- ◆ 70mm width up to 100 amps
- ◆ Three position operator (ON-OFF-TRIP) (On 100AF only)
- ◆ Complete range of accessories
- ◆ Handle locks in the off position
- ◆ Class 10 overload trip characteristics
- ◆ Trip test
- ◆ Finger safe terminal
- ◆ DIN rail and screw mounting

Snap together with an RMSC contactor to make a complete electro-mechanical combination starter



Standard features:

- ◆ Front-mounted auxiliary contact
- ◆ Easy mounting onto DIN rail
- ◆ Large scale for current setting
- ◆ Auxiliaries snap on without tools
- ◆ Dial cover lock device
- ◆ Test trip device for checks of the trip mechanism
- ◆ Finger safe terminals
- ◆ Dial cover
- ◆ Handle lock device (off positions)
- ◆ Three position operator handle (ON-OFF-TRIP) (on 100AF only)
- ◆ Identification labels
- ◆ High interrupt capability

Guaranteed ... for two full years.

Only Benshaw has a two year guarantee.

Benshaw's RMSP Series motor starter protectors are guaranteed for two full years. Other manufacturers limit their warranties to just one year. But at Benshaw, we believe that, because we build them better, we can guarantee them longer. We call that "the Benshaw Promise."



RMSP Manual Starter Specifications

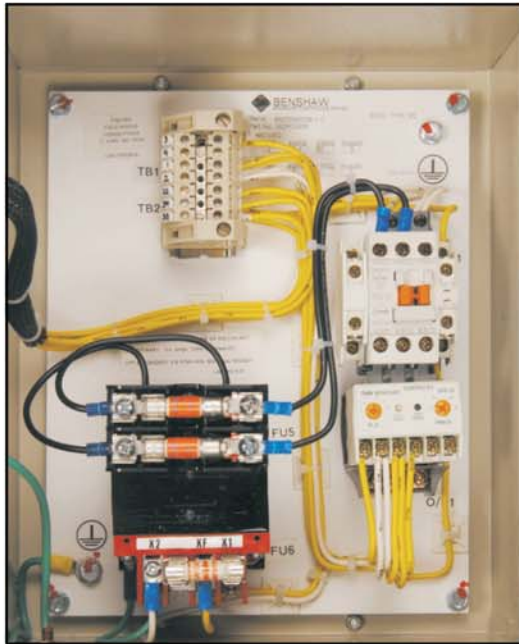
Specification		RMSP-32H	RMSP-63H	RMSP-100H
FRAME		32AF	63AF	100AF
RATED OPERATIONAL VOLTAGE (Ue)		Up to 690V	Up to 690V	Up to 690V
RATED FREQUENCY		50/60Hz	50/60Hz	50/60Hz
RATED INSULATION VOLTAGE (Ui)		690V	1,000V	1,000V
RATED IMPULSE VOLTAGE (Uimp)		6kV	8kV	8kV
UTILIZATION CATEGORY	IEC 60 947-2 (Breaker)	Cat. A	Cat. A	Cat. A
	IEC 60 947-4 (Starter)	AC3	AC3	AC3
SHOCK RESISTANCE (IEC 68 Part 2-27)		25g	25g	25g
DEGREE OF PROTECTION (IEC 60 529)		IP20	IP20	IP20
INSTANTANEOUS SHORT CIRCUIT RELEASE		13 x Ie max.	13 x Ie max.	13 x Ie max.
MECHANICAL ENDURANCE (Operating)		100,000	50,000	50,000
ELECTRICAL ENDURANCE (Cycles)		100,000	25,000	25,000
MAX. OPERATING FREQUENCY PER HOUR		25	25	25
TEMPERATURE COMPENSATION (Operation) (°C)		-20 ~ +60-	20 ~ +60	-20 ~ +60
PHASE FAILURE FUNCTION		Yes	Yes	Yes
TRIP INDICATING FUNCTION		Yes	Yes	Yes
TEST FUNCTION		Yes	Yes	Yes

Specification			RMSP-32H										RMSP-63H										RMSP-100H									
RATED BREAKING CAPACITY (kA)			240V 230V		415V 400V		480V 440V		525V 500V		690V 600V		240V 230V		415V 400V		480V 440V		525V 500V		690V 600V		240V 230V		415V 400V		480V 440V		525V 500V		690V 600V	
Rated Operational Current (Ie)	Thermal Release Adj. Range (A)		ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS	ICU	ICS
0.16	0.1 - 0.16		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0.25	0.16 - 0.25		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0.4	0.25 - 0.4		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
0.63	0.4 - 0.63		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1	0.63 - 1		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
1.6	1 - 1.6		100	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2.5	1.6 - 2.5		100	100	100	100	100	100	100	100	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	2.5 - 4		100	100	100	100	100	100	100	100	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	4 - 6		100	100	100	100	100	100	100	100	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	5 - 8		100	100	100	100	50	38	50	38	6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	6 - 10		100	100	100	100	50	38	50	38	6	6	100	100	100	100	50	38	50	38	6	5	-	-	-	-	-	-	-	-	-	
13	9 - 13		100	100	100	100	50	38	42	32	6	6	100	100	100	100	50	38	42	32	6	5	-	-	-	-	-	-	-	-	-	
17	11 - 17		100	100	50	38	20	15	10	8	4	4	100	100	50	50	50	38	12	9	5	5	100	100	100	100	50	38	35	27	12	9
22	14 - 22		100	100	50	38	20	15	10	8	4	4	100	100	50	50	50	38	12	9	5	5	100	100	100	50	50	38	35	27	12	9
26	18 - 26		100	100	50	38	20	15	10	8	4	4	100	100	50	50	35	27	12	9	5	5	100	100	100	50	50	38	35	27	12	9
32	22 - 32		100	100	50	38	20	15	10	8	4	4	100	100	50	50	35	27	10	8	5	5	100	100	100	50	50	38	25	19	12	9
40	28 - 40		-	-	-	-	-	-	-	-	-	-	100	100	50	50	35	27	10	8	5	5	100	100	100	50	50	38	20	15	12	9
50	34 - 50		-	-	-	-	-	-	-	-	-	-	100	100	50	50	35	27	10	8	5	5	100	100	100	50	50	38	15	11	10	8
63	45 - 63		-	-	-	-	-	-	-	-	-	-	100	100	50	50	35	27	10	8	5	5	100	100	100	50	50	38	15	11	8	6
75	55 - 75		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100	75	50	50	38	12	9	6	6
90	70 - 90		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100	75	50	50	38	12	9	6	6
100	80 - 100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100	75	50	50	38	12	9	6	6

Prepackaged Full Voltage Starters With Door Mounted Controls



RCI SERIES - NON-COMBINATION / COMBINATION / NEMA 12/3R / ELECTRONIC OVERLOAD PROTECTION



- Control Terminal Block
- Fused Control Power Transformer
- Grounding Lug
- Circuit Breaker with Operator CBRCI (Type)
- NEMA Rated Contactor
- SPE Electronic Overload Relay

Provided with SPE Electronic Overload Relay

SPE electronic overload relays provide field adjustable, precise motor protection, including:

- ◆ Adjustable overload class (1-30)
- ◆ Wide range of current adjustments
- ◆ 1 NO and 1 NC auxiliary contact
- ◆ Current imbalance detection
- ◆ Phase loss detection
- ◆ Phase reversal protection
- ◆ Trip free design
- ◆ Test function/trip indication
- ◆ Fault indication



SPE Electronic Overload Relay

NCRCI-18-4-3R Full Voltage Starter

RCI Series Product Highlights:

RCI starters are NEMA Rated, cUL listed, completely integrated, full voltage/non-reversing starter packages. The rugged NEMA 12/3R design is ideal for Industrial Duty Applications such as pumps, compressors, conveyors, fans and any other continuous duty equipment. The “Three wires In/Out” design includes the Benshaw SPE, field adjustable electronic overload relay which enables quick installation and startup with precision motor protection ...standard.

Rugged. Reliable. Ready.

- ◆ cUL listed
- ◆ NEMA rated, heavy duty contactors
- ◆ NEMA 12/3R enclosure
- ◆ Field adjustable SPE electronic overload relay
- ◆ Two year warranty - standard
- ◆ Complete door mounted operator control package
- ◆ 480/240: 120 fused control power transformer
- ◆ “Three wires in/out” installation & startup
- ◆ Combination or non-combination



Prepackaged Full Voltage Starters With Door Mounted Controls

RCI SERIES - NON-COMBINATION / COMBINATION / NEMA 12/3R / ELECTRONIC
OVERLOAD PROTECTION



NCRCI Non-Combination Full Voltage Non-Reversing Starters

- ◆ NEMA 12/3R enclosure
- ◆ cUL listed
- ◆ NEMA rated contactor and separately mounted SPE overload relay
- ◆ 480/240:120 fused control power transformer
- ◆ Door-mounted start and stop push-buttons
- ◆ Door-mounted overload reset push-button
- ◆ Red run indicator light
- ◆ (2) Auxiliary contacts
- ◆ Hand off auto selector switch

240V or 480V

NEMA SIZE	MODEL NUMBER	DIMENSIONS
00	NCRCI-9-3R	12 x 10 x 6
0	NCRCI-18-3R	12 x 10 x 6
1	NCRCI-32-3R	12 x 10 x 8
2	NCRCI-50-3R	16 x 12 x 6
3	NCRCI-85-3R	16 x 12 x 6
4	NCRCI-150-3R	20 x 16 x 8

- Dual Primary Transformer 240 / 480
- Units are fused @ 480V



CBRCI Combination Full Voltage 480V Non-Reversing Starters

- ◆ NEMA 12/3R enclosure
- ◆ cUL listed
- ◆ NEMA rated contactor and separately mounted SPE overload relay
- ◆ 480/240:120 fused control power transformer
- ◆ Door-mounted start and stop push-buttons
- ◆ Door-mounted overload reset push-button
- ◆ Red run indicator light
- ◆ (2) Auxiliary contacts
- ◆ Circuit breaker with door-mounted operating mechanism
- ◆ Hand off auto selector switch

480V

NEMA SIZE	MODEL NUMBER	DIMENSIONS
00	CBRCI-9-4-3R	20 x 16 x 8
0	CBRCI-18-4-3R	20 x 16 x 8
1	CBRCI-32-4-3R	24 x 12 x 8
2	CBRCI-50-4-3R	30 x 12 x 8
3	CBRCI-85-4-3R	36 x 16 x 8
4	CBRCI-150-4-3R	36 x 16 x 8
5	CBRCI-300-4-3R	48 x 24 x 12

CBRCI Combination Full Voltage 240V Non-Reversing Starters

- ◆ Same features as above units

240V

NEMA SIZE	MODEL NUMBER	DIMENSIONS
00	CBRCI-9-2-3R	20 x 16 x 8
0	CBRCI-18-2-3R	20 x 16 x 8
1	CBRCI-32-5-2-3R	24 x 12 x 8
2	CBRCI-32-7-2-3R	24 x 12 x 8
3	CBRCI-50-2-3R	30 x 12 x 8
4	CBRCI-85-2-3R	36 x 16 x 8
4	CBRCI-150-2-3R	36 x 16 x 8

Engineered Packages

PRODUCT OVERVIEW

Benshaw has developed advanced engineering, drafting, materials management and quality systems focused on designing and building customer solutions. This “Build to Order” capability combined with an extensive inventory of control components, protective relays, circuit breakers, contactors, enclosures and other electrical / electronic devices provides our customers with the quickest shipment of engineered products in the industry.

Standard Ratings

- ◆ 1/2 - 600 HP
- ◆ 120 - 600V
- ◆ Single or 3 phase
- ◆ UL / CSA, IEC and NEMA



Control Modifications - whatever you specify

- ◆ Over 250 modifications and accessories are available
- ◆ Pilot devices, control power transformers, switches, meters, relays, space heaters, protective devices, etc.

Combination Starters to meet your requirements

- ◆ 15 to 1200 amp circuit breakers
- ◆ 40 to 1200 amp non-fused disconnects
- ◆ 30 to 800 amp fusible disconnect
- ◆ Flange or rotary handle mechanism

Enclosures to match your environment

- ◆ Standard designs - NEMA 1, 12, 4 chassis
- ◆ Custom enclosures
- ◆ Special enclosures - 3R, 4X, 7, 9, as specified
- ◆ Motor control centers



For Any Application

APPLICATION SPECIFIC STARTERS OVERVIEW

Benshaw is the trusted expert for any AC motor application. Benshaw provides a full line of application solutions for reversing motors, two speed motors, part winding motors, and Wye-Delta motors.

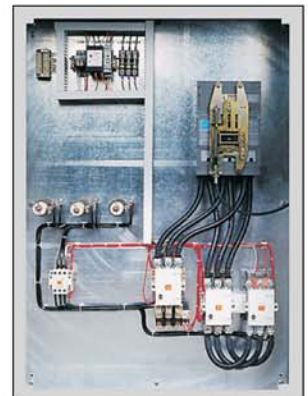
Call for price and availability

Specialty Electromechanical Starters

- ◆ Full voltage, non-reversing
- ◆ Full voltage, reversing
- ◆ 2-Speed, one winding
- ◆ 2-Speed, two windings
- ◆ Part Winding
- ◆ Wye-Delta open transition
- ◆ Wye-Delta closed transition

Industry Specific Solutions

- ◆ Pump control starters
- ◆ Compressor starters
- ◆ Chiller starters
- ◆ Motor-mounted starters
- ◆ VFD bypass units



Select the starter package that meets your specifications...

Standard products...



Full Voltage, Non-Reversing



Full Voltage, Reversing



Wye-Delta Closed Transition

Benshaw starters are built and tested to UL, IEC and NEMA standards and are supplied with hinged cover, industrial enclosures. Each Benshaw starter is supplied with motor thermal overload protection standard. Options are available for advanced motor/system protection, pilot devices and other optional accessories.

Standard ratings

- ◆ 1/2 thru 600 HP
- ◆ 120 thru 600 V
- ◆ Single or three-phase
- ◆ UL/CSA, IEC and NEMA

Full range of standard starters

- ◆ Full Voltage, Non-Reversing
- ◆ Full Voltage, Reversing
- ◆ 2-Speed, 1 Winding
- ◆ 2-Speed, 2 Windings
- ◆ Part Winding
- ◆ Wye-Delta Open Transition
- ◆ Wye-Delta Closed Transition

Standard combination starters

- ◆ Circuit breakers
- ◆ Non-fused disconnect switches
- ◆ Fused disconnect switches
- ◆ Rotary or flanged operators

Pre-engineered starter options

- ◆ N1, 12, 3R, 4 enclosures
- ◆ Full range of control options
- ◆ Metering packages
- ◆ Advanced motor/system protection
- ◆ Oversized enclosures
- ◆ Control voltage options

Pre-engineered industry-specific solutions

- ◆ Pump control starters
- ◆ Compressor starters
- ◆ Chiller starters
- ◆ Motor-mounted starters
- ◆ Inverter bypass units

PREDATOR™ QuickShip Program

FOR FULL VOLTAGE ELECTROMECHANICAL STARTERS

Benshaw's PREDATOR™ QuickShip program allows you to custom configure a wide range of full voltage electromechanical starters for shipment within five working days A.R.O. Simply choose a PREDATOR-QUALIFIED starter from the Engineered Products section of this catalog, then add PREDATOR-QUALIFIED options, as needed. Benshaw will build and ship your custom configured starter within five working days!



PRE-ENGINEERED REAL-TIME ENGINEERING DATABASE

QuickShip Starter Features:

- ◆ UL/IEC Rated 1-800 amps
- ◆ NEMA Rated size 00-7
- ◆ Line voltage 208-600V (60Hz only)
- ◆ NEMA 1, 12, 3R enclosed
- ◆ Non-combination or combination circuit breaker
- ◆ Non-reversing or reversing 120V control

QuickShip Options:

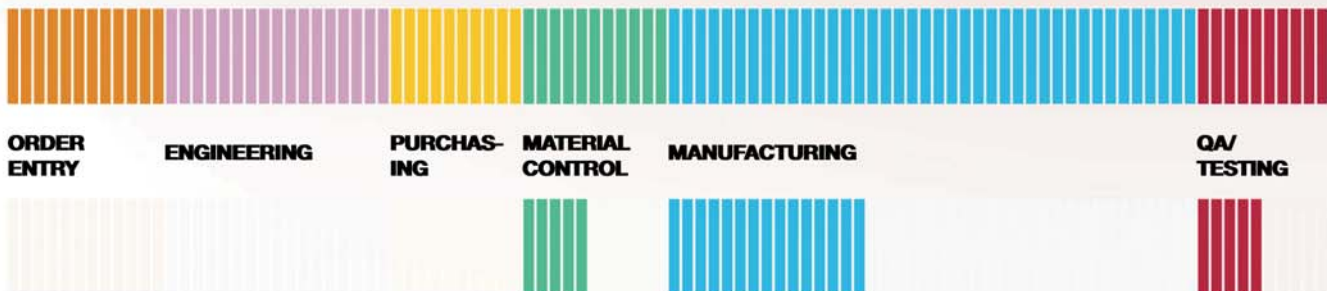
- ◆ Start-Stop pushbutton
- ◆ Forward-Off-Reverse selector switch
- ◆ Hand-off auto selector switch
- ◆ Local off remote switch
- ◆ Control power transformer
- ◆ Run light
- ◆ Power on light
- ◆ Class 20 overload (NEMA rated starters)



AUTOMATED TURNKEY ORDER RELEASE

TYPICAL ENGINEERED PRODUCT WORKFLOW

AVERAGE 8-10 WORKING DAYS



PREDATOR™ QUICK SHIP WORKFLOW

5 WORKING DAYS

World-class after-market service and support—whenever and wherever needed...

7x24

Benshaw provides comprehensive support, with web-based tools and dedicated, knowledgeable staff available 7-days-a-week, 24-hours-a-day to answer your questions, dispatch a field service technician or coordinate an emergency parts request.

Repairs, spares, field engineering, retrofits and training services—whenever and wherever needed—are all part of Benshaw's commitment.



www.BenshawExpress.com offers a guaranteed two-hour emergency response on many starters and drives from warehouses around the country

- ◆ 7x24 same day shipment.
- ◆ Air or truck delivery.
- ◆ Airport pick-up or door-to-door service.



7x24 Phone Support from Benshaw operations centers in Pittsburgh, Listowel (Canada), Detroit and Phoenix provides:

- ◆ Technical assistance.
- ◆ Overnight parts shipment.
- ◆ Service dispatch.



Training courses are available in a classroom or a hands-on environment:

- ◆ Basic electrical maintenance.
- ◆ Electronic maintenance and diagnostics.
- ◆ New product orientations.
- ◆ Customized systems (maintenance- or operations-based).



Regional/International Field Service by a skilled technician, engineer or complete team, if needed, is available for:

- ◆ Start-up commissioning.
- ◆ Field repairs.
- ◆ Field analysis/data collection.
- ◆ Preventive maintenance.



Repairs are made by trained, experienced personnel, using the latest diagnostic and test equipment to service:

- ◆ Printed circuit boards.
- ◆ Power electronic control assemblies.
- ◆ Electrical sub-assemblies.

United States

Pittsburgh, Pennsylvania
 Indianapolis, Indiana
 Syracuse, New York
 Boston, Massachusetts
 Charlotte, North Carolina
 Birmingham, Alabama
 Los Angeles, California
 Detroit, Michigan
 Chicago, Illinois
 Phoenix, Arizona
 Seattle, Washington
 Denver, Colorado
 Houston, Texas
 Mobile, Alabama
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Listowel, Ontario
 Toronto, Ontario
 Montreal, Quebec
 Calgary, Alberta

Brazil

Ecuador

Venezuela

Columbia

Peru

Chile

Argentina

China

Australia

Philippines

Korea

Singapore

Germany

Mexico

Russia

Turkey

Egypt

Saudi Arabia

United Arab Emirates

Bahrain

Kuwait

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 Phone: (519) 291-5112

Ben-Tech Industrial Automation

2904 Bond Street
 Rochester Hills, MI 48309
 Phone: (248) 299-7700

BENSHAW Mobile

CSD Division
 5821 Rangeline Road, Suite 202
 Theodore, AL 36582
 Phone: (251) 443-5911
 Fax: (251) 443-5966

BENSHAW High Point

EPC Division
 645 McWay Drive
 High Point, NC 27263
 Phone: (336) 434-4445

BENSHAW Pueblo

Trane Division
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 Pueblo, CO 81001
 Phone: (719) 948-1405

