

Heavy industrial power applications

Motor contactors and starters

Catalog
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a brand of
Schneider
Electric

 **SQUARE D**

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1 - Heavy Industrial Contactors and Starters, Type S, NEMA Style

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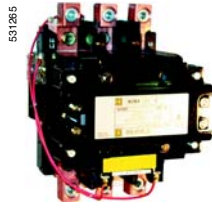
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Applications **Type S NEMA Contactors and Starters**



| | | | | | | | | | | | | | |
|---|-------------|---------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|---------------|-------------|--|
| NEMA Size | 00 | | | 0 | | | 1 | | | 2 | | | |
| Continuous current ratings | 9 A | | | 18 A | | | 27 A | | | 45 A | | | |
| Motor | 200 V | 1.5 hp/1.1 kW | | | 3 hp/2.2 kW | | | 7.5 hp/5.5 kW | | | 10 hp/7.5 kW | | |
| | 230 V | 1.5 hp/1.1 kW | | | 3 hp/2.2 kW | | | 7.5 hp/5.5 kW | | | 15 hp/11 kW | | |
| | 460 V | 2 hp/1.5 kW | | | 5 hp/3.7 kW | | | 10 hp/7.5 kW | | | 25 hp/18.5 kW | | |
| | 575 V | 2 hp/1.5 kW | | | 5 hp/3.7 kW | | | 10 hp/7.5 kW | | | 25 hp/18.5 kW | | |
| Enclosures - NEMA 1: General purpose - NEMA 12: Dust-tight and drip-tight for industrial use | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | |
| | | | | | | | | | | | | | |
| Contactors | 8502 SAO | 8502 SAG | 8502 SBA | 8502 SBO | 8502 SBG | 8502 SBA | 8502 SCO | 8502 SCG | 8502 SCA | 8502 SDO | 8502 SDG | 8502 SDA | |
| Pages | 1/6 | | | 1/6 | | | 1/6 | | | 1/6 | | | |
| Reversing contactors | 8702 SAO | 8702 SAG | 8702 SBA | 8702 SBO | 8702 SBG | 8702 SBA | 8702 SCO | 8702 SCG | 8702 SCA | 8702 SDO | 8702 SDG | 8702 SDA | |
| Pages | 1/7 | | | 1/7 | | | 1/7 | | | 1/7 | | | |
| Starters | 8536 SAO | 8536 SAG | 8536 SBA | 8536 SBO | 8536 SBG | 8536 SBA | 8536 SCO | 8536 SCG | 8536 SCA | 8536 SDO | 8536 SDG | 8536 SDA | |
| Pages | 1/8 | | | 1/8 | | | 1/8 | | | 1/8 | | | |
| Reversing starters | 8736 SAO | 8736 SAG | 8736 SBA | 8736 SBO | 8736 SBG | 8736 SBA | 8736 SCO | 8736 SCG | 8736 SCA | 8736 SDO | 8736 SDG | 8736 SDA | |
| Pages | 1/9 | | | 1/9 | | | 1/9 | | | 1/9 | | | |

Type S NEMA Contactors and Starters

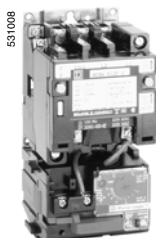


| 3 | | | 4 | | | 5 | | | 6 | | | 7 | | |
|---------------|----------|----------|--------------|----------|----------|---------------|----------|----------|---------------|----------|----------|---------------|----------|----------|
| 90 A | | | 135 A | | | 270 A | | | 540 A | | | 810 A | | |
| 25 hp/18.5 kW | | | 40 hp/30 kW | | | 75 hp/55 kW | | | 150 hp/110 kW | | | — | | |
| 30 hp/22 kW | | | 50 hp/37 kW | | | 100 hp/75 kW | | | 200 hp/150 kW | | | 300 hp/220 kW | | |
| 50 hp/37 kW | | | 100 hp/75 kW | | | 200 hp/150 kW | | | 400 hp/300 kW | | | 600 hp/450 kW | | |
| 50 hp/37 kW | | | 100 hp/75 kW | | | 200 hp/150 kW | | | 400 hp/300 kW | | | 600 hp/450 kW | | |
| Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 | Open | NEMA 1 | NEMA 12 |
| 8502 SEO | 8502 SEG | 8502 SEA | 8502 SFO | 8502 SFG | 8502 SFA | 8502 SGO | 8502 SGG | 8502 SGA | 8502 SHO | 8502 SHG | 8502 SHA | 8502 SJO | 8502 SJG | 8502 SJA |
| 1/6 | | | 1/6 | | | 1/6 | | | 1/6 | | | 1/6 | | |
| 8702 SEO | 8702 SEG | 8702 SEA | 8702 SFO | 8702 SFG | 8702 SFA | 8702 SGO | 8702 SGG | 8702 SGA | 8702 SHO | 8702 SHG | 8702 SHA | 8702 SJO | 8702 SJG | 8702 SJA |
| 1/7 | | | 1/7 | | | 1/7 | | | 1/7 | | | 1/7 | | |
| 8536 SEO | 8536 SEG | 8536 SEA | 8536 SFO | 8536 SFG | 8536 SFA | 8536 SGO | 8536 SGG | 8536 SGA | 8536 SHO | 8536 SHG | 8536 SHA | 8536 SJO | 8536 SJG | 8536 SJA |
| 1/8 | | | 1/8 | | | 1/8 | | | 1/8 | | | 1/8 | | |
| 8736 SEO | 8736 SEG | 8736 SEA | 8736 SFO | 8736 SFG | 8736 SFA | 8736 SGO | 8736 SGG | 8736 SGA | 8736 SHO | 8736 SHG | 8736 SHA | 8736 SJO | 8736 SJG | 8736 SJA |
| 1/9 | | | 1/9 | | | 1/9 | | | 1/9 | | | 1/9 | | |

General



Type SCO 2
Size 1, 3-pole contactor



Starter with
Motor Logic
solid-state overload relay



Size 00, 0, 1
reversing contactor
(horizontal type)



Reversing starter with
Motor Logic
solid-state overload relay
(vertical type)

Full-voltage contactors

Class 8502 Type S magnetic contactors are used to switch heating loads, capacitors, transformers and electric motors where overload protection is provided separately. Class 8502 contactors are available in NEMA Sizes 00 to 7. Type S contactors are designed for operation up to ~ 600 V, 50 to 60 Hz.

Full-voltage starters

Class 8536 Type S magnetic starters are used for full-voltage starting and stopping of a.c. squirrel-cage motors. Motor overload protection is provided via solid-state overload relays. Type S starters are available in NEMA Sizes 00 to 7 and are designed for operation up to ~ 600 V, 50 to 60 Hz.

Full-voltage reversing contactors

Class 8702 Type S reversing magnetic contactors are used for starting, stopping and reversing a.c. motors where overload protection is provided separately. Class 8702 reversing contactors consist of two Class 8502 contactors mechanically and electrically interlocked. Open-type devices, Sizes 0 to 5, are available in either horizontal or vertical arrangements. Sizes 00, 6 and 7 are available as horizontal only. Enclosed devices Size 00 to 7 use horizontally arranged components. Type S reversing contactors are designed for operation up to ~ 600 V, 50 to 60 Hz.

Full-voltage reversing starters

Class 8736 Type S reversing magnetic starters are used for full-voltage starting, stopping and reversing of a.c. squirrel-cage motors. Class 8736 starters consist of one Class 8502 contactor and one Class 8536 starter mechanically and electrically interlocked. Open-type devices, Sizes 0 to 5, are available in either horizontal or vertical arrangements. Sizes 00, 6 and 7 are available as horizontal only. Enclosed devices use horizontally arranged components. Type S starters are designed for operation up to ~ 600 V, 50 to 60 Hz.

Characteristics

Environment

| Class | | | 8502, 8536, 8702, 8736 | | | | | | | | | |
|--|--|------------------|---------------------------|---|---|---|---|---|---|----|----------|--|
| Size | | | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Rated insulation voltage | | | | | | | | | | | | |
| Conforming to UL, CSA | | | V 600 | | | | | | | | | |
| Rated impulse withstand voltage | | | | | | | | | | | | |
| | | | kV 5 10 18 | | | | | | | | | |
| Conforming to standards | | | NEMA ICS-1, ICS-2, UL 508 | | | | | | | | | |
| Product certifications | | | | | | | | | | | | |
| Type S magnetic contactors and starters | | UL | Yes | | | | | | | | | |
| | | CSA | Yes | | | | | | | | | |
| | | CE | Yes | | | | | | | No | | |
| Ambient air temperature around the device | | Storage | °C 0...40 | | | | | | | | | |
| | | Operation | °C 0...40 | | | | | | | | | |
| Maximum operating altitude | | Without derating | m 1300 | | | | | | | | | |
| Operating position (1) | | Without derating | ± 90° | | | | | | | | Vertical | |

(1) ± 90° degrees possible in relation to normal vertical mounting plane.

Characteristics (continued)

Pole characteristics

| Class | | 8502, 8536, 8702, 8736 | | | | | | | | | |
|------------------------------------|----------------------------|------------------------|----|----|----|-----|-----|-----|-----|-----|--|
| Size | | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Number of poles | 3-pole devices | 3 | | | | | | | | | |
| Rated operational voltage | Up to | V 600 | | | | | | | | | |
| Frequency limits | Of the operational current | Hz 50/60 | | | | | | | | | |
| Conventional rated thermal current | | A 9 | 18 | 27 | 45 | 90 | 135 | 270 | 540 | 810 | |
| Rated making capacity | At 600 V | 10 x rated current | | | | | | | | | |
| Rated breaking capacity | At 600 V | 10 x rated current | | | | | | | | | |
| Permissible short time rating | Service limit current | A 11 | 21 | 32 | 52 | 104 | 156 | 311 | 621 | 932 | |

a.c. control circuit characteristics

| Class | | 8502, 8536, 8702, 8736 | | | | | | | | | |
|-------------------------------|---------------------------|------------------------|------------|------------|-------------|-------------|-------------|---------|-------------|----------|--|
| Size | | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Rated control circuit voltage | | V 600 | | | | | | | | | |
| Average consumption 50 Hz | Inrush | VA N/A | 232 | 232 | 296 | 676 | 1260 | 1300 | 1495 (1) | – | |
| | Sealed | VA N/A | 26 | 26 | 36 | 47 | 89 | 14 | 56 (1) | – | |
| Average consumption 60 Hz | Inrush | VA 165 | 245 | 245 | 311 | 700 | 1185 | 1300 | 1780 (1) | 1960 (1) | |
| | Sealed | VA 33 | 27 | 27 | 37 | 46 | 85 | 14 | 48 (1) | 59 (1) | |
| Heat dissipation 50/60Hz | 50 Hz | W N/A | 7.7 | 7.7 | 12 | 15 | 23.4 | 13 | 27 | – | |
| | 60 Hz | W 6 | 7.8 | 7.8 | 14 | 14 | 22 | 13 | 32 | 36 | |
| Operating time (2) | Closing "C" | ms 9.1 - 23.2 | 8.4 - 20.1 | 8.4 - 20.1 | 14.6 - 27.6 | 17.3 - 32.3 | 13.0 - 43.9 | 40 - 60 | 57.0 - 74.0 | 43.8 | |
| | Opening "O" | ms 5.29 - 15.9 | 2.4 - 15.9 | 2.4 - 15.9 | 16.3 - 22.8 | 9.6 - 18.7 | 11.2 - 21.7 | 50 - 75 | 28.3 - 31.8 | 54.3 | |
| Mechanical life | In millions of op. cycles | 6 | 10 | 10 | 10 | 5 | 3 | 2 | 1.5 | 0.5 | |
| Maximum operating rate (3) | In op. cycles per hour | 9000 | 9000 | 9000 | 5400 | 4500 | 4500 | 180 | 180 | 180 | |

Power circuit connections (connection via lug)

| Type of lug | | Screw clamp terminal | | | Box lug | | | Parallel groove | | |
|------------------------|-------------------------------------|----------------------|--------|--------|---------|----------|-------------|-----------------|--------------------------------|--------------------------------|
| Wire sizes (Min./max.) | Solid or stranded copper wire (AWG) | #14-#8 | #14-#8 | #14-#8 | #14-#4 | #14-#1/0 | #8-250kcmil | #4-500kcmil | 1 or 2, 250-500kcmil per phase | 1 to 4, 250-500kcmil per phase |

Control circuit connections (connection via lug)

| Type of lug | | Screw clamp terminal |
|------------------------|-------------------------------------|----------------------|
| Wire sizes (Min./max.) | Solid or stranded copper wire (AWG) | #16-#12 |

(1) Size 6 and 7 have a d.c. coil. The values shown are for the a.c. input to the d.c. power supply that provides power to the coil.

(2) The closing time "C" is measured from the moment that the coil supply is switched on to the initial contact of the main poles. The opening time "O" is measured from the moment that the coil supply is switched off to the moment that the main poles separate.

(3) Operating cycles are without a load (mechanical life).

Contactors and Starters

Type S, NEMA-style

Contactors Class 8502

1

591007



8502 SCO 2 ●●●

3-pole contactors

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Continuous current ratings A | Enclosure type (1) | Basic reference Add code indicating control circuit voltage (2) and optional variants (3) | Weight kg (lb) |
|-----------|---|------|-------|-----|-------|------|-------|------|---------------------------------|--------------------|---|-------------------|
| | Motor volts | | | | | | | | | | | |
| | 200 V | | 230 V | | 460 V | | 575 V | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | | | | |
| 00 | 1.5 | 1.1 | 1.5 | 1.1 | 2 | 1.5 | 2 | 1.5 | 9 | Open | 8502 SAO 12 ●●● | 2 (4) |
| | | | | | | | | | | NEMA 1 | 8502 SAG 12 ●●● | 3 (7.5) |
| | | | | | | | | | | NEMA 12 | 8502 SBA 2 ●●● | 7 (15) |
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | 18 | Open | 8502 SBO 2 ●●● | 2 (4) |
| | | | | | | | | | | NEMA 1 | 8502 SBG 2 ●●● | 3 (7.5) |
| | | | | | | | | | | NEMA 12 | 8502 SBA 2 ●●● | 7 (15) |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | 27 | Open | 8502 SCO 2 ●●● | 2 (4) |
| | | | | | | | | | | NEMA 1 | 8502 SCG 2 ●●● | 3 (7.5) |
| | | | | | | | | | | NEMA 12 | 8502 SCA 2 ●●● | 7 (15) |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | 45 | Open | 8502 SDO 2 ●●● | 3 (6.75) |
| | | | | | | | | | | NEMA 1 | 8502 SDG 2 ●●● | 7 (14.5) |
| | | | | | | | | | | NEMA 12 | 8502 SDA 2 ●●● | 10 (22) |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | 90 | Open | 8502 SEO 2 ●●● | 6 (14) |
| | | | | | | | | | | NEMA 1 | 8502 SEG 2 ●●● | 15 (34) |
| | | | | | | | | | | NEMA 12 | 8502 SEA 2 ●●● | 29 (65) |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | 135 | Open | 8502 SFO 2 ●●● | 8 (18) |
| | | | | | | | | | | NEMA 1 | 8502 SFG 2 ●●● | 24 (52) |
| | | | | | | | | | | NEMA 12 | 8502 SFA 2 ●●● | 31 (69) |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | 270 | Open | 8502 SGO 2 ●●● | 20 (45) |
| | | | | | | | | | | NEMA 1 | 8502 SGG 2 ●●● | 65 (143) |
| | | | | | | | | | | NEMA 12 | 8502 SGA 2 ●●● | 72 (160) |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | 540 | Open | 8502 SHO 2 ●●● | 32 (80) |
| | | | | | | | | | | NEMA 1 | 8502 SHG 2 ●●● | 103 (226) |
| | | | | | | | | | | NEMA 12 | 8502 SHA 2 ●●● | 103 (228) |
| 7 | – | – | 300 | 220 | 600 | 450 | 600 | 450 | 810 | Open | 8502 SJO 2 ●●● | 61 (135) |
| | | | | | | | | | | NEMA 1 | 8502 SJG 2 ●●● | 154 (340) |
| | | | | | | | | | | NEMA 12 | 8502 SJA 2 ●●● | 196 (433) |

(1) Open: no enclosure ("O").

NEMA 1: General purpose enclosure ("G").

NEMA 12: Dust-tight and drip-tight industrial-use enclosure ("A").

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | – | V02 | – | – | V03 | – | V05 | V06 | – | V07 | – |
| 60 Hz | V01 | – | V02 | V08 | – | V03 | – | – | V06 | – | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: 8502 SAO 12 V01S.

(3) For optional variants, see pages 1/10 to 1/13.

Contactors and Starters

Type S, NEMA-style

Reversing contactors Class 8702

851010



8702 SAO 4 ●●●
(horizontal type)

3-pole reversing contactors

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Continuous current ratings A | Enclosure type (1) | Basic reference Add code indicating control circuit voltage (2) and optional variants (3) | Weight kg (lb) | |
|-----------|---|------|-------|-----|-------|------|-------|------|---------------------------------|----------------------|---|-------------------|-----------|
| | Motor volts | | | | | | | | | | | | |
| | 200 V | | 230 V | | 460 V | | 575 V | | | | | | |
| hp | kW | hp | kW | hp | kW | hp | kW | A | | | | | |
| 00 | 1.5 | 1.1 | 1.5 | 1.1 | 2 | 1.5 | 2 | 1.5 | 9 | Open/Horizontal Type | 8702 SAO 4 ●●● | 5 (12) | |
| | | | | | | | | | | | NEMA 1 | 8702 SAG 4 ●●● | 7 (16) |
| | | | | | | | | | | | NEMA 12 | 8702 SBA 4 ●●● | 10 (23) |
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | 18 | Open/Vertical Type | 8702 SBO 12 ●●● | 5 (12) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SBO 4 ●●● | 5 (12) |
| | | | | | | | | | | | NEMA 1 | 8702 SBG 4 ●●● | 7 (16) |
| | | | | | | | | | | NEMA 12 | 8702 SBA 4 ●●● | 10 (23) | |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | 27 | Open/Vertical Type | 8702 SCO 7 ●●● | 5 (12) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SCO 8 ●●● | 5 (12) |
| | | | | | | | | | | | NEMA 1 | 8702 SCG 8 ●●● | 7 (16) |
| | | | | | | | | | | NEMA 12 | 8702 SCA 4 ●●● | 10 (23) | |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | 45 | Open/Vertical Type | 8702 SDO 1 ●●● | 7 (16) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SDO 2 ●●● | 7 (16) |
| | | | | | | | | | | | NEMA 1 | 8702 SDG 2 ●●● | 11 (24) |
| | | | | | | | | | | NEMA 12 | 8702 SDA 1 ●●● | 14 (31) | |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | 90 | Open/Vertical Type | 8702 SEO 1 ●●● | 15 (35) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SEO 2 ●●● | 15 (35) |
| | | | | | | | | | | | NEMA 1 | 8702 SEG 2 ●●● | 43 (95) |
| | | | | | | | | | | NEMA 12 | 8702 SEA 1 ●●● | 44 (96) | |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | 135 | Open/Vertical Type | 8702 SFO 1 ●●● | 20 (45) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SFO 3 ●●● | 20 (45) |
| | | | | | | | | | | | NEMA 1 | 8702 SFG 3 ●●● | 43 (95) |
| | | | | | | | | | | NEMA 12 | 8702 SFA 1 ●●● | 44 (96) | |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | 270 | Open/Vertical Type | 8702 SGO 1 ●●● | 44 (98) | |
| | | | | | | | | | | | Open/Horizontal Type | 8702 SGO 3 ●●● | 44 (98) |
| | | | | | | | | | | | NEMA 1 | 8702 SGG 3 ●●● | 135 (298) |
| | | | | | | | | | | NEMA 12 | 8702 SGA 1 ●●● | 137 (302) | |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | 540 | Open/Horizontal Type | 8702 SHO 1 ●●● | 88 (195) | |
| | | | | | | | | | | | NEMA 1 | 8702 SHG 1 ●●● | 181 (400) |
| | | | | | | | | | | | NEMA 12 | 8702 SHA 1 ●●● | 222 (490) |
| 7 | – | – | 300 | 220 | 600 | 450 | 600 | 450 | 810 | Open/Horizontal Type | 8702 SJO 1 ●●● | 141 (310) | |
| | | | | | | | | | | | NEMA 1 | 8702 SJG 1 ●●● | 233 (514) |
| | | | | | | | | | | | NEMA 12 | 8702 SJA 1 ●●● | 275 (607) |

(1) Open: no enclosure ("O").

NEMA 1: General purpose enclosure ("G").

NEMA 12: Dust-tight and drip-tight industrial-use enclosure ("A").

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | – | V02 | – | – | V03 | – | V05 | V06 | – | V07 | – |
| 60 Hz | V01 | – | V02 | V08 | – | V03 | – | – | V06 | – | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: 8702 SAO 4 V01S.

(3) For optional variants, see pages 1/10 to 1/13.

Contactors and Starters

Type S, NEMA-style Starters Class 8536

1

531008



8536 SAO 12 V02 H20

3-pole starters

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Contin-uous current ratings A | Enclosure type (1) | Basic reference Add code indicating control circuit voltage (2) and optional variants (3) and "H" code (4) | Weight kg (lb) |
|-----------|---|------|-------|-----|-------|------|-------|------|----------------------------------|---------------------------|--|------------------------------------|
| | Motor volts | | | | | | | | | | | |
| | 200 V | | 230 V | | 460 V | | 575 V | | | | | |
| hp | kW | hp | kW | hp | kW | hp | kW | | | | | |
| 00 | 1.5 | 1.1 | 1.5 | 1.1 | 2 | 1.5 | 2 | 1.5 | 9 | Open NEMA 1 NEMA 12 | 8536 SAO 12 (2) (3) (4) 8536 SAG 12 (2) (3) (4) 8536 SBA 2 (2) (3) (4) | 2 (4) 3 (8) 7 (16) |
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | 18 | Open NEMA 1 NEMA 12 | 8536 SBO 2 (2) (3) (4) 8536 SBG 2 (2) (3) (4) 8536 SBA 2 (2) (3) (4) | 2 (4) 4 (8) 7 (16) |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | 27 | Open NEMA 1 NEMA 12 | 8536 SCO 3 (2) (3) (4) 8536 SCG 3 (2) (3) (4) 8536 SCA 3 (2) (3) (4) | 2 (4) 3 (8) 7 (16) |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | 45 | Open NEMA 1 NEMA 12 | 8536 SDO 1 (2) (3) (4) 8536 SDG 1 (2) (3) (4) 8536 SDA 1 (2) (3) (4) | 3 (6.75) 7 (15.5) 10 (23) |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | 90 | Open NEMA 1 NEMA 12 | 8536 SEO 1 (2) (3) (4) 8536 SEG 1 (2) (3) (4) 8536 SEA 1 (2) (3) (4) | 6 (14) 17 (37) 31 (68) |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | 135 | Open NEMA 1 NEMA 12 | 8536 SFO 1 (2) (3) (4) 8536 SFG 1 (2) (3) (4) 8536 SFA 1 (2) (3) (4) | 8 (18) 25 (56) 33 (73) |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | 270 | Open NEMA 1 NEMA 12 | 8536 SGO 1 (2) (3) (4) 8536 SGG 1 (2) (3) (4) 8536 SGA 1 (2) (3) (4) | 20 (45) 73 (160) 80 (177) |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | 540 | Open NEMA 1 NEMA 12 | 8536 SHO 2 (2) (3) (4) 8536 SHG 2 (2) (3) (4) 8536 SHA 2 (2) (3) (4) | 32 (80) 105 (231) 106 (233) |
| 7 | - | - | 300 | 220 | 600 | 450 | 600 | 450 | 810 | Open NEMA 1 NEMA 12 | 8536 SJO 2 (2) (3) (4) 8536 SJG 2 (2) (3) (4) 8536 SJA 2 (2) (3) (4) | 61 (135) 130 (287) 140 (309) |

(1) Open: no enclosure ("O").

NEMA 1: General purpose enclosure ("G").

NEMA 12: Dust-tight and drip-tight industrial-use enclosure ("A").

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | - | V02 | - | - | V03 | - | V05 | V06 | - | V07 | - |
| 60 Hz | V01 | - | V02 | V08 | - | V03 | - | - | V06 | - | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: 8536 SAO 12 V01 H10S.

(3) For optional variants, see pages 1/10 to 1/13.

(4) To complete the "H" code for solid-state overload relays, see page 1/10.

531011

8736 SAO 16 V02 H20
(vertical type)

3-pole reversing starters

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Contin-uous current ratings A | Enclosure type (1) | Basic reference Add code indicating control circuit voltage (2) and optional variants (3) and "H" code (4) | Weight kg (lb) |
|-----------|---|------|-------|-----|-------|------|-------|------|----------------------------------|----------------------|--|-------------------|
| | Motor volts | | | | | | | | | | | |
| | 200 V | | 230 V | | 460 V | | 575 V | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | | | | |
| 00 | 1.5 | 1.1 | 1.5 | 1.1 | 2 | 1.5 | 2 | 1.5 | 9 | Open/Horizontal Type | 8736 SAO 16 (2) (3) (4) | 6 (13) |
| | | | | | | | | | | NEMA 1 | 8736 SAG 16 (2) (3) (4) | 8 (17) |
| | | | | | | | | | | NEMA 12 | 8736 SBA 4 (2) (3) (4) | 11 (24) |
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | 18 | Open/Vertical Type | 8736 SBO 10 (2) (3) (4) | 6 (13) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SBO 4 (2) (3) (4) | 6 (13) |
| | | | | | | | | | | NEMA 1 | 8736 SBG 4 (2) (3) (4) | 8 (17) |
| | | | | | | | | | | NEMA 12 | 8736 SBA 4 (2) (3) (4) | 11 (24) |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | 27 | Open/Vertical Type | 8736 SCO 7 (2) (3) (4) | 6 (13) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SCO 8 (2) (3) (4) | 6 (13) |
| | | | | | | | | | | NEMA 1 | 8736 SCG 8 (2) (3) (4) | 8 (17) |
| | | | | | | | | | | NEMA 12 | 8736 SCA 4 (2) (3) (4) | 11 (24) |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | 45 | Open/Vertical Type | 8736 SDO 1 (2) (3) (4) | 8 (18) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SDO 2 (2) (3) (4) | 8 (18) |
| | | | | | | | | | | NEMA 1 | 8736 SDG 2 (2) (3) (4) | 11 (25) |
| | | | | | | | | | | NEMA 12 | 8736 SDA 1 (2) (3) (4) | 15 (32) |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | 90 | Open/Vertical Type | 8736 SEO 1 (2) (3) (4) | 17 (38) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SEO 2 (2) (3) (4) | 17 (38) |
| | | | | | | | | | | NEMA 1 | 8736 SEG 2 (2) (3) (4) | 44 (98) |
| | | | | | | | | | | NEMA 12 | 8736 SEA 1 (2) (3) (4) | 45 (99) |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | 135 | Open/Vertical Type | 8736 SFO 1 (2) (3) (4) | 22 (48) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SFO 3 (2) (3) (4) | 22 (48) |
| | | | | | | | | | | NEMA 1 | 8736 SFG 3 (2) (3) (4) | 44 (98) |
| | | | | | | | | | | NEMA 12 | 8736 SFA 1 (2) (3) (4) | 45 (99) |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | 270 | Open/Vertical Type | 8736 SGO 1 (2) (3) (4) | 52 (115) |
| | | | | | | | | | | Open/Horizontal Type | 8736 SGO 3 (2) (3) (4) | 52 (115) |
| | | | | | | | | | | NEMA 1 | 8736 SGG 3 (2) (3) (4) | 143 (315) |
| | | | | | | | | | | NEMA 12 | 8736 SGA 1 (2) (3) (4) | 145 (319) |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | 540 | Open/Horizontal Type | 8736 SHO 1 (2) (3) (4) | 91 (200) |
| | | | | | | | | | | NEMA 1 | 8736 SHG 1 (2) (3) (4) | 184 (405) |
| | | | | | | | | | | NEMA 12 | 8736 SHA 1 (2) (3) (4) | 225 (495) |
| 7 | – | – | 300 | 220 | 600 | 450 | 600 | 450 | 810 | Open/Horizontal Type | 8736 SJO 1 (2) (3) (4) | 143 (315) |
| | | | | | | | | | | NEMA 1 | 8736 SJG 1 (2) (3) (4) | 236 (521) |
| | | | | | | | | | | NEMA 12 | 8736 SJA 1 (2) (3) (4) | 280 (618) |

(1) Open: no enclosure ("O").

NEMA 1: General purpose enclosure ("G").

NEMA 12: Dust-tight and drip-tight industrial-use enclosure ("A").

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | – | V02 | – | – | V03 | – | V05 | V06 | – | V07 | – |
| 60 Hz | V01 | – | V02 | V08 | – | V03 | – | – | V06 | – | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: 8736 SAO 16 V01 H10S.

(3) For optional variants, see pages 1/10 to 1/13.

(4) To complete the "H" code for solid-state overload relays, see page 1/10.

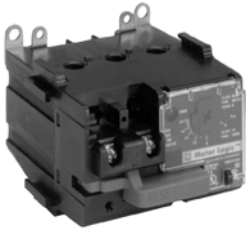
Contactors and Starters

Type S, NEMA-style

Variants – Motor Logic® Overload Relay

1

551123



H10

Variants – Motor Logic solid-state overload relays

| Type | For use on | | Description | Overload relay range | Suffix to the starter reference (1) | Weight kg (lb) |
|---|------------|-----------------------|--------------------------|----------------------|-------------------------------------|----------------|
| | Class | Enclosure Type | | | | |
| Motor Logic solid state overload relays (no additional auxiliary contact) | 8536, 8736 | Open, NEMA 1, NEMA 12 | Base unit, trip class 10 | (2) | H10 | – |
| | | | Base unit, trip class 20 | (2) | H20 | – |
| | | | Feature unit | (2) | H30 | – |
| Motor Logic solid state overload relays (with additional auxiliary contact) | 8536, 8736 | Open, NEMA 1, NEMA 12 | Base unit, trip class 10 | (2) | H11 | – |
| | | | Base unit, trip class 20 | (2) | H21 | – |
| | | | Feature unit | (2) | H31 | – |

(1) Example: 8536 SAO 12 V01 H10.

(2) Standard current ranges, depending on contactor size:

| Size | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------------------|-------|--------|--------|---------|---------|----------|----------|-----------|-----------|
| Current ranges A | 3...9 | 6...18 | 9...27 | 15...45 | 30...90 | 40...135 | 90...270 | 180...540 | 270...810 |
| | | | | | | | | (3) | (4) |

(3) Only available with feature unit.

(4) Only available with feature unit with auxiliary contact.

Associations

| Contactor Size | Trip type | Motor Logic solid-state overload relays | | | | | | | | | | | |
|----------------|--------------------------|---|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|------------------------|------|
| | | No auxiliary contact | | With auxiliary contact | | No auxiliary contact | | With auxiliary contact | | No auxiliary contact | | With auxiliary contact | |
| 00 | Class 10 | Size 00C (3–9 A) H10 H11 | | Size 00B (1.5–4.5 A) H108 H118 | | | | | | | | | |
| | Class 20 | H20 H21 | | H208 H218 | | | | | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | H308 H318 | | | | | | | | | |
| 0 | Class 10 | Size 0 (6–18 A) H10 H11 | | Size 00C (3–9 A) H109 H119 | | Size 00B (1.5–4.5 A) H108 H118 | | | | | | | |
| | Class 20 | H20 H21 | | H209 H219 | | H208 H218 | | | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | H309 H319 | | H308 H318 | | | | | | | |
| 1 | Class 10 | Size 1 (9–27 A) H10 H11 | | Size 0 (6–18 A) H100 H110 | | Size 00C (3–9 A) H109 H119 | | Size 00B (1.5–4.5 A) H108 H118 | | | | | |
| | Class 20 | H20 H21 | | H200 H210 | | H209 H219 | | H208 H218 | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | H300 H310 | | H309 H319 | | H308 H318 | | | | | |
| 2 | Class 10 | Size 2 (15–45 A) H10 H11 | | Size 1 (9–27 A) H101 H111 | | Size 0 (6–18 A) H100 H110 | | Size 00C (3–9 A) H109 H119 | | Size 00B (1.5–4.5 A) H108 H118 | | – | – |
| | Class 20 | H20 H21 | | H201 H211 | | H200 H210 | | H209 H219 | | H208 H218 | | – | – |
| | Class 10/20 (selectable) | H30 H31 | | H301 H311 | | H300 H310 | | H309 H319 | | H308 H318 | | H308 | H318 |
| 3 | Class 10 | Size 3 (30–90 A) H10 H11 | | | | | | | | | | | |
| | Class 20 | H20 H21 | | | | | | | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | | | | | | | | | | |
| 4 | Class 10 | Size 4 (45–135 A) H10 H11 | | Size 3 (30–90 A) H103 H113 | | | | | | | | | |
| | Class 20 | H20 H21 | | H203 H213 | | | | | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | H303 H313 | | | | | | | | | |
| 5 | Class 10 | Size 5 (90–270 A) H10 H11 | | | | | | | | | | | |
| | Class 20 | H20 H21 | | | | | | | | | | | |
| | Class 10/20 (selectable) | H30 H31 | | | | | | | | | | | |

Available codes

Not available

581202



B20

Variants – Motor Logic Plus solid-state overload relays

| Description | For use on Class/Enclosure type | Motor Logic Plus current ranges | Factory modification | Suffix to the starter reference (1) | Weight |
|--|---------------------------------|---------------------------------|-------------------------------|-------------------------------------|---------|
| | | | | | kg (lb) |
| Motor Logic Plus solid-state overload relays | 8536, 8736 Open type | 0.5...2.3 | No modification for 200–480 V | B20 | – |
| | | | No modification for 600 V | B24 | – |
| | | 2...9 | No modification for 200–480 V | B30 | – |
| | | | No modification for 600 V | B34 | – |
| | | 6...27 | No modification for 200–480 V | B40 | – |
| | | | No modification for 600 V | B44 | – |
| | | 10...45 | No modification for 200–480 V | B50 | – |
| | | | No modification for 600 V | B54 | – |
| | | 20...90 | No modification for 200–480 V | B60 | – |
| | | | No modification for 600 V | B64 | – |
| | | 60...135 | No modification for 200–480 V | B70 | – |
| | | | No modification for 600 V | B74 | – |
| | | 120...270 | No modification for 200–480 V | B80 | – |
| | | | No modification for 600 V | B84 | – |
| | | 240...540 | No modification for 200–480 V | B90 | – |
| | | | No modification for 600 V | B94 | – |

(1) Example: **8536 SAO 12 V01 B20S**.

Contactors and Starters

Type S, NEMA-style Variants

1

Variants – Operators

| Description | For use on | | Colour/Marking | Suffix to the contactor or starter reference (1) | Weight kg (lb) |
|---|------------------------|----------------|------------------------|--|----------------|
| | Class | Enclosure type | | | |
| Push buttons | 8502, 8536 | NEMA 1, 12 | "Start-Stop" | A | – |
| | 8702, 8736 | NEMA 1, 12 | "Forward-Reverse-Stop" | A1 | – |
| | | | "High-Low-Stop" | A2 | – |
| Pilot lights without operating interlock (2) | 8502, 8536, 8702, 8736 | NEMA 1 | Red | P1 | – |
| | | | Green | P2 | – |
| | | | Amber | P3 | – |
| | | | Clear | P4 | – |
| Push-to-test pilot lights without operating interlock (2) | 8502, 8536, 8702, 8736 | NEMA 12 | Red | P21 | – |
| | | | Green | P22 | – |
| | | | Amber | P23 | – |
| | | | Clear | P24 | – |
| | | | Yellow | P25 | – |
| LED pilot lights | 8502, 8536, 8702, 8736 | NEMA 1 | Red | P51 | – |
| | | | Green | P52 | – |
| | | | Yellow | P55 | – |
| Special wiring | 8502, 8536, 8702, 8736 | NEMA 1 | Red/"Off" | P71 | – |
| | | | Green/"On" | P72 | – |
| Selector switches | 8502, 8536, 8702, 8736 | NEMA 1, | "Hand-Off-Auto" | C | – |
| | | NEMA 12 | | | |
| | 8702, 8736 | NEMA 1, | "On-Off" | C6 | – |
| | | NEMA 12 | "Forward-Off-Reverse" | C14 | – |
| | | | "Forward-Reverse" | C20 | – |

Variants – Transformers

| Description | For use on | | Functions | Suffix to the contactor or starter reference (1) | Weight kg (lb) |
|---|------------------------|----------------|---------------------------------------|--|----------------|
| | Class | Enclosure type | | | |
| Separate control circuit | 8502, 8536, 8702, 8736 | NEMA 1, 12 | Specify voltage and frequency | S | – |
| Fused control circuit without transformer | 8502, 8536, 8702, 8736 | NEMA 1, 12 | One fuse | F | – |
| | | | Two fuses | F4 | – |
| Control circuit transformers standard capacity (50/60 Hz) (3) | 8502, 8536, 8702, 8736 | NEMA 1, 12 | Fuses: 2 (primary), 0 (secondary) | F4T (4) | – |
| | | | Fuses: 2 (primary), 1 (secondary) | FF4T | – |
| | | | Fuses: 1 (primary), 2 (secondary) (5) | F1F10T | – |
| | | | Fuses: 2 (primary), 2 (secondary) | F4F10T | – |
| Additional capacity (50/60 Hz) Two fuses in primary (3) | 8502, 8536, 8702, 8736 | NEMA 1, 12 | 100 VA additional capacity | F4T11 (6) | – |
| | | | 200 VA additional capacity | F4T12 (6) | – |
| Additional capacity (50/60 Hz) Two fuses in primary and one fuse in secondary (3) | 8502, 8536, 8702, 8736 | NEMA 1, 12 | 100 VA additional capacity | FF4T11 | – |

(1) Example: **8536 SAG 12 V01 A P1 P2**. All suffixes are listed in alphanumeric order after the voltage code.

(2) Unless otherwise requested, the standard practice is to wire the red pilot light to indicate that the device is energized. No additional auxiliary contact is required. Also, standard practice is to wire the green pilot light to indicate that the device is de-energized. An additional normally closed auxiliary contact is required; please consult your regional sales office.

(3) Control circuit transformer selection table:

| Primary-secondary | 120-24 (7) | 208-120 | 240-24 (7) | 240-120 | 277-120 | 480-24 (7) | 480-120 | 480-240 | 600-120 |
|-------------------|------------|---------|------------|---------|---------|------------|---------|---------|---------|
| 60 Hz | V89 | V84 | V82 | V80 | V85 | V83 | V81 | V87 | V86 |

Example: **8536 SAG 12 V81 F4T A P1 P2**.

(4) Not available with 24 V secondary on Size 3. Select appropriate transformer with secondary fuse protection. See transformer selection table.

(5) Single phase with one leg earthed, or earthed 3-phase applications only.

(6) Not available with 24 V secondary. Select appropriate transformer with secondary fuse protection. See transformer selection table for 24 V secondary restrictions.

(7) 24 V coils are not available on Sizes 4–7.

Contactors and Starters

Type S, NEMA-style Variants

Variants – Auxiliary contacts

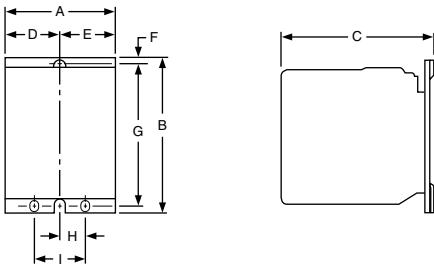
| Description | For use on | | Number of contacts | | | | Suffix to the contactor or starter reference | Weight kg (lb) | | | |
|---|------------|-----------------|--|------------|-------------------|-----|--|----------------|---|-------|---|
| | Class | Enclosure type | Forward contactor | | Reverse contactor | | | | | | |
| | | | N/O | N/C | N/O | N/C | | | | | |
| Auxiliary contacts for non-reversing contactors and non-reversing starters (1) | 8502, 8536 | NEMA 1, NEMA 12 | – | 1 | – | – | X01 | – | | | |
| | | | – | 2 | – | – | X02 | – | | | |
| | | | – | 3 | – | – | X03 | – | | | |
| | | | – | 4 | – | – | X04 | – | | | |
| | | | 1 | – | – | – | X10 | – | | | |
| | | | – | 1 | – | – | X11 | – | | | |
| | | | – | 2 | – | – | X12 | – | | | |
| | | | – | 3 | – | – | X13 | – | | | |
| | | | 2 | – | – | – | X20 | – | | | |
| | | | – | 1 | – | – | X21 | – | | | |
| | | | – | 2 | – | – | X22 | – | | | |
| | | | 3 | – | – | – | X30 | – | | | |
| | | | – | 1 | – | – | X31 | – | | | |
| | | | 4 | – | – | – | X40 | – | | | |
| | | | Auxiliary contacts standard no additional auxiliary contacts for reversing contactors and reversing starters | 8702, 8736 | NEMA 1, NEMA 12 | 1 | – | – | – | X1000 | – |
| | | | | | | – | 1 | – | – | X0100 | – |
| 2 | – | – | | | | – | X2000 | – | | | |
| 1 | 1 | – | | | | – | X1100 | – | | | |
| – | 2 | – | | | | – | X0200 | – | | | |
| – | – | 1 | | | | – | X0010 | – | | | |
| 1 | – | 1 | | | | – | X1010 | – | | | |
| – | 1 | 1 | | | | – | X0110 | – | | | |
| 2 | – | 1 | | | | – | X2010 | – | | | |
| 1 | 1 | 1 | | | | – | X1110 | – | | | |
| – | 2 | 1 | | | | – | X0210 | – | | | |
| – | – | – | | | | 1 | X0001 | – | | | |
| 1 | – | – | | | | 1 | X1001 | – | | | |
| – | 1 | – | | | | 1 | X0101 | – | | | |
| 2 | – | – | | | | 1 | X2001 | – | | | |
| 1 | 1 | – | | | | 1 | X1101 | – | | | |
| – | 2 | – | | | | 1 | X0201 | – | | | |
| – | – | 2 | | | | – | X0020 | – | | | |
| 1 | – | 2 | | | | – | X1020 | – | | | |
| – | 1 | 2 | | | | – | X0120 | – | | | |
| 2 | – | 2 | | | | – | X2020 | – | | | |
| 1 | 1 | 2 | | | | – | X1120 | – | | | |
| – | 2 | 2 | | | | – | X0220 | – | | | |
| – | – | 1 | | | | 1 | X0011 | – | | | |
| 1 | – | 1 | | | | 1 | X1011 | – | | | |
| – | 1 | 1 | | | | 1 | X0111 | – | | | |
| 2 | – | 1 | | | | 1 | X2011 | – | | | |
| 1 | 1 | 1 | | | | 1 | X1111 | – | | | |
| – | 2 | 1 | | | | 1 | X0211 | – | | | |
| – | – | – | | | | 2 | X0002 | – | | | |
| 1 | – | – | | | | 2 | X1002 | – | | | |
| – | 1 | – | | | | 2 | X0102 | – | | | |
| 2 | – | – | 2 | X2002 | – | | | | | | |
| 1 | 1 | – | 2 | X1102 | – | | | | | | |
| – | 2 | – | 2 | X0202 | – | | | | | | |

(1) Maximum number of external auxiliary units (in addition to holding circuit contact):

| Class 8502/8536/8702/8736 | Maximum number |
|--------------------------------------|---|
| ●●●● SA | 4 N/O or N/C, if second internal auxiliary contact is not used |
| ●●●● SB/SC/SD | 4 N/O or N/C |
| | 2 N/O or N/C plus 1 power-pole adder (single- or 2-pole, N/O or N/C) |
| | 1 attached timer plus 1 power-pole adder (single- or 2-pole, N/O or N/C) plus 1 auxiliary contact |
| ●●●● SE/SF/SG (Size 3 and Size 4) | 4 N/O or N/C |
| ●●●● SE/SF/SG (Size 5) | 2 N/O or N/C plus 1 NEMA Size 0–1 or Size 2 power-pole adder (single- or 2-pole, N/O or N/C) |
| ●●●● SH/SJ | 4 N/O or N/C |
| | 2 N/O or N/C plus 1 NEMA Size 0–1 or Size 2 power-pole adder (single- or 2-pole, N/O or N/C) |

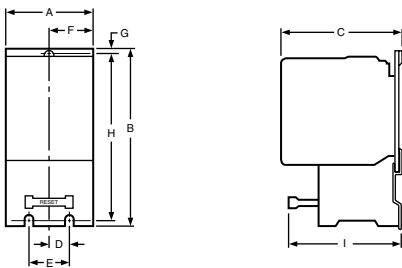
Dimensions in mm (25.4 mm = 1 inch)

Contactors 8502 S●O (Open)



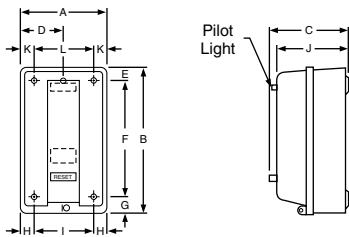
| | A | B | C | D | E | F | G | H | I |
|----------|-------|-------|-------|------|-------|-------|-------|-------|-------|
| 8502 SAO | 81.5 | 110.2 | 106.9 | 41.3 | 41.3 | 5.3 | 99.8 | - | - |
| 8502 SBO | 81.5 | 110.2 | 106.9 | 41.3 | 41.3 | 5.3 | 99.8 | - | - |
| 8502 SCO | 81.5 | 110.2 | 106.9 | 41.3 | 41.3 | 5.3 | 99.8 | - | - |
| 8502 SDO | 125.2 | 130.2 | 125.2 | 54.6 | 54.6 | 5.3 | 116.6 | 13.5 | 26.9 |
| 8502 SEO | 138.7 | 180.1 | 165.1 | 47.6 | 89.7 | 7.9 | 153.2 | 82.6 | 120.7 |
| 8502 SFO | 152.4 | 207.8 | 165.1 | 52.3 | 99.8 | 7.9 | 177.8 | 91.2 | 134.9 |
| 8502 SGO | 220.0 | 312.7 | 222.3 | 82.6 | 147.6 | 15.9 | 282.6 | 120.7 | 184.2 |
| 8502 SHO | 267.7 | 712.7 | 228.6 | 89.7 | 185.7 | 128.5 | 471.4 | 120.7 | 184.2 |
| 8502 SJO | 267.7 | 946.2 | 276.1 | 89.7 | 185.7 | 183.1 | 568.3 | 120.7 | 184.2 |

Starters 8536 S●O (Open)

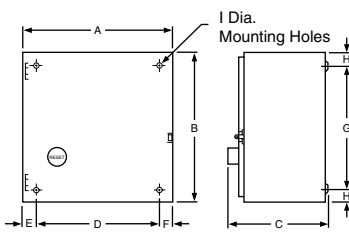


| | A | B | C | D | E | F | G | H | I |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 8536 SAO | 81.5 | 168.3 | 106.9 | 12.7 | 25.4 | 37.3 | 5.1 | 158.8 | 100.6 |
| 8536 SBO | 81.5 | 168.3 | 106.9 | 12.7 | 25.4 | 37.3 | 5.1 | 158.8 | 100.6 |
| 8536 SCO | 81.5 | 168.3 | 106.9 | 12.7 | 25.4 | 37.3 | 5.1 | 158.8 | 100.6 |
| 8536 SDO | 109.5 | 198.4 | 125.2 | 12.7 | 25.4 | 52.3 | 5.2 | 186.4 | 103.1 |
| 8536 SEO | 138.7 | 281.7 | 165.1 | 22.2 | 44.5 | 91.2 | 7.9 | 258.6 | 196.9 |
| 8536 SFO | 152.4 | 327.0 | 165.1 | 46.0 | 44.5 | 99.8 | 7.9 | 284.0 | 146.1 |
| 8536 SGO | 217.4 | 446.0 | 222.3 | 120.7 | 184.2 | 136.5 | 15.9 | 415.9 | 152.4 |
| 8536 SHO | 313.4 | 712.7 | 228.6 | 120.7 | 184.2 | 146.8 | 128.5 | 471.4 | 220.5 |
| 8536 SJO | 313.4 | 946.2 | 276.2 | 120.7 | 184.2 | 146.8 | 183.1 | 568.3 | 228.6 |

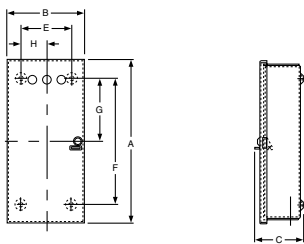
Contactors and starters 8502/8536 S●G (NEMA 1 General purpose enclosure)



| | A | B | C | C | D | E | F | G | H | I | J | K | L |
|------------------|-------|-------|-------|-------|------|------|-------|------|------|-------|-------|------|-------|
| 8502 8536 | | | | | | | | | | | | | |
| 8502/8536 SAG | 152.4 | 254.0 | 134.1 | 141.2 | 76.2 | 22.2 | 206.4 | 25.4 | 23.6 | 104.8 | 127.0 | - | - |
| 8502/8536 SBG | 152.4 | 254.0 | 134.1 | 141.2 | 76.2 | 22.2 | 206.4 | 25.4 | 23.6 | 104.8 | 127.0 | - | - |
| 8502/8536 SCG | 152.4 | 254.0 | 134.1 | 141.2 | 76.2 | 22.2 | 206.4 | 25.4 | 23.6 | 104.8 | 127.0 | - | - |
| 8502/8536 SDG | 198.4 | 322.1 | 153.2 | 160.3 | - | 32.5 | 266.7 | 27.7 | 27.7 | 142.9 | 146.1 | 27.7 | 142.9 |
| 8502/8536 SEG | 290.3 | 554.0 | 203.2 | 212.7 | - | 38.9 | 476.3 | 38.9 | 38.9 | 212.7 | 196.9 | 38.9 | 212.7 |



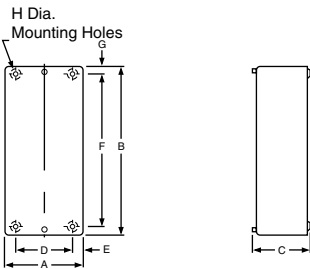
| | A | B | C | C | D | E | F | G | H | I |
|------------------|-------|--------|-------|-------|-------|------|------|--------|------|----|
| 8502 8536 | | | | | | | | | | |
| 8502/8536 SFG | 285.8 | 639 | 228.6 | 228.6 | 218.2 | 31.8 | 31.8 | 566.7 | 36.3 | 11 |
| 8502/8536 SGG | 437.1 | 1122.9 | 325.4 | 328.4 | 330.2 | 54.0 | 54.0 | 1016.0 | 54.0 | 14 |



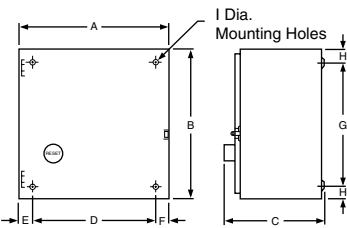
| | A | B | C | D | E | F | G | H |
|---------------|--------|-------|-------|---|-------|--------|------|-------|
| 8502/8536 SHG | 1670.1 | 513.3 | 333.4 | - | 279.4 | 1638.3 | 60.3 | 139.7 |
| 8502/8536 SJG | 2362.2 | 876.3 | 596.9 | - | - | - | - | - |

Dimensions in mm (25.4 mm = 1 inch)

Contactors and starters 8502/8536 S●G F4T (NEMA 1 General purpose enclosure with suffix F4T)



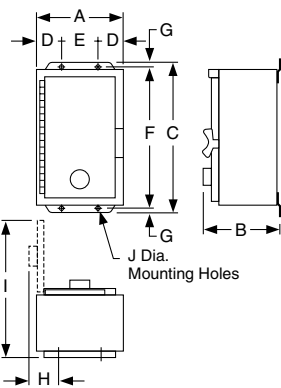
| (1) | A | B | C | C | D | E | F | G | H |
|-----------------------|-------|-------|-------|-------|-------|------|-------|------|-----|
| | | | 8502 | 8536 | | | | | |
| 8502/8536 SBG ●●● F4T | 161.0 | 403.2 | 127.0 | 141.2 | 118.1 | 21.3 | 365.1 | 19.1 | 7.1 |
| 8502/8536 SCG ●●● F4T | 161.0 | 403.2 | 127.0 | 141.2 | 118.1 | 21.3 | 365.1 | 19.1 | 7.1 |



| (1) | A | B | C | C | D | E | F | G | H | I |
|-----------------------|-------|-------|-------|-------|-------|------|------|-------|------|------|
| | | | 8502 | 8536 | | | | | | |
| 8502/8536 SDG ●●● F4T | 377.8 | 358.8 | 192 | 194.3 | 323.9 | 26.9 | 26.9 | 304.8 | 26.9 | 7.9 |
| 8502/8536 SFG ●●● F4T | 461.0 | 740.4 | 235.0 | 235.0 | 393.7 | 35.1 | 35.1 | 673.1 | 33.5 | 10.9 |

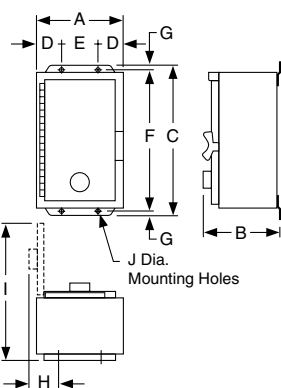
(1) For other products with form F4T:
 8502/8536 SEG ●●● F4T uses 9070 GO transformer (see dimensions page 1/14).
 8502/8536 SHG ●●● F4T and 8502/8536 SJG ●●● F4T are supplied as standard.

Contactors and starters 8502/8536 S●A (NEMA 12 Dust-tight enclosure)



| | A | B | C | D | E | F | G | H | I | J |
|---------------|-------|-------|--------|-------|-------|--------|------|-------|-------|------|
| 8502/8536 SBA | 161.9 | 216.7 | 323.9 | 39.6 | 82.6 | 304.8 | 9.5 | 90.4 | 311.2 | 7.9 |
| 8502/8536 SCA | 161.9 | 216.7 | 323.9 | 39.6 | 82.6 | 304.8 | 9.5 | 90.4 | 311.2 | 7.9 |
| 8502/8536 SDA | 206.4 | 235.7 | 406.4 | 39.6 | 127.0 | 381.0 | 12.7 | 90.4 | 390.5 | 7.9 |
| 8502/8536 SEA | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8502/8536 SFA | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8502/8536 SGA | 437.1 | 341.1 | 1193.8 | 104.8 | 228.6 | 1168.4 | 12.7 | 137.2 | 719.1 | 14.2 |
| 8502/8536 SHA | 513.3 | 330.2 | 1651.0 | 104.8 | 304.8 | 1625.6 | 12.7 | 163.3 | 784.2 | 17.3 |
| 8502/8536 SJA | 876.3 | 596.9 | 2362.2 | - | - | - | - | - | - | - |

Contactors and starters 8502/8536 S●A F4T (NEMA 12 Dust-tight enclosure with suffix F4T)

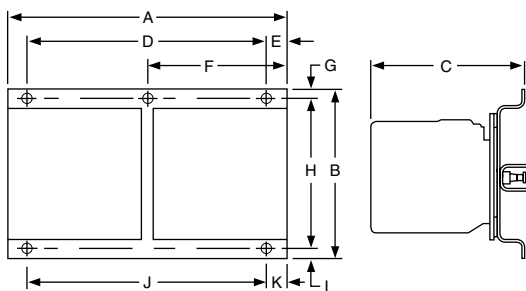


| (1) | A | B | C | D | E | F | G | H | I | J |
|-----------------------|-------|-------|--------|-------|-------|--------|------|-------|-------|------|
| 8502/8536 SBA ●●● F4T | 301.6 | 203.2 | 342.9 | 71.4 | 171.5 | 323.9 | 9.5 | 99.1 | 466.7 | 7.9 |
| 8502/8536 SCA ●●● F4T | 301.6 | 203.2 | 342.9 | 71.4 | 171.5 | 323.9 | 9.5 | 99.1 | 466.7 | 7.9 |
| 8502/8536 SDA ●●● F4T | 377.8 | 206.4 | 406.4 | 65.0 | 247.7 | 381.0 | 9.5 | 92.7 | 546.1 | 7.9 |
| 8502/8536 SEA ●●● F4T | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8502/8536 SFA ●●● F4T | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8502/8536 SGA ●●● F4T | 437.1 | 341.1 | 1193.8 | 104.8 | 228.6 | 1168.4 | 12.7 | 137.2 | 719.1 | 14.2 |

(1) 8502/8536 SHA ●●● F4T and 8502/8536 SJA ●●● F4T are supplied as standard.

Dimensions in mm (25.4 mm = 1 inch)

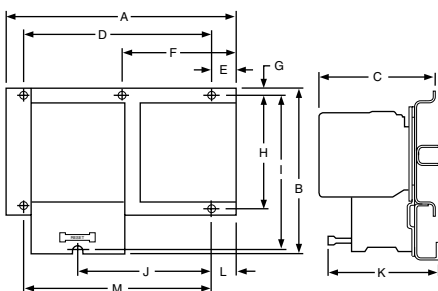
Reversing contactors and reversing starters 8702 S●O/8736 SJO (Open)



| Reference/Mounting (1) | A | B | C | D | E | F | G | H | I | J | K |
|------------------------|-------|-------|-------|-------|------|-------|------|-------|------|-------|------|
| 8702 SAO/Horizontal | 181.0 | 127.0 | 134.9 | – | – | 86.4 | 11.7 | 110.2 | 4.6 | 139.7 | 22.9 |
| 8702 SBO/Horizontal | 181.0 | 127.0 | 134.9 | – | – | 86.4 | 11.7 | 110.2 | 4.6 | 139.7 | 22.9 |
| 8702 SBO/Vertical | 138.7 | 233.9 | 134.9 | 127.8 | 5.3 | – | 15.5 | 203.2 | 15.5 | 127.8 | 5.3 |
| 8702 SCO/Horizontal | 181.0 | 127.0 | 134.9 | – | – | 86.4 | 11.7 | 110.2 | 4.6 | 139.7 | 22.9 |
| 8702 SCO/Vertical | 138.7 | 233.9 | 134.9 | 127.8 | 5.3 | – | 15.5 | 203.2 | 15.5 | 127.8 | 5.3 |
| 8702 SDO/Horizontal | 228.6 | 174.6 | 153.2 | – | – | 114.3 | 9.5 | 142.9 | 6.4 | 152.4 | 38.1 |
| 8702 SDO/Vertical | 171.5 | 288.9 | 153.2 | 158.8 | 6.4 | – | 12.7 | 263.5 | 12.7 | 158.8 | 6.4 |
| 8702 SEO/Horizontal | 322.8 | 202.2 | 177.8 | 298.5 | 12.2 | – | 12.2 | 177.8 | 12.2 | 298.5 | 12.2 |
| 8702 SEO/Vertical | 182.9 | 482.6 | 177.8 | 158.8 | 12.2 | – | 25.7 | 431.8 | 24.9 | 158.8 | 12.2 |
| 8702 SFO/Horizontal | 362.0 | 296.7 | 177.8 | 336.6 | 12.7 | – | 12.7 | 203.2 | 46.7 | 336.6 | 12.7 |
| 8702 SFO/Vertical | 202.2 | 607.1 | 177.8 | 177.8 | 12.2 | – | 46.0 | 514.4 | 30.0 | 177.8 | 12.2 |
| 8702 SGO/Horizontal | 490.5 | 411.0 | 238.1 | 457.2 | 16.5 | – | 26.2 | 355.6 | 29.2 | 457.2 | 16.5 |
| 8702 SGO/Vertical | 273.1 | 864.6 | 238.1 | 241.3 | 15.9 | – | 31.8 | 812.8 | 29.2 | 241.3 | 15.9 |
| 8702 SHO/Horizontal | 568.3 | 712.2 | 241.6 | 457.2 | 15.9 | – | 97.2 | 538.0 | 77.0 | 457.2 | 19.4 |
| 8702 SJO/Horizontal | 616.0 | 946.2 | 350.8 | 501.7 | 38.4 | – | – | 762.0 | – | – | – |
| 8736 SJO/Horizontal | 616.0 | 946.2 | 350.8 | 501.7 | 38.4 | – | – | 762.0 | – | – | – |

(1) Vertical type design differs from that shown on the corresponding NEMA size horizontal type figure, but dimensions listed apply to that figure.

Reversing contactors and reversing starters 8736 S●O (Open)

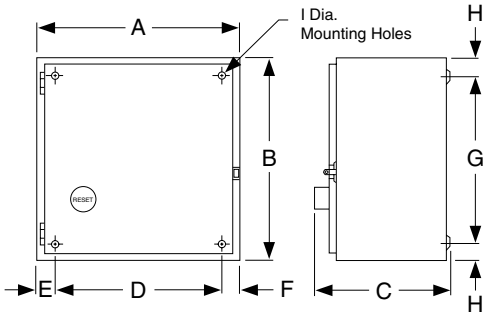


| Reference/Mounting (1) | A | B | C | D | E | F | G | H | I | J | K | L | M |
|------------------------|-------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|------|-------|
| 8736 SAO/Horizontal | 181.0 | 175.3 | 134.9 | – | – | 86.4 | 11.9 | 110.2 | 157.7 | 115.1 | 128.5 | 16.7 | – |
| 8736 SBO/Horizontal | 181.0 | 175.3 | 134.9 | – | – | 86.4 | 11.9 | 110.2 | 157.7 | 115.1 | 128.5 | 16.7 | – |
| 8736 SBO/Vertical | 138.9 | 292.4 | 134.9 | 127.8 | 5.3 | – | 15.5 | 203.2 | 271.8 | 63.8 | 128.5 | 5.3 | 127.8 |
| 8736 SCO/Horizontal | 181.0 | 175.3 | 134.9 | – | – | 86.4 | 11.9 | 110.2 | 157.7 | 115.1 | 128.5 | 16.7 | – |
| 8736 SCO/Vertical | 138.9 | 292.4 | 134.9 | 127.8 | 5.3 | – | 15.5 | 203.2 | 271.8 | 63.8 | 128.5 | 5.3 | 127.8 |
| 8736 SDO/Horizontal | 228.6 | 215.9 | 153.2 | – | – | 114.3 | 9.5 | 142.9 | 190.5 | 127.0 | 131.0 | 38.1 | – |
| 8736 SDO/Vertical | 171.5 | 342.4 | 153.2 | 158.8 | 6.4 | – | 19.8 | 263.5 | 329.2 | 79.4 | 131.0 | 6.4 | 152.4 |
| 8736 SEO/Horizontal | 322.8 | 297.4 | 177.8 | 298.5 | 12.2 | – | 12.2 | 273.1 | 273.1 | 298.5 | 158.8 | 12.2 | 298.5 |
| 8736 SEO/Vertical | 185.7 | 565.2 | 177.8 | 158.8 | 12.2 | – | 25.7 | 527.1 | – | 158.8 | 158.8 | 12.2 | 158.8 |
| 8736 SFO/Horizontal | 362.0 | 370.6 | 177.8 | 336.6 | 12.7 | – | 46.7 | 311.2 | 311.2 | 336.6 | 158.8 | 12.7 | 336.6 |
| 8736 SFO/Vertical | 202.2 | 662.4 | 177.8 | 177.8 | 12.2 | – | 46.7 | 622.3 | – | 102.6 | 158.8 | 12.2 | 177.8 |
| 8736 SGO/Horizontal | 490.5 | 530.9 | 238.1 | 457.2 | 16.5 | – | 32.5 | 482.6 | 482.6 | 457.2 | 168.3 | 15.9 | 457.2 |
| 8736 SGO/Vertical | 273.1 | 994.4 | 238.1 | 241.3 | 16.5 | – | 32.5 | 946.2 | 946.2 | 241.3 | 168.3 | 15.9 | 241.3 |
| 8736 SHO/Horizontal | 568.3 | 712.2 | 241.6 | 457.2 | 17.3 | – | 97.2 | 538.0 | 77.0 | 457.2 | 19.4 | – | – |

(1) Vertical type design differs from that shown on the corresponding NEMA size horizontal type figure, but dimensions listed apply to that figure.

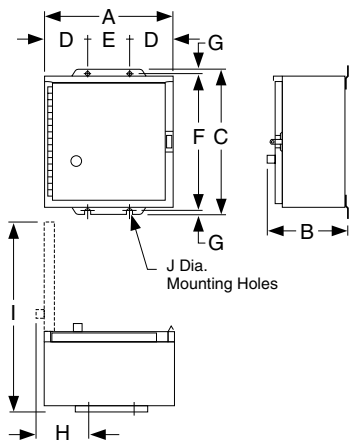
Dimensions in mm (25.4 mm = 1 inch)

Reversing contactors and reversing starters 8702/8736 S●G (NEMA 1 General purpose enclosure)



| | A | B | C | C | D | E | F | G | H | I |
|---------------|-------|--------|-------|-------|-------|------|------|--------|------|------|
| | | | 8702 | 8736 | | | | | | |
| 8702/8736 SAG | 301.6 | 301.6 | 188.0 | 191.3 | 247.7 | 26.9 | 26.9 | 247.7 | 26.9 | 7.9 |
| 8702/8736 SBG | 301.6 | 301.6 | 188.0 | 191.3 | 247.7 | 26.9 | 26.9 | 247.7 | 26.9 | 7.9 |
| 8702/8736 SCG | 301.6 | 301.6 | 188.0 | 191.3 | 247.7 | 26.9 | 26.9 | 247.7 | 26.9 | 7.9 |
| 8702/8736 SDG | 377.8 | 358.8 | 192.0 | 194.3 | 323.9 | 26.9 | 26.9 | 304.8 | 26.9 | 7.9 |
| 8702/8736 SEG | 461.0 | 740.6 | 235.0 | 235.0 | 393.7 | 33.7 | 33.7 | 673.1 | 33.7 | 11.1 |
| 8702/8736 SFG | 461.0 | 740.6 | 235.0 | 235.0 | 393.7 | 33.7 | 33.7 | 673.1 | 33.7 | 11.1 |
| 8702/8736 SGG | 894.3 | 1173.7 | 325.4 | 328.4 | 787.4 | 53.3 | 53.3 | 1066.8 | 53.3 | 14.2 |
| 8702/8736 SHG | 919.7 | 1582.7 | 494.3 | 494.3 | - | - | - | - | - | - |
| 8702/8736 SJG | 876.3 | 2362.2 | 596.9 | 596.9 | - | - | - | - | - | - |

Reversing contactors and reversing starters 8702/8736 S●A (NEMA 12 Dust-tight enclosure)



| (1) | A | B | C | D | E | F | G | H | I | J |
|---------------|-------|-------|--------|-------|-------|--------|------|-------|--------|------|
| 8702/8736 SBA | 301.6 | 196.9 | 349.3 | 65.0 | 171.5 | 323.9 | 12.7 | 92.7 | 460.4 | 7.9 |
| 8702/8736 SCA | 301.6 | 196.9 | 349.3 | 65.0 | 171.5 | 323.9 | 12.7 | 92.7 | 460.4 | 7.9 |
| 8702/8736 SDA | 377.8 | 200.0 | 406.4 | 65.0 | 247.7 | 381.0 | 12.7 | 92.7 | 539.8 | 7.9 |
| 8702 SEA | 461.2 | 235.0 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 93.5 | 678.4 | 10.9 |
| 8736 SEA | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8702 SFA | 461.2 | 235.0 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 93.5 | 678.4 | 10.9 |
| 8736 SFA | 461.0 | 242.8 | 800.1 | 78.0 | 304.8 | 774.7 | 12.7 | 114.3 | 678.4 | 10.9 |
| 8702 SGA | 889.5 | 333.4 | 1244.6 | 104.8 | 685.8 | 1219.2 | 12.7 | 134.9 | 1165.2 | 14.2 |
| 8736 SGA | 889.5 | 353.8 | 1244.6 | 104.8 | 685.8 | 1219.2 | 12.7 | 155.6 | 1165.2 | 14.2 |
| 8702/8736 SHA | 919.7 | 494.3 | 1580.1 | - | - | - | - | - | - | - |
| 8702/8736 SJA | 876.3 | 596.9 | 2362.2 | - | - | - | - | - | - | - |

(1) Standard enclosure has space for a fused control transformer, suffix F4T, on 8702/8736 SBA, 8702/8736 SCA, 8702/8736 SDA.

2 - Heavy Industrial Combination Starters, Type S, NEMA-Style

Selection guide page 2/2

- Starters with disconnect switch or circuit breaker
 - General, characteristics page 2/4
- Starters with fusible disconnect switch, Class 8538 with Class H fuse clips and solid-state overload relay
 - References page 2/6
- Starters with fusible disconnect switch, Class 8538 with Class R fuse clips
 - References page 2/7
- Starters with Mag-Gard® circuit breaker, Class 8539
 - References page 2/8
- Starters with thermal-magnetic circuit breaker, Class 8539
 - References page 2/10
- Starters with non-fusible disconnect switch, Class 8538
 - References page 2/12
- Starters with fusible disconnect switch and Class H fuse clips Class 8538
 - References page 2/13
- Starters with fusible disconnect switch (Class R fuse clips) and solid-state overload relay, Class 8538
 - Associations page 2/14
- Starters with fusible disconnect switch and solid-state overload relay, Class 8538
 - Associations page 2/15
- Starters with Mag-Gard® circuit breaker, Class 8539 and solid-state overload relay
 - Associations page 2/16
- Starters with thermal-magnetic circuit breaker and solid-state overload relay
 - Associations page 2/18
- Accessories
 - Characteristics page 2/20
 - References page 2/21
- Starters with disconnect switch or circuit breaker
 - Dimensions page 2/22



Combination Starters

Type S, NEMA-style starters with Disconnect switch or circuit breaker

Applications

Type S NEMA combination starters



NEMA Size

| 0 | 1 | 2 |
|---|---|---|
|---|---|---|

Standard motor power ratings 50/60 Hz

(1)

| |
|---------------|
| 200 V (208 V) |
| 230 V (240 V) |
| 460 V (480 V) |
| 575 V (500 V) |

Motor voltage (starter voltage)

| |
|--------------|
| 3 hp/2.2 kW |
| 3 hp/2.2 kW |
| 5 hp/3.75 kW |
| 5 hp/3.75 kW |

| |
|---------------|
| 7.5 hp/5.5 kW |
| 7.5 hp/5.5 kW |
| 10 hp/7.5 kW |
| 10 hp/7.5 kW |

| |
|---------------|
| 10 hp/7.5 kW |
| 15 hp/11 kW |
| 25 hp/18.5 kW |
| 25 hp/18.5 kW |

Enclosures

- NEMA 1: General purpose
- NEMA 12: Dust-tight for industrial use

| NEMA 1 | NEMA 12 |
|--------|---------|
|--------|---------|

| NEMA 1 | NEMA 12 |
|--------|---------|
|--------|---------|

| NEMA 1 | NEMA 12 |
|--------|---------|
|--------|---------|

Fusible disconnect-switch starters Class H fuse clips

Pages

| | |
|--------------|-------------|
| 8538 SBG 1 ● | 8538 SBA ●● |
| 2/6 | |

| | |
|--------------|-------------|
| 8538 SCG 1 ● | 8538 SCA ●● |
| 2/6 | |

| | |
|--------------|-------------|
| 8538 SDG 1 ● | 8538 SDA ●● |
| 2/6 | |

Fusible disconnect-switch starters Class R fuse clips

Pages

| | |
|--------------|-------------|
| 8538 SBG 3 ● | 8538 SBA ●● |
| 2/7 | |

| | |
|--------------|-------------|
| 8538 SCG 3 ● | 8538 SCA ●● |
| 2/7 | |

| | |
|--------------|-------------|
| 8538 SDG 3 ● | 8538 SDA ●● |
| 2/7 | |

Non-fusible disconnect-switch starters

Pages

| | |
|-------------|-------------|
| 8538 SBG 11 | 8538 SBA ●1 |
| 2/12 | |

| | |
|-------------|-------------|
| 8538 SCG 11 | 8538 SCA ●1 |
| 2/12 | |

| | |
|-------------|-------------|
| 8538 SDG 11 | 8538 SDA ●1 |
| 2/12 | |

Circuit-breaker starters

Pages

| | |
|--------------|-------------|
| 8539 SBG 4 ● | 8539 SBA ●● |
| 2/8 and 2/9 | |

| | |
|--------------|-------------|
| 8539 SCG 4 ● | 8539 SCA ●● |
| 2/8 and 2/9 | |

| | |
|--------------|-------------|
| 8539 SDG 4 ● | 8539 SDA ●● |
| 2/8 and 2/9 | |

Thermal-magnetic circuit-breaker starters

Pages

| | |
|---------------|-------------|
| 8539 SBG ● | 8539 SBA ●● |
| 2/10 and 2/11 | |

| | |
|---------------|-------------|
| 8539 SCG ● | 8539 SCA ●● |
| 2/10 and 2/11 | |

| | |
|---------------|-------------|
| 8539 SDG ● | 8539 SDA ●● |
| 2/10 and 2/11 | |

(1) For circuit-breaker starters and thermal-magnetic circuit-breaker starters, see pages 2/8 to 2/11.

Type S NEMA combination starters



| 3 | | 4 | | 5 | | 6 | | 7 | |
|--|----------------|--|----------------|---|----------------|--|----------------|--|-----------------|
| 25 hp/18.5 kW 30 hp/22 kW 50 hp/37 kW 50 hp/37 kW | | 40 hp/30 kW 50 hp/37 kW 100 hp/75 kW 100 hp/75 kW | | 75 hp/55 kW 100 hp/75 kW 200 hp/150 kW 200 hp/150 kW | | 150 hp/110 kW 200 hp/150 kW 400 hp/300 kW 400 hp/300 kW | | — 300 hp/220 kW 600 hp/450 kW 600 hp/450 kW | |
| NEMA 1 | NEMA 12 | NEMA 1 | NEMA 12 | NEMA 1 | NEMA 12 | NEMA 1 | NEMA 12 | NEMA 1 | NEMA 12 |
| 8538 SEG 1 ● | 8538 SEA ●● | 8538 SFG 1 ● | 8538 SFA ●● | 8538 SGG 1 ● | 8538 SGA ●● | 8538 SHG 1 ● | 8538 SHA ●● | — | — |
| 2/6 | | 2/6 | | 2/6 | | 2/6 | | — | |
| 8538 SEG 3 ● | 8538 SEA ●● | 8538 SFG 3 ● | 8538 SFA ●● | 8538 SGG 3 ● | 8538 SGA ●● | 8538 SHG 3 ● | 8538 SHA ●● | — | — |
| 2/7 | | 2/7 | | 2/7 | | 2/7 | | — | |
| 8538 SEG 11 ● | 8538 SEA ●1 | 8538 SFG 11 ● | 8538 SFA ●1 | 8538 SGG 11 ● | 8538 SGA ●1 | 8538 SHG 11 ● | 8538 SHA ●1 | — | — |
| 2/12 | | 2/12 | | 2/12 | | 2/12 | | — | |
| 8539 SEG 4 ● | 8539 SEA ●● | 8539 SFG 4 ● | 8539 SFA ●● | 8539 SGG 4 ● | 8539 SGA ●● | 8539 SHG 4 ● | 8539 SHA ●● | 8539 SJK 4 ● | 8539 SJA 5 ● |
| 2/8 and 2/9 | | 2/8 and 2/9 | | 2/8 and 2/9 | | 2/8 and 2/9 | | 2/8 and 2/9 | |
| 8539 SEG ● | 8539 SEA ●● | 8539 SFG ● | 8539 SFA ●● | 8539 SGG ● | 8539 SGA ●● | 8539 SHG ● | 8539 SHA ●● | 8539 SJK ● | 8539 SJA ●● |
| 2/10 and 2/11 | | 2/10 and 2/11 | | 2/10 and 2/11 | | 2/10 and 2/11 | | 2/10 and 2/11 | |

Combination Starters

Type S, NEMA-style starters with Disconnect switch or circuit breaker

General

Class 8538 and 8539 Type S combination starters combine the requirements of motor overload and short-circuit protection into one package. These starters are manufactured in accordance with NEMA standards and are UL listed. They are designed to operate up to ~ 600 V maximum, 50 to 60 Hz, and are available with solid-state overload relays.

Square D is one of the leaders in North America and Europe in providing starters that are verified by UL to comply with IEC 947-4-1 and Type 2 coordination. This means that the components of a motor branch circuit protective device (fuses and circuit-breaker), contactor and overload relay will be suitable for further use following a short-circuit fault allowing for replacement of components during normal scheduled maintenance. Class 8538 Type S combination starters, Sizes 0–5, with fusible disconnect switches, meet Type 2 performance criteria.

Disconnect-switch starters

Features:

- Interchangeable fuse clips, straight through wiring, solid earth/ground bar, space for a fused control transformer, provisions for adding disconnect switch electrical interlock, handle mechanism/door closing mechanism.

Switch-type combination starters are available with fusible or non-fusible disconnect switches in NEMA Sizes 0–6. The switch itself is constructed of a moulded, insulated material that delivers arc-quenching performance similar to that of high voltage switch-gear. The visible blade construction allows you to confirm the blade position at a glance. Many industries have standardized on this feature.

Sizes 0–2, non-fusible assemblies can be field converted to fusible designs easily and quickly. Factory-built fusible units accept the industry-standard Class H or R fuses. The various units have specific UL-listed short-circuit withstand ratings that range from 5000 to 100 000 A. Specific ratings are influenced by many components including the size of the disconnect switch and the type of fuses used with the switch.

Circuit-breaker starters

Features:

- Handle mechanism, door closing mechanism.

Options:

- Factory-installed auxiliary switch (provides remote indication of an open or tripped breaker), factory-supplied alarm switch (actuates bell alarms or warning light when breaker is tripped).

Square D provides both a thermal-magnetic circuit-breaker and a motor circuit protector in NEMA Sizes 0–7 for applications requiring a breaker-type combination starter. The most widely used over-current protection devices are thermal-magnetic circuit-breakers. Mag-Gard® motor circuit protectors are similar in construction, but provide only short-circuit protection. When Mag-Gard devices are used with motor starters, the adjustable instantaneous trip provides maximum motor protection based on specific amperage and application.

Type S combination starters using thermal-magnetic breakers carry a UL-listed short-circuit withstand rating from 5000 to 30 000 A. If a Mag-Gard Type GJL breaker is used, withstand ratings increase to 100 000 A. Specific ratings and listings may vary depending on the specific combination of components used in the assembly.



Fusible disconnect-switch combination starter



Circuit-breaker combination starter

Characteristics

Environment

| Class | 8538 | | | | | | | 8539 | | | | | | | | |
|---|---------|-----|---|---|----|---|----|---------|---|----|---|---|---|---|--------|--|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| Rated insulation voltage | | | | | | | | | | | | | | | | |
| Conforming to UL, CSA | V | 600 | | | | | | 600 | | | | | | | | |
| Rated impulse withstand voltage | | | | | | | | | | | | | | | | |
| Class H or Class K fuses | kV | 5 | | | 10 | | 18 | | – | | | | | | | |
| Class R fuses | kV | 100 | | | | | | | | | | | | | | |
| ITE circuit-breaker (FAL, KAL, LAL, MAL) | kV | – | | | | | | 10 | | | | | | – | | |
| ITE circuit-breaker (GJL) | kV | – | | | | | | 65 | | | | | | – | | |
| INST circuit-breaker (FAL, KAL, LAL, MAL) | kV | – | | | | | | 22 (1) | | 22 | | – | | | 30 (3) | |
| INST circuit-breaker (GJL) | kV | – | | | | | | 100 (2) | | – | | – | | | | |
| Product certifications | UL, CSA | | | | | | | | | | | | | | | |

(1) 22 kV rating for 0–480 V. 10 kV rating for 600 V.

(2) 100 kV rating for 0–480 V. 10 kV rating for 600 V.

(3) 30 kV rating for 0–480 V. 22 kV rating for 600 V.

Combination Starters

Type S, NEMA-style starters with Disconnect switch or circuit breaker



Electrical characteristics

UL-listed short-circuit ratings

| Size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|------------------------|--|---|--------|--------|---|--------|---|
| Disconnect-switch starters | 8538 S●G 1●/S●A | | | | | | | |
| NEMA fuse class | Class H | | | | | | | |
| Enclosure (1) | Standard | | | | | | | |
| Available Ampere RMS symmetrical | A | 5000 | | | 10 000 | | 18 000 | – |
| Disconnect-switch starters | 8538 S●G 3●/S●A | | | | | | | |
| NEMA fuse class | Class R | | | | | | | |
| Enclosure (1) | Standard | | | | | | | |
| Available Ampere RMS symmetrical | A | 100 000 | | | | | | – |
| Circuit-breaker starters | 8539 S●G 4●/S●A | | | | | | | |
| Enclosure (1) | Standard | | | | | | | |
| Available Ampere RMS symmetrical | A | With GJL circuit-breaker: 100 000 (voltage 0–480 V) 10 000 (voltage 481–600 V) | With GJL circuit-breaker: 100 000 (voltage 0–480 V) 10 000 (voltage 481–600 V) 22 000 (8539 SGG 4● S8 and 8539 SDA ●● S8) | 22 000 | | | | 30 000 (voltage 0–480 V) 22 000 (voltage 481–600 V) |
| Thermal-magnetic circuit-breaker starters | 8538 S●G ●/S●A | | | | | | | |
| Enclosure (1) | Standard | | | | | | | |
| Available Ampere RMS symmetrical | A | 5000 | | | 10 000 | | 18 000 | 30 000 (voltage 0–480 V) 22 000 (voltage 481–600 V) |

Mag-Gard trip range

| Circuit-breaker | GJL/FAL/KAL/LAL/MAL ●●●● M●● | | | | | | | |
|---------------------------------|-------------------------------------|----------------|--|--|-----------------|--|-----------------|--|
| Suffix number/trip range | A | M01 = 9–33 | | | 25M = 625–1250 | | 35M = 1750–3500 | |
| | | M02 = 21–77 | | | 26M = 750–1500 | | 36M = 2000–4000 | |
| | | M03 = 45–165 | | | 29M = 875–1750 | | 40M = 2500–5000 | |
| | | M04 = 90–330 | | | 30M = 1000–2000 | | 42M = 3000–6000 | |
| | | M05 = 150–550 | | | 31M = 1125–2250 | | 44M = 3500–7000 | |
| | | M06 = 225–825 | | | 32M = 1250–2500 | | | |
| | | 18M = 300–1100 | | | 33M = 1500–3000 | | | |

Terminals

| Size | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------|---|--|----------------------------------|---|---|---|---|-----------------------|
| Type | Line terminals on disconnect switch | | | | | | | |
| Type of lug | Box lug | | | | | | | |
| Wire | #14–#1/0 Cu/Al | | | | #6–300 MCM Cu/Al | One #4–500 MCM Cu | – | – |
| Switch | #14–#1/0 Cu/Al | | | | #14–#1/0 Cu/Al | One #4–500 MCM Cu | – | – |
| size min.–max. | #14–#4 Cu (2) #12–#4 Al or #14–#1/0 Cu #12–#1/0 Al #14–#1 Cu/#8–#1/0 Al (GJL Breaker) | #14–#1/0 Cu or #12–#1/0 Al #14–#1 Cu/#8–1/0 Al (GJL Breaker) | #14–#2 Cu #10–#2 Al (FA Brkr) | #4–300 MCM Cu/Al (KA Breaker) #14–#1 Cu/#8–#1/0 Al (GJL Breaker) | #14–#1/0 Cu #12–#1/0 Al (LA Brkr) #4–300 MCM Cu/Al (KA Breaker) | #4–300 MCM Cu/Al (KA Breaker) x1 #1–600 MCM or x2 #1–250 MCM Cu/Al (LA Breaker) | x1 #1–600 MCM or x2 #1–250 MCM Cu/Al (LA Breaker) or x3 #3/0–500 MCM Cu/Al (MA Breaker) | x3 #3/0–500 MCM Cu/Al |
| Type | Power terminals on magnetic starter | | | | | | | |
| Type of lug | Screw clamp terminal | Box lug | | | | | Parallel groove | |
| Wire | #14–#8 Cu | #14–#4 Cu | #14–#0 Cu | #8–250 MCM Cu | #4–500 MCM Cu | 250–500 MCM Cu (3) | 250–500 MCM Cu | 250–500 MCM Cu |
| Size min.–max. | | | | | | | | |
| Per terminal | 1 or 2 | 1 | | | | | 1 or 2 | 1–4 |
| Type | Control terminals on magnetic starter | | | | | | | |
| Type of lug | Screw clamp terminal | | | | | | | |
| Wire | #16–#12 Cu | | | | | | #16–#12 Cu (4) | #16–#12 Cu |
| Size min.–max. | | | | | | | | |
| Per terminal | 2 | | | | | | | |

(1) Standard enclosure includes non-oversize NEMA 1 and 12.
 (2) Use on FAL circuit-breakers rated 25 A or less.
 (3) Order Class 9999 Type SAL-16 parts kit to convert power terminals to accept wire sizes 1/0–300 MCM.
 (4) Terminal block range limited to #16–#14.

Combination Starters

Type S, NEMA-style starters with
Fusible disconnect switch, Class 8538
with Class H fuse clips and solid-state overload relay

551043



8538 SBG 12 ●●●

2

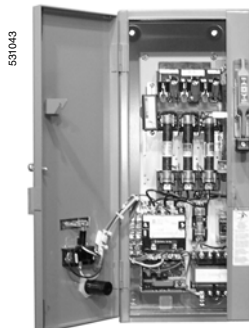
3-pole fusible full-voltage starters, non-reversing (Class H fuse clips)

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Fuse clip size | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and H code (4) | Weight |
|---|--|------|-----|------|-----|------|-----|------|----------------|----------------|---|-----------|
| | Motor volts (1) 200 V (208 V) 230 V (240 V) 460 V (480 V) 575 V (600 V) | | | | | | | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | A | | | kg (lb) |
| NEMA 1 general purpose enclosure | | | | | | | | | | | | |
| 0 | 3 | 2.2 | 3 | 2.2 | – | – | – | – | 30 | – | 8538 SBG 12 (2) (3) (4) | 17 (38) |
| | – | – | – | – | 5 | 3.75 | 5 | 3.75 | 30 | – | 8538 SBG 13 (2) (3) (4) | 17 (38) |
| 1 | 5 | 3.75 | 5 | 3.75 | – | – | – | – | 30 | – | 8538 SCG 12 (2) (3) (4) | 17 (38) |
| | – | – | – | – | 10 | 7.5 | 10 | 7.5 | 30 | – | 8538 SCG 14 (2) (3) (4) | 17 (38) |
| 2 | 7.5 | 5.5 | 7.5 | 5.5 | – | – | – | – | 60 | – | 8538 SCG 13 (2) (3) (4) | 17 (38) |
| | 10 | 7.5 | 15 | 11 | – | – | – | – | 60 | – | 8538 SDG 12 (2) (3) (4) | 25 (54) |
| 3 | – | – | – | – | 15 | 11 | 15 | 11 | 30 | – | 8538 SDG 16 (2) (3) (4) | 25 (54) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | – | 8538 SDG 14 (2) (3) (4) | 25 (54) |
| 4 | 20 | 15 | 25 | 18.5 | – | – | – | – | 100 | – | 8538 SEG 15 (2) (3) (4) | 46 (102) |
| | – | – | – | – | 50 | 37 | 50 | 37 | 100 | – | 8538 SEG 13 (2) (3) (4) | 46 (102) |
| 5 | 25 | 18.5 | 30 | 22 | – | – | – | – | 200 | – | 8538 SEG 12 (2) (3) (4) | 46 (102) |
| | 40 | 30 | 50 | 37 | – | – | – | – | 200 | – | 8538 SFG 15 (2) (3) (4) | 74 (163) |
| 6 | – | – | – | – | 100 | 75 | 100 | 75 | 200 | – | 8538 SFG 13 (2) (3) (4) | 74 (163) |
| | 75 | 55 | 100 | 75 | – | – | – | – | 400 | – | 8538 SGG 15 (2) (3) (4) | 204 (450) |
| 7 | – | – | – | – | 200 | 150 | 200 | 150 | 400 | – | 8538 SGG 13 (2) (3) (4) | 204 (450) |
| | 150 | 110 | 200 | 150 | – | – | – | – | 600 | – | 8538 SHG 13 (2) (3) (4) | 240 (530) |
| 8 | – | – | – | – | 400 | 300 | 400 | 300 | 600 | – | 8538 SHG 12 (2) (3) (4) | 240 (530) |
| | NEMA 12 dust-tight industrial-use enclosure | | | | | | | | | | | |
| 0 | 3 | 2.2 | 3 | 2.2 | – | – | – | – | 30 | With | 8538 SBA 22 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 5 | 3.75 | 5 | 3.75 | 30 | Without | 8538 SBA 12 (2) (3) (4) | 18 (40) |
| 1 | 5 | 3.75 | 5 | 3.75 | – | – | – | – | 30 | With | 8538 SBA 23 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 10 | 7.5 | 10 | 7.5 | 30 | Without | 8538 SBA 13 (2) (3) (4) | 18 (40) |
| 2 | 7.5 | 5.5 | 7.5 | 5.5 | – | – | – | – | 60 | With | 8538 SCA 22 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 10 | 7.5 | 10 | 7.5 | 30 | Without | 8538 SCA 12 (2) (3) (4) | 18 (40) |
| 3 | 10 | 7.5 | 15 | 11 | – | – | – | – | 60 | With | 8538 SCA 24 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 15 | 11 | 15 | 11 | 30 | Without | 8538 SCA 14 (2) (3) (4) | 18 (40) |
| 4 | 7.5 | 5.5 | 7.5 | 5.5 | – | – | – | – | 60 | With | 8538 SCA 23 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | Without | 8538 SCA 13 (2) (3) (4) | 18 (40) |
| 5 | 10 | 7.5 | 15 | 11 | – | – | – | – | 60 | With | 8538 SDA 22 (2) (3) (4) | 25 (55) |
| | – | – | – | – | 15 | 11 | 15 | 11 | 30 | Without | 8538 SDA 12 (2) (3) (4) | 25 (55) |
| 6 | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | With | 8538 SDA 26 (2) (3) (4) | 25 (55) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | Without | 8538 SDA 16 (2) (3) (4) | 25 (55) |
| 7 | 20 | 15 | 25 | 18.5 | – | – | – | – | 100 | With | 8538 SDA 24 (2) (3) (4) | 25 (55) |
| | – | – | – | – | 50 | 37 | 50 | 37 | 100 | Without | 8538 SDA 14 (2) (3) (4) | 25 (55) |
| 8 | 25 | 18.5 | 30 | 22 | – | – | – | – | 200 | With | 8538 SEA 25 (2) (3) (4) | 50 (111) |
| | – | – | – | – | 50 | 37 | 50 | 37 | 100 | Without | 8538 SEA 15 (2) (3) (4) | 50 (111) |
| 9 | – | – | – | – | 50 | 37 | 50 | 37 | 100 | With | 8538 SEA 23 (2) (3) (4) | 50 (111) |
| | 25 | 18.5 | 30 | 22 | – | – | – | – | 200 | Without | 8538 SEA 13 (2) (3) (4) | 50 (111) |
| 10 | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | With | 8538 SEA 22 (2) (3) (4) | 50 (111) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | Without | 8538 SEA 12 (2) (3) (4) | 50 (111) |
| 11 | 40 | 30 | 50 | 37 | – | – | – | – | 200 | With | 8538 SFA 25 (2) (3) (4) | 77 (170) |
| | – | – | – | – | 100 | 75 | 100 | 75 | 200 | Without | 8538 SFA 15 (2) (3) (4) | 77 (170) |
| 12 | – | – | – | – | 100 | 75 | 100 | 75 | 200 | With | 8538 SFA 23 (2) (3) (4) | 77 (170) |
| | – | – | – | – | 100 | 75 | 100 | 75 | 200 | Without | 8538 SFA 13 (2) (3) (4) | 77 (170) |
| 13 | 75 | 55 | 100 | 75 | – | – | – | – | 400 | With | 8538 SGA 25 (2) (3) (4) | 207 (457) |
| | – | – | – | – | 200 | 150 | 200 | 150 | 400 | Without | 8538 SGA 15 (2) (3) (4) | 207 (457) |
| 14 | – | – | – | – | 200 | 150 | 200 | 150 | 400 | With | 8538 SGA 23 (2) (3) (4) | 207 (457) |
| | – | – | – | – | 200 | 150 | 200 | 150 | 400 | Without | 8538 SGA 13 (2) (3) (4) | 207 (457) |
| 15 | 150 | 110 | 200 | 150 | – | – | – | – | 600 | With | 8538 SHA 23 (2) (3) (4) | 250 (552) |
| | – | – | – | – | 400 | 300 | 400 | 300 | 600 | Without | 8538 SHA 13 (2) (3) (4) | 250 (552) |
| 16 | – | – | – | – | 400 | 300 | 400 | 300 | 600 | With | 8538 SHA 22 (2) (3) (4) | 250 (552) |
| | – | – | – | – | 400 | 300 | 400 | 300 | 600 | Without | 8538 SHA 12 (2) (3) (4) | 250 (552) |

(1) (2) (3) (4) See page 2/8.

Combination Starters

Type S, NEMA-style starters with
Fusible disconnect switch, Class 8538
with Class R fuse clips



8538 SBG 32 ●●●

3-pole fusible full-voltage starters, non-reversing (Class R fuse clips)

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Fuse clip size | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and H code (4) | Weight |
|--|--|------|-----|------|-----|------|-----|------|----------------|----------------|---|-----------|
| | Motor volts (1) 200 V (208 V) 230 V (240 V) 460 V (480 V) 575 V (600 V) | | | | | | | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | A | | kg (lb) | |
| NEMA 1 general purpose enclosure | | | | | | | | | | | | |
| 0 | 3 | 2.2 | 3 | 2.2 | – | – | – | – | 30 | – | 8538 SBG 32 (2) (3) (4) | 17 (38) |
| | – | – | – | – | 5 | 3.75 | 5 | 3.75 | 30 | – | 8538 SBG 33 (2) (3) (4) | 17 (38) |
| 1 | 5 | 3.75 | 5 | 3.75 | – | – | – | – | 30 | – | 8538 SCG 32 (2) (3) (4) | 17 (38) |
| | – | – | – | – | 10 | 7.5 | 10 | 7.5 | 30 | – | 8538 SCG 34 (2) (3) (4) | 17 (38) |
| | 7.5 | 5.5 | 7.5 | 5.5 | – | – | – | – | 60 | – | 8538 SCG 33 (2) (3) (4) | 17 (38) |
| 2 | 10 | 7.5 | 15 | 11 | – | – | – | – | 60 | – | 8538 SDG 32 (2) (3) (4) | 25 (54) |
| | – | – | – | – | 15 | 11 | 15 | 11 | 30 | – | 8538 SDG 36 (2) (3) (4) | 25 (54) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | – | 8538 SDG 34 (2) (3) (4) | 25 (54) |
| 3 | 20 | 15 | 25 | 18.5 | – | – | – | – | 100 | – | 8538 SEG 35 (2) (3) (4) | 46 (102) |
| | – | – | – | – | 50 | 37 | 50 | 37 | 100 | – | 8538 SEG 33 (2) (3) (4) | 46 (102) |
| | 25 | 18.5 | 30 | 22 | – | – | – | – | 200 | – | 8538 SEG 32 (2) (3) (4) | 46 (102) |
| 4 | 40 | 30 | 50 | 37 | – | – | – | – | 200 | – | 8538 SFG 35 (2) (3) (4) | 74 (163) |
| | – | – | – | – | 100 | 75 | 100 | 75 | 200 | – | 8538 SFG 33 (2) (3) (4) | 74 (163) |
| 5 | 75 | 55 | 100 | 75 | – | – | – | – | 400 | – | 8538 SGG 35 (2) (3) (4) | 204 (450) |
| | – | – | – | – | 200 | 150 | 200 | 150 | 400 | – | 8538 SGG 33 (2) (3) (4) | 204 (450) |
| 6 | 150 | 110 | 200 | 150 | – | – | – | – | 600 | – | 8538 SHG 33 (2) (3) (4) | 240 (530) |
| | – | – | – | – | 400 | 300 | 400 | 300 | 600 | – | 8538 SHG 32 (2) (3) (4) | 240 (530) |
| NEMA 12 dust-tight industrial-use enclosure | | | | | | | | | | | | |
| 0 | 3 | 2.2 | 3 | 2.2 | – | – | – | – | 30 | With | 8538 SBA 42 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 5 | 3.75 | 5 | 3.75 | 30 | Without | 8538 SBA 32 (2) (3) (4) | 18 (40) |
| | – | – | – | – | – | – | – | – | 30 | With | 8538 SBA 43 (2) (3) (4) | 18 (40) |
| | – | – | – | – | – | – | – | – | 30 | Without | 8538 SBA 33 (2) (3) (4) | 18 (40) |
| 1 | 5 | 3.75 | 5 | 3.75 | – | – | – | – | 30 | With | 8538 SCA 42 (2) (3) (4) | 18 (40) |
| | – | – | – | – | 10 | 7.5 | 10 | 7.5 | 30 | Without | 8538 SCA 32 (2) (3) (4) | 18 (40) |
| | – | – | – | – | – | – | – | – | 30 | With | 8538 SCA 44 (2) (3) (4) | 18 (40) |
| | – | – | – | – | – | – | – | – | 30 | Without | 8538 SCA 34 (2) (3) (4) | 18 (40) |
| | 7.5 | 5.5 | 7.5 | 5.5 | – | – | – | – | 60 | With | 8538 SCA 43 (2) (3) (4) | 18 (40) |
| | – | – | – | – | – | – | – | – | 60 | Without | 8538 SCA 33 (2) (3) (4) | 18 (40) |
| 2 | 10 | 7.5 | 15 | 11 | – | – | – | – | 60 | With | 8538 SDA 42 (2) (3) (4) | 25 (55) |
| | – | – | – | – | 15 | 11 | 15 | 11 | 30 | Without | 8538 SDA 32 (2) (3) (4) | 25 (55) |
| | – | – | – | – | – | – | – | – | 30 | With | 8538 SDA 46 (2) (3) (4) | 25 (55) |
| | – | – | – | – | – | – | – | – | 30 | Without | 8538 SDA 36 (2) (3) (4) | 25 (55) |
| | – | – | – | – | 25 | 18.5 | 25 | 18.5 | 60 | With | 8538 SDA 44 (2) (3) (4) | 25 (55) |
| | – | – | – | – | – | – | – | – | 60 | Without | 8538 SDA 34 (2) (3) (4) | 25 (55) |
| 3 | 20 | 15 | 25 | 18.5 | – | – | – | – | 100 | With | 8538 SEA 45 (2) (3) (4) | 50 (111) |
| | – | – | – | – | 50 | 37 | 50 | 37 | 100 | Without | 8538 SEA 35 (2) (3) (4) | 50 (111) |
| | – | – | – | – | – | – | – | – | 100 | With | 8538 SEA 43 (2) (3) (4) | 50 (111) |
| | – | – | – | – | – | – | – | – | 100 | Without | 8538 SEA 33 (2) (3) (4) | 50 (111) |
| | 25 | 18.5 | 30 | 22 | – | – | – | – | 200 | With | 8538 SEA 42 (2) (3) (4) | 50 (111) |
| | – | – | – | – | – | – | – | – | 200 | Without | 8538 SEA 32 (2) (3) (4) | 50 (111) |
| 4 | 40 | 30 | 50 | 37 | – | – | – | – | 200 | With | 8538 SFA 45 (2) (3) (4) | 77 (170) |
| | – | – | – | – | 100 | 75 | 100 | 75 | 200 | Without | 8538 SFA 35 (2) (3) (4) | 77 (170) |
| | – | – | – | – | – | – | – | – | 200 | With | 8538 SFA 43 (2) (3) (4) | 77 (170) |
| | – | – | – | – | – | – | – | – | 200 | Without | 8538 SFA 33 (2) (3) (4) | 77 (170) |
| 5 | 75 | 55 | 100 | 75 | – | – | – | – | 400 | With | 8538 SGA 45 (2) (3) (4) | 207 (457) |
| | – | – | – | – | 200 | 150 | 200 | 150 | 400 | Without | 8538 SGA 35 (2) (3) (4) | 207 (457) |
| | – | – | – | – | – | – | – | – | 400 | With | 8538 SGA 43 (2) (3) (4) | 207 (457) |
| | – | – | – | – | – | – | – | – | 400 | Without | 8538 SGA 33 (2) (3) (4) | 207 (457) |
| 6 | 150 | 110 | 200 | 150 | – | – | – | – | 600 | With | 8538 SHA 43 (2) (3) (4) | 250 (552) |
| | – | – | – | – | 400 | 300 | 400 | 300 | 600 | Without | 8538 SHA 33 (2) (3) (4) | 250 (552) |
| | – | – | – | – | – | – | – | – | 600 | With | 8538 SHA 42 (2) (3) (4) | 250 (552) |
| | – | – | – | – | – | – | – | – | 600 | Without | 8538 SHA 32 (2) (3) (4) | 250 (552) |

(1) (2) (3) (4) See page 2/8.

Combination Starters

Type S, NEMA-style starters with Mag-Gard® circuit-breaker, Class 8539

531042



8539 SBG 41 ●●●

2

3-pole circuit-breaker starters, non-reversing

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Circuit-breaker | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and "H" code (4) | Weight |
|---|---|------|-----|------|-----|------|-----|------|-----------------|--|-----------------------|
| | Motor volts (1) | | | | | | | | | | |
| | 200 V (208 V) 230 V (240 V) 460 V (480 V) 575 V (600 V) | | | | | | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | | | kg (lb) |
| NEMA 1 general purpose enclosure | | | | | | | | | | | |
| 0 | 0.3 | 0.2 | 0.3 | 0.2 | 1 | 0.75 | 1 | 0.75 | GJL 36003 MO1 | 8539 SBG 41 | (2) (3) (4) 17 (38) |
| | 1 | 0.75 | 1 | 0.75 | 3 | 2.2 | 3 | 2.2 | GJL 36007 MO2 | 8539 SBG 42 | (2) (3) (4) 17 (38) |
| | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | GJL 36015 MO3 | 8539 SBG 43 | (2) (3) (4) 17 (38) |
| 1 | 0.3 | 0.2 | 0.3 | 0.2 | 1 | 0.75 | 1 | 0.75 | GJL 36003 MO1 | 8539 SCG 41 | (2) (3) (4) 17 (38) |
| | 1 | 0.75 | 1 | 0.75 | 3 | 2.2 | 3 | 2.2 | GJL 36007 MO2 | 8539 SCG 42 | (2) (3) (4) 17 (38) |
| | 3 | 2.2 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | GJL 36015 MO3 | 8539 SCG 43 | (2) (3) (4) 17 (38) |
| | 5 | 3.7 | 7.5 | 5.5 | 10 | 7.5 | – | – | GJL 36030 MO4 | 8539 SCG 44 | (2) (3) (4) 17 (38) |
| | 7.5 | 5.5 | – | – | – | – | – | – | GJL 36050 MO5 | 8539 SCG 45 | (2) (3) (4) 17 (38) |
| 2 | 3 | 2.2 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | GJL 36015 MO3 | 8539 SDG 41 | (2) (3) (4) 25 (54) |
| | 5 | 3.7 | 7.5 | 5.5 | 15 | 11 | 20 | 15 | GJL 36030 MO4 | 8539 SDG 42 | (2) (3) (4) 25 (54) |
| | 10 | 7.5 | 10 | 7.5 | 25 | 18.5 | 25 | 18.5 | GJL 36050 MO5 | 8539 SDG 43 | (2) (3) (4) 25 (54) |
| | – | – | 15 | 11 | – | – | – | – | GJL 36075 MO6 | 8539 SDG 44 | (2) (3) (4) 25 (54) |
| 3 | – | – | – | – | 25 | 18.5 | 30 | 22 | GJL 36050 MO5 | 8539 SEG 41 | (2) (3) (4) 46 (102) |
| | 25 | 18.5 | 30 | 22 | 30 | 22 | 50 | 37 | FAL 36100 18M | 8539 SEG 42 | (2) (3) (4) 46 (102) |
| 4 | 30 | 22 | – | – | 75 | 55 | 100 | 75 | KAL 36250 25M | 8539 SFG 42 | (2) (3) (4) 74 (163) |
| | – | – | 40 | 30 | – | – | – | – | KAL 36250 26M | 8539 SFG 43 | (2) (3) (4) 74 (163) |
| | – | – | 50 | 37 | 100 | 75 | – | – | KAL 36250 29M | 8539 SFG 44 | (2) (3) (4) 74 (163) |
| 5 | – | – | – | – | – | – | 125 | 90 | KAL 36250 29M | 8539 SGG 41 | (2) (3) (4) 191 (420) |
| | 50 | 37 | – | – | – | – | 150 | 110 | KAL 36250 30M | 8539 SGG 42 | (2) (3) (4) 191 (420) |
| | – | – | 60 | 45 | 125 | 90 | – | – | KAL 36250 31M | 8539 SGG 43 | (2) (3) (4) 191 (420) |
| | 60 | 45 | 75 | 55 | 150 | 110 | 200 | 150 | LAL 36400 32M | 8539 SGG 44 | (2) (3) (4) 191 (420) |
| | 75 | 55 | – | – | – | – | – | – | LAL 36400 33M | 8539 SGG 45 | (2) (3) (4) 191 (420) |
| | – | – | 100 | 75 | 200 | 150 | – | – | LAL 36400 35M | 8539 SGG 46 | (2) (3) (4) 191 (420) |
| 6 | – | – | – | – | – | – | 250 | 185 | LAL 36400 35M | 8539 SHG 42 | (2) (3) (4) 200 (441) |
| | 100 | 75 | – | – | 250 | 185 | 300 | 220 | LAL 36400 36M | 8539 SHG 43 | (2) (3) (4) 200 (441) |
| | 125 | 90 | 150 | 110 | 300 | 220 | 400 | 300 | MAL 36600 40M | 8539 SHG 44 | (2) (3) (4) 200 (441) |
| | 150 | 110 | – | – | 350 | 250 | – | – | MAL 36600 42M | 8539 SHG 45 | (2) (3) (4) 200 (441) |
| | – | – | 200 | 150 | 400 | 300 | – | – | MAL 36600 44M | 8539 SHG 46 | (2) (3) (4) 200 (441) |
| 7 | – | – | – | – | – | – | 500 | 370 | MAL 36800 44M | 8539 SJG 41 | (2) (3) (4) 318 (702) |
| | – | – | 250 | 185 | 500 | 370 | 600 | 450 | MAL 36800 45M | 8539 SJG 42 | (2) (3) (4) 318 (702) |
| | – | – | 300 | 220 | 600 | 450 | – | – | MAL 361000 47M | 8539 SJG 43 | (2) (3) (4) 318 (702) |

(1) Motor voltage (starter voltage).

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-------------|-----|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | – | V02 | – | – | V03 | – | V05 | V06 | – | V07 | – |
| 60 Hz | V01 (5) (6) | – | V02 (5) | V08 | – | V03 | – | – | V06 | – | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: **8559 SCG 41 V02 H10S**.

(3) For optional variants, see page 2/21.

(4) To complete "H" code for Motor Logic solid-state overload relays, see pages 2/13 to 2/19. Motor Logic Plus units are not available on combination starters.

(5) 24 V coils are not available on Sizes 4–6. On Sizes 0–3, where 24 V coils are available, suffix "S" (separate control) must be specified.

(6) These voltage codes must include suffix "S" (supplied at no charge). When specifying suffix "S", please supply motor voltage when ordering.

Combination Starters

Type S, NEMA-style starters with Mag-Gard® circuit breaker, Class 8539

551042



8539 SBA 51 ●●●

| 3-pole circuit-breaker starters, non-reversing (continued) | | | | | | | | | | | | |
|--|--|------|-----|------|-----|------|-----|------|-----------------|----------------|--|-----------|
| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Circuit-breaker | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3), and "H" code (4) | Weight |
| | Motor volts (1) 200 V (208 V) 230 V (240 V) 460 V (480 V) 575 V (600 V) | | | | | | | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | | | | kg (lb) |
| NEMA 12 dust-tight industrial-use enclosure | | | | | | | | | | | | |
| 0 | 0.3 | 0.2 | 0.3 | 0.2 | 1 | 0.75 | 1 | 0.75 | GJL 36003 MO1 | With | 8539 SBA 51 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SBA 41 (2) (3) (4) | 18 (40) |
| | 1 | 0.75 | 1 | 0.75 | 3 | 2.2 | 3 | 2.2 | GJL 36007 MO2 | With | 8539 SBA 52 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SBA 42 (2) (3) (4) | 18 (40) |
| | 3 | 2.2 | 3 | 2.2 | 5 | 3.7 | 5 | 3.7 | GJL 36015 MO3 | With | 8539 SBA 53 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SBA 43 (2) (3) (4) | 18 (40) |
| 1 | 0.3 | 0.2 | 0.3 | 0.2 | 1 | 0.75 | 1 | 0.75 | GJL 36003 MO1 | With | 8539 SCA 51 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SCA 41 (2) (3) (4) | 18 (40) |
| | 1 | 0.75 | 1 | 0.75 | 3 | 2.2 | 3 | 2.2 | GJL 36007 MO2 | With | 8539 SCA 52 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SCA 42 (2) (3) (4) | 18 (40) |
| | 3 | 2.2 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | GJL 36015 MO3 | With | 8539 SCA 53 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SCA 43 (2) (3) (4) | 18 (40) |
| | 5 | 3.7 | 7.5 | 5.5 | 10 | 7.5 | - | - | GJL 36030 MO4 | With | 8539 SCA 54 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SCA 44 (2) (3) (4) | 18 (40) |
| | 7.5 | 5.5 | - | - | - | - | - | - | GJL 36050 MO5 | With | 8539 SCA 55 (2) (3) (4) | 18 (40) |
| | | | | | | | | | | Without | 8539 SCA 45 (2) (3) (4) | 18 (40) |
| 2 | 3 | 2.2 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | GJL 36015 MO3 | With | 8539 SDA 51 (2) (3) (4) | 25 (55) |
| | | | | | | | | | | Without | 8539 SDA 41 (2) (3) (4) | 25 (55) |
| | 5 | 3.7 | 7.5 | 5.5 | 15 | 11 | 20 | 15 | GJL 36030 MO4 | With | 8539 SDA 52 (2) (3) (4) | 25 (55) |
| | | | | | | | | | | Without | 8539 SDA 42 (2) (3) (4) | 25 (55) |
| | 10 | 7.5 | 10 | 7.5 | 25 | 18.5 | 25 | 18.5 | GJL 36050 MO5 | With | 8539 SDA 53 (2) (3) (4) | 25 (55) |
| | | | | | | | | | | Without | 8539 SDA 43 (2) (3) (4) | 25 (55) |
| | - | - | 15 | 11 | - | - | - | - | GJL 36075 MO6 | With | 8539 SDA 54 (2) (3) (4) | 25 (55) |
| | | | | | | | | | | Without | 8539 SDA 44 (2) (3) (4) | 25 (55) |
| 3 | - | - | - | - | 25 | 18.5 | 30 | 22 | GJL 36050 MO5 | With | 8539 SEA 51 (2) (3) (4) | 50 (111) |
| | | | | | | | | | | Without | 8539 SEA 41 (2) (3) (4) | 50 (111) |
| | 25 | 18.5 | 30 | 22 | 30 | 22 | 50 | 37 | FAL 36100 18M | With | 8539 SEA 52 (2) (3) (4) | 50 (111) |
| | | | | | | | | | | Without | 8539 SEA 42 (2) (3) (4) | 50 (111) |
| 4 | 30 | 22 | - | - | 75 | 55 | 100 | 75 | KAL 36250 25M | With | 8539 SFA 52 (2) (3) (4) | 77 (170) |
| | | | | | | | | | | Without | 8539 SFA 42 (2) (3) (4) | 77 (170) |
| | - | - | 40 | 30 | - | - | - | - | KAL 36250 26M | With | 8539 SFA 53 (2) (3) (4) | 77 (170) |
| | | | | | | | | | | Without | 8539 SFA 43 (2) (3) (4) | 77 (170) |
| | - | - | 50 | 37 | 100 | 75 | - | - | KAL 36250 29M | With | 8539 SFA 54 (2) (3) (4) | 77 (170) |
| | | | | | | | | | | Without | 8539 SFA 44 (2) (3) (4) | 77 (170) |
| 5 | - | - | - | - | - | - | 125 | 90 | KAL 36250 29M | With | 8539 SGA 51 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 41 (2) (3) (4) | 200 (440) |
| | 50 | 37 | - | - | - | - | 150 | 110 | KAL 36250 30M | With | 8539 SGA 52 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 42 (2) (3) (4) | 200 (440) |
| | - | - | 60 | 45 | 125 | 90 | - | - | KAL 36250 31M | With | 8539 SGA 53 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 43 (2) (3) (4) | 200 (440) |
| | 60 | 45 | 75 | 55 | 150 | 110 | 200 | 150 | LAL 36400 32M | With | 8539 SGA 54 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 44 (2) (3) (4) | 200 (440) |
| | 75 | 55 | - | - | - | - | - | - | LAL 36400 33M | With | 8539 SGA 55 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 45 (2) (3) (4) | 200 (440) |
| | - | - | 100 | 75 | 200 | 150 | - | - | LAL 36400 35M | With | 8539 SGA 56 (2) (3) (4) | 200 (440) |
| | | | | | | | | | | Without | 8539 SGA 46 (2) (3) (4) | 200 (440) |
| 6 | - | - | - | - | - | - | 250 | 185 | LAL 36400 35M | With | 8539 SHA 52 (2) (3) (4) | 200 (441) |
| | | | | | | | | | | Without | 8539 SHA 42 (2) (3) (4) | 200 (441) |
| | 100 | 75 | - | - | 250 | 185 | 300 | 220 | LAL 36400 36M | With | 8539 SHA 53 (2) (3) (4) | 200 (441) |
| | | | | | | | | | | Without | 8539 SHA 43 (2) (3) (4) | 200 (441) |
| | 125 | 90 | 150 | 110 | 300 | 220 | 400 | 300 | MAL 36600 40M | With | 8539 SHA 54 (2) (3) (4) | 200 (441) |
| | | | | | | | | | | Without | 8539 SHA 44 (2) (3) (4) | 200 (441) |
| | 150 | 110 | - | - | 350 | 250 | - | - | MAL 36600 42M | With | 8539 SHA 55 (2) (3) (4) | 200 (441) |
| | | | | | | | | | | Without | 8539 SHA 45 (2) (3) (4) | 200 (441) |
| | - | - | 200 | 150 | 400 | 300 | - | - | MAL 36600 44M | With | 8539 SHA 56 (2) (3) (4) | 200 (441) |
| | | | | | | | | | | Without | 8539 SHA 46 (2) (3) (4) | 200 (441) |
| 7 | - | - | - | - | - | - | 500 | 370 | MAL 36800 44M | With | 8539 SJA 51 (2) (3) (4) | 318 (702) |
| | | | | | | | | | | | | |
| | - | - | 250 | 185 | 500 | 370 | 600 | 450 | MAL 36800 45M | With | 8539 SJA 52 (2) (3) (4) | 318 (702) |
| | | | | | | | | | | | | |
| | - | - | 300 | 220 | 600 | 450 | - | - | MAL 361000 47M | With | 8539 SJA 53 (2) (3) (4) | 318 (702) |

(1) (2) (3) (4) See page 2/8.



Combination Starters

Type S, NEMA-style starters with Thermal-magnetic circuit breaker, Class 8539

531042



8539 SBG 1 ●●●

2

3-pole thermal-magnetic circuit-breaker starters, non-reversing

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | 3 Circuit-breaker | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and "H" code (4) | Weight | |
|--|---|-------|---------------|-------|---------------|-------|---------------|------|-------------------|----------------|---|-------------------------|-----------|
| | Motor volts (1) | | | | | | | | | | | | |
| | 200 V (208 V) | | 230 V (240 V) | | 460 V (480 V) | | 575 V (600 V) | | | | | | Type |
| hp kW | | hp kW | | hp kW | | hp kW | | A | kg (lb) | | | | |
| NEMA 1 general purpose enclosure | | | | | | | | | | | | | |
| 0 | 2 | 1.5 | 2 | 1.5 | — | — | — | — | FAL | 15 | — | 8539 SBG 1 (2) (3) (4) | 17 (38) |
| | — | — | — | — | 5 | 3.7 | 5 | 3.7 | FAL | 15 | — | 8539 SBG 2 (2) (3) (4) | 17 (38) |
| | 3 | 2.2 | 3 | 2.2 | — | — | — | — | FAL | 20 | — | 8539 SBG 3 (2) (3) (4) | 17 (38) |
| 1 | 5 | 3.7 | — | — | — | — | — | — | FAL | 35 | — | 8539 SCG 5 (2) (3) (4) | 17 (38) |
| | 7.5 | 5.5 | — | — | — | — | — | — | FAL | 50 | — | 8539 SCG 2 (2) (3) (4) | 17 (38) |
| | — | — | 5 | 3.7 | — | — | — | — | FAL | 30 | — | 8539 SCG 1 (2) (3) (4) | 17 (38) |
| | — | — | 7.5 | 5.5 | — | — | — | — | FAL | 45 | — | 8539 SCG 6 (2) (3) (4) | 17 (38) |
| | — | — | — | — | 7.5 | 5.5 | 10 | 7.5 | FAL | 20 | — | 8539 SCG 3 (2) (3) (4) | 17 (38) |
| | — | — | — | — | 10 | 7.5 | — | — | FAL | 25 | — | 8539 SCG 7 (2) (3) (4) | 17 (38) |
| | — | — | — | — | — | — | 7.5 | 5.5 | FAL | 15 | — | 8539 SCG 8 (2) (3) (4) | 17 (38) |
| 2 | 10 | 7.5 | 10 | 7.5 | — | — | — | — | FAL | 60 | — | 8539 SDG 1 (2) (3) (4) | 25 (54) |
| | — | — | 15 | 11 | — | — | — | — | FAL | 80 | — | 8539 SDG 7 (2) (3) (4) | 25 (54) |
| | — | — | — | — | 7.5 | 5.5 | — | — | FAL | 20 | — | 8539 SDG 3 (2) (3) (4) | 25 (54) |
| | — | — | — | — | 20 | 15 | 25 | 18.5 | FAL | 60 | — | 8539 SDG 4 (2) (3) (4) | 25 (54) |
| | — | — | — | — | 25 | 18.5 | — | — | FAL | 70 | — | 8539 SDG 5 (2) (3) (4) | 25 (54) |
| | — | — | — | — | — | — | 15 | 11 | FAL | 35 | — | 8539 SDG 8 (2) (3) (4) | 25 (54) |
| | — | — | — | — | — | — | 20 | 15 | FAL | 45 | — | 8539 SDG 9 (2) (3) (4) | 25 (54) |
| 3 | 15 | 11 | 20 | 15 | 40 | 30 | 50 | 37 | FAL | 90 | — | 8539 SEG 3 (2) (3) (4) | 46 (102) |
| | 20 | 15 | 25 | 18.5 | 50 | 37 | — | — | FAL | 100 | — | 8539 SEG 1 (2) (3) (4) | 46 (102) |
| | 25 | 18.5 | 30 | 22 | — | — | — | — | KAL | 110 | — | 8539 SEG 5 (2) (3) (4) | 46 (102) |
| | — | — | — | — | 30 | 22 | 40 | 30 | FAL | 80 | — | 8539 SEG 6 (2) (3) (4) | 46 (102) |
| | — | — | — | — | — | — | 30 | 22 | FAL | 60 | — | 8539 SEG 4 (2) (3) (4) | 46 (102) |
| 4 | 30 | 22 | — | — | 75 | 55 | — | — | KAL | 125 | — | 8539 SFG 3 (2) (3) (4) | 74 (163) |
| | 40 | 30 | 50 | 37 | 100 | 75 | — | — | KAL | 200 | — | 8539 SFG 4 (2) (3) (4) | 74 (163) |
| | — | — | 40 | 30 | — | — | 100 | 75 | KAL | 150 | — | 8539 SFG 1 (2) (3) (4) | 74 (163) |
| | — | — | — | — | 60 | 45 | 75 | 55 | KAL | 110 | — | 8539 SFG 5 (2) (3) (4) | 74 (163) |
| | — | — | — | — | — | — | 60 | 45 | FAL | 100 | — | 8539 SFG 6 (2) (3) (4) | 74 (163) |
| 5 | 50 | 37 | — | — | — | — | 150 | 110 | LAL | 200 | — | 8539 SGG 6 (2) (3) (4) | 191 (420) |
| | 60 | 45 | 75 | 55 | 150 | 110 | 200 | 150 | LAL | 250 | — | 8539 SGG 1 (2) (3) (4) | 191 (420) |
| | 75 | 55 | — | — | — | — | — | — | LAL | 300 | — | 8539 SGG 4 (2) (3) (4) | 191 (420) |
| | — | — | 60 | 45 | 125 | 90 | — | — | LAL | 225 | — | 8539 SGG 3 (2) (3) (4) | 191 (420) |
| | — | — | 100 | 75 | 200 | 150 | — | — | LAL | 350 | — | 8539 SGG 2 (2) (3) (4) | 191 (420) |
| 6 | — | — | — | — | — | — | 125 | 90 | KAL | 200 | — | 8539 SGG 7 (2) (3) (4) | 191 (420) |
| | 100 | 75 | 125 | 90 | 250 | 185 | 300 | 220 | MAL | 450 | — | 8539 SHG 4 (2) (3) (4) | 220 (486) |
| | 125 | 90 | 150 | 110 | 300 | 220 | 400 | 300 | MAL | 600 | — | 8539 SHG 3 (2) (3) (4) | 220 (486) |
| | 150 | 110 | — | — | 350 | 250 | — | — | MAL | 600 | — | 8539 SHG 5 (2) (3) (4) | 220 (486) |
| | — | — | 200 | 150 | 400 | 300 | — | — | MAL | 800 | — | 8539 SHG 7 (2) (3) (4) | 220 (486) |
| 7 | — | — | — | — | — | — | 250 | 185 | MAL | 250 | — | 8539 SHG 6 (2) (3) (4) | 220 (486) |
| | — | — | — | — | — | — | 350 | 250 | MAL | 500 | — | 8539 SHG 2 (2) (3) (4) | 220 (486) |
| | — | — | 250 | 185 | 500 | 370 | 600 | 450 | MAL | 900 | — | 8539 SJG 2 (2) (3) (4) | 320 (706) |
| | — | — | 300 | 220 | 600 | 450 | — | — | MAL | 1000 | — | 8539 SJG 3 (2) (3) (4) | 320 (706) |
| | — | — | — | — | — | — | 500 | 370 | MAL | 800 | — | 8539 SJG 1 (2) (3) (4) | 320 (706) |
| NEMA 12 dust-tight industrial-use enclosure | | | | | | | | | | | | | |
| 0 | 2 | 1.5 | 2 | 1.5 | — | — | — | — | FAL | 15 | With | 8539 SBA 11 (2) (3) (4) | 18 (40) |
| | — | — | — | — | 5 | 3.7 | 5 | 3.7 | FAL | 15 | Without | 8539 SBA 1 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 15 | With | 8539 SBA 12 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 15 | Without | 8539 SBA 2 (2) (3) (4) | 18 (40) |
| 3 | 3 | 2.2 | 3 | 2.2 | — | — | — | — | FAL | 20 | With | 8539 SBA 13 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 20 | Without | 8539 SBA 13 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 20 | With | 8539 SCA 15 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 20 | Without | 8539 SCA 5 (2) (3) (4) | 18 (40) |
| 1 | 5 | 3.7 | — | — | — | — | — | — | FAL | 35 | With | 8539 SCA 12 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 35 | Without | 8539 SCA 5 (2) (3) (4) | 18 (40) |
| | 7.5 | 5.5 | — | — | — | — | — | — | FAL | 50 | With | 8539 SCA 12 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 50 | Without | 8539 SCA 2 (2) (3) (4) | 18 (40) |
| | — | — | 5 | 3.7 | — | — | — | — | FAL | 30 | With | 8539 SCA 11 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 30 | Without | 8539 SCA 1 (2) (3) (4) | 18 (40) |
| | — | — | 7.5 | 5.5 | — | — | — | — | FAL | 45 | With | 8539 SCA 16 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 45 | Without | 8539 SCA 6 (2) (3) (4) | 18 (40) |
| 2 | — | — | — | — | 7.5 | 5.5 | 10 | 7.5 | FAL | 20 | With | 8539 SCA 13 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 20 | Without | 8539 SCA 3 (2) (3) (4) | 18 (40) |
| | — | — | — | — | 10 | 7.5 | — | — | FAL | 25 | With | 8539 SCA 17 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 25 | Without | 8539 SCA 7 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | 7.5 | 5.5 | FAL | 15 | With | 8539 SCA 18 (2) (3) (4) | 18 (40) |
| | — | — | — | — | — | — | — | — | FAL | 15 | Without | 8539 SCA 8 (2) (3) (4) | 18 (40) |

(1) (2) (3) (4) See page 2/8.

Combination Starters

Type S, NEMA-style starters with Thermal-magnetic circuit-breaker, Class 8539

531042



8539 SDA 11 ●●●

3-pole thermal-magnetic circuit-breaker starters, non-reversing

NEMA 12 dust-tight industrial-use enclosure (continued)

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | Circuit-breaker | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and "H" code (4) | Weight | |
|-----------|---|------|---------------|------|---------------|------|---------------|------|-----------------|----------------|---|-------------------------|-----------|
| | Motor volts (1) | | | | | | | | | | | | |
| | 200 V (208 V) | | 230 V (240 V) | | 460 V (480 V) | | 575 V (600 V) | | | | | | Type |
| hp | kW | hp | kW | hp | kW | hp | kW | | A | | kg (lb) | | |
| 2 | 10 | 7.5 | 10 | 7.5 | - | - | - | - | FAL | 60 | With | 8539 SDA 11 (2) (3) (4) | 25 (55) |
| | - | - | 15 | 11 | - | - | - | - | FAL | 80 | Without | 8539 SDA 1 (2) (3) (4) | 25 (55) |
| | - | - | - | - | 7.5 | 5.5 | - | - | FAL | 20 | With | 8539 SDA 17 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | - | - | FAL | 20 | Without | 8539 SDA 7 (2) (3) (4) | 25 (55) |
| | - | - | - | - | 20 | 15 | 25 | 18.5 | FAL | 60 | With | 8539 SDA 13 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | - | - | FAL | 60 | Without | 8539 SDA 3 (2) (3) (4) | 25 (55) |
| | - | - | - | - | 25 | 18.5 | - | - | FAL | 70 | With | 8539 SDA 14 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | - | - | FAL | 70 | Without | 8539 SDA 4 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | 15 | 11 | FAL | 35 | With | 8539 SDA 5 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | 20 | 15 | FAL | 45 | Without | 8539 SDA 8 (2) (3) (4) | 25 (55) |
| 3 | 15 | 11 | 20 | 15 | 40 | 30 | 50 | 37 | FAL | 90 | With | 8539 SDA 18 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | - | - | FAL | 90 | Without | 8539 SDA 19 (2) (3) (4) | 25 (55) |
| | 20 | 15 | 25 | 18.5 | 50 | 37 | - | - | FAL | 100 | With | 8539 SEA 9 (2) (3) (4) | 25 (55) |
| | - | - | - | - | - | - | - | - | FAL | 100 | Without | 8539 SEA 1 (2) (3) (4) | 50 (111) |
| | 25 | 18.5 | 30 | 22 | - | - | - | - | KAL | 110 | With | 8539 SEA 13 (2) (3) (4) | 50 (111) |
| | - | - | - | - | 30 | 22 | 40 | 30 | FAL | 80 | Without | 8539 SEA 3 (2) (3) (4) | 50 (111) |
| | - | - | - | - | - | - | 30 | 22 | FAL | 60 | With | 8539 SEA 15 (2) (3) (4) | 50 (111) |
| | - | - | - | - | - | - | - | - | FAL | 80 | Without | 8539 SEA 5 (2) (3) (4) | 50 (111) |
| | - | - | - | - | - | - | 30 | 22 | FAL | 60 | With | 8539 SEA 16 (2) (3) (4) | 50 (111) |
| | - | - | - | - | - | - | - | - | FAL | 60 | Without | 8539 SEA 6 (2) (3) (4) | 50 (111) |
| 4 | 30 | 22 | - | - | 75 | 55 | - | - | KAL | 125 | With | 8539 SEA 14 (2) (3) (4) | 50 (111) |
| | - | - | - | - | - | - | - | - | KAL | 125 | Without | 8539 SEA 4 (2) (3) (4) | 50 (111) |
| | 40 | 30 | 50 | 37 | 100 | 75 | - | - | KAL | 200 | With | 8539 SFA 13 (2) (3) (4) | 77 (170) |
| | - | - | 40 | 30 | - | - | 100 | 75 | KAL | 150 | Without | 8539 SFA 3 (2) (3) (4) | 77 (170) |
| | - | - | - | - | 60 | 45 | 75 | 55 | KAL | 110 | With | 8539 SFA 14 (2) (3) (4) | 77 (170) |
| | - | - | - | - | - | - | 100 | 75 | KAL | 150 | Without | 8539 SFA 4 (2) (3) (4) | 77 (170) |
| | - | - | - | - | 60 | 45 | 75 | 55 | KAL | 110 | With | 8539 SFA 11 (2) (3) (4) | 77 (170) |
| | - | - | - | - | - | - | 60 | 45 | FAL | 100 | Without | 8539 SFA 1 (2) (3) (4) | 77 (170) |
| 5 | 50 | 37 | - | - | - | - | 150 | 110 | LAL | 200 | With | 8539 SFA 15 (2) (3) (4) | 77 (170) |
| | - | - | - | - | - | - | - | - | LAL | 200 | Without | 8539 SFA 5 (2) (3) (4) | 77 (170) |
| | 60 | 45 | 75 | 55 | 150 | 110 | 200 | 150 | LAL | 250 | With | 8539 SFA 16 (2) (3) (4) | 77 (170) |
| | - | - | - | - | - | - | - | - | LAL | 250 | Without | 8539 SFA 6 (2) (3) (4) | 77 (170) |
| | 75 | 55 | - | - | - | - | - | - | LAL | 300 | With | 8539 SGA 1 (2) (3) (4) | 200 (440) |
| | - | - | 60 | 45 | 125 | 90 | - | - | LAL | 225 | Without | 8539 SGA 6 (2) (3) (4) | 200 (440) |
| | - | - | 100 | 75 | 200 | 150 | - | - | LAL | 350 | With | 8539 SGA 11 (2) (3) (4) | 200 (440) |
| | - | - | - | - | - | - | - | - | LAL | 350 | Without | 8539 SGA 4 (2) (3) (4) | 200 (440) |
| | - | - | - | - | - | - | 125 | 90 | KAL | 200 | With | 8539 SGA 13 (2) (3) (4) | 200 (440) |
| | - | - | - | - | - | - | - | - | KAL | 200 | Without | 8539 SGA 3 (2) (3) (4) | 200 (440) |
| 6 | 100 | 75 | 125 | 90 | 250 | 185 | 300 | 220 | MAL | 450 | With | 8539 SGA 12 (2) (3) (4) | 200 (440) |
| | - | - | - | - | - | - | - | - | MAL | 450 | Without | 8539 SGA 2 (2) (3) (4) | 200 (440) |
| | 125 | 90 | 150 | 110 | 300 | 220 | 400 | 300 | MAL | 600 | With | 8539 SGA 17 (2) (3) (4) | 200 (440) |
| | - | - | - | - | - | - | - | - | MAL | 600 | Without | 8539 SGA 7 (2) (3) (4) | 200 (440) |
| | 150 | 110 | - | - | 350 | 250 | - | - | MAL | 600 | With | 8539 SHA 14 (2) (3) (4) | 220 (486) |
| | - | - | 200 | 150 | 400 | 300 | - | - | MAL | 800 | Without | 8539 SHA 4 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | 250 | 185 | MAL | 250 | With | 8539 SHA 13 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | - | - | MAL | 250 | Without | 8539 SHA 3 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | 350 | 250 | MAL | 500 | With | 8539 SHA 15 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | - | - | MAL | 500 | Without | 8539 SHA 5 (2) (3) (4) | 220 (486) |
| 7 | - | - | 250 | 185 | 500 | 370 | 600 | 450 | MAL | 900 | With | 8539 SHA 17 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | - | - | MAL | 900 | Without | 8539 SHA 7 (2) (3) (4) | 220 (486) |
| | - | - | 300 | 220 | 600 | 450 | - | - | MAL | 1000 | With | 8539 SHA 16 (2) (3) (4) | 220 (486) |
| | - | - | - | - | - | - | 500 | 370 | MAL | 800 | Without | 8539 SHA 6 (2) (3) (4) | 220 (486) |
| 7 | - | - | - | - | - | - | - | - | MAL | 800 | With | 8539 SJA 12 (2) (3) (4) | 320 (706) |
| | - | - | - | - | - | - | - | - | MAL | 800 | Without | 8539 SJA 2 (2) (3) (4) | 320 (706) |
| | - | - | - | - | - | - | - | - | MAL | 1000 | With | 8539 SJA 13 (2) (3) (4) | 320 (706) |
| | - | - | - | - | - | - | - | - | MAL | 1000 | Without | 8539 SJA 3 (2) (3) (4) | 320 (706) |
| 7 | - | - | - | - | - | - | - | - | MAL | 800 | With | 8539 SJA 11 (2) (3) (4) | 320 (706) |
| | - | - | - | - | - | - | - | - | MAL | 800 | Without | 8539 SJA 1 (2) (3) (4) | 320 (706) |

(1) (2) (3) (4) (5) See page 2/8.



Combination Starters

Type S, NEMA-style starters with Non-fusible disconnect-switch, Class 8538

551268



8538 SBG 11 ●●●

2

3-pole non-fusible full-voltage starters, non-reversing

| NEMA Size | Standard power ratings of 3-phase motors 50/60 Hz | | | | | | | | External reset | Basic reference Add code indicating control circuit voltage (2), optional variants (3) and "H" code (4) | Weight |
|---|---|------|-----|-----|-----|------|-----|------|----------------|---|-----------|
| | Motor volts (1) | | | | | | | | | | |
| | 200 V (208 V) 230 V (240 V) 460 V (480 V) 575 V (600 V) | | | | | | | | | | |
| | hp | kW | hp | kW | hp | kW | hp | kW | | kg (lb) | |
| NEMA 1 general purpose enclosure | | | | | | | | | | | |
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.75 | 5 | 3.75 | – | 8538 SBG 11 (2) (3) (4) | 17 (38) |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | – | 8538 SCG 11 (2) (3) (4) | 17 (38) |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | – | 8538 SDG 11 (2) (3) (4) | 25 (54) |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | – | 8538 SEG 11 (2) (3) (4) | 46 (102) |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | – | 8538 SFG 11 (2) (3) (4) | 74 (163) |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | – | 8538 SGG 11 (2) (3) (4) | 204 (450) |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | – | 8538 SHG 11 (2) (3) (4) | – |

NEMA 12 dust-tight industrial-use enclosure

| | | | | | | | | | | | |
|---|-----|------|-----|-----|-----|------|-----|------|---------|-------------------------|-----------|
| 0 | 3 | 2.2 | 3 | 2.2 | 5 | 3.75 | 5 | 3.75 | With | 8538 SBA 21 (2) (3) (4) | 18 (40) |
| | | | | | | | | | Without | 8538 SBA 11 (2) (3) (4) | 18 (40) |
| 1 | 7.5 | 5.5 | 7.5 | 5.5 | 10 | 7.5 | 10 | 7.5 | With | 8538 SCA 21 (2) (3) (4) | 18 (40) |
| | | | | | | | | | Without | 8538 SCA 11 (2) (3) (4) | 18 (40) |
| 2 | 10 | 7.5 | 15 | 11 | 25 | 18.5 | 25 | 18.5 | With | 8538 SDA 21 (2) (3) (4) | 25 (55) |
| | | | | | | | | | Without | 8538 SDA 11 (2) (3) (4) | 25 (55) |
| 3 | 25 | 18.5 | 30 | 22 | 50 | 37 | 50 | 37 | With | 8538 SEA 21 (2) (3) (4) | 50 (111) |
| | | | | | | | | | Without | 8538 SEA 11 (2) (3) (4) | 50 (111) |
| 4 | 40 | 30 | 50 | 37 | 100 | 75 | 100 | 75 | With | 8538 SFA 21 (2) (3) (4) | 77 (170) |
| | | | | | | | | | Without | 8538 SFA 11 (2) (3) (4) | 77 (170) |
| 5 | 75 | 55 | 100 | 75 | 200 | 150 | 200 | 150 | With | 8538 SGA 21 (2) (3) (4) | 200 (441) |
| | | | | | | | | | Without | 8538 SGA 11 (2) (3) (4) | 200 (441) |
| 6 | 150 | 110 | 200 | 150 | 400 | 300 | 400 | 300 | With | 8538 SHA 21 (2) (3) (4) | 200 (441) |
| | | | | | | | | | Without | 8538 SHA 11 (2) (3) (4) | 200 (441) |

(1) Motor voltage (starter voltage).

(2) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 380 | 440 | 480 | 550 | 600 |
|-------|-------------|-----|---------|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | – | V02 | – | – | V03 | – | V05 | V06 | – | V07 | – |
| 60 Hz | V01 (5) (6) | – | V02 (5) | V08 | – | V03 | – | – | V06 | – | V07 |

24 V and 120 V coils require the addition of form "S" for separate control. Example: **8538 SCA 21 V03 H10S**.

(3) For optional variants, see page 2/21.

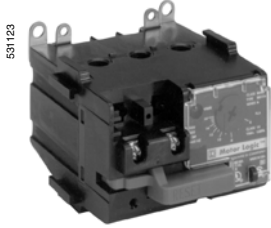
(4) To complete "H" code for Motor Logic solid-state overload relays, see pages 2/13 to 2/19. Motor Logic Plus units are not available on combination starters.

(5) 24 V coils are not available on Sizes 4–6. On Sizes 0–3, where 24 V coils are available, suffix "S" (separate control) must be specified.

(6) These voltage codes must include suffix "S" (supplied at no charge). When specifying suffix "S", please supply motor voltage when ordering.

Combination Starters

Type S, NEMA-style starters with
Fusible disconnect switch, Class 8538 with
Class H fuse clips



H10

Variants for fusible disconnect-switch starters only (Class H fuse clips)

Motor Logic solid-state overload relays (1)

| Type | For use on | Description | Overload relay range | Suffix to the starter reference (2) | Weight kg (lb) |
|------------------------|--|--------------------------|---------------------------------|-------------------------------------|----------------|
| | Fusible disconnect-switch starters Class 8538 with Class H fuse clips | | | | |
| Motor | 8538 S●G 1●. | Base unit, trip class 10 | (3) | H10 | — |
| Logic | 8538 S●A 1●. | Base unit, trip class 20 | (3) | H20 | — |
| solid-state | 8538 S●A 2●. | Feature unit | (3) | H30 | — |
| overload relays | (except 8538 SDG 16, 8538 SDA 16/SDA 26) | | | | |
| | 8538 SBG 12/13, | Base unit, trip class 10 | With 3...9 A overload relay | H109 | — |
| | 8538 SBA 12/22/13/23, | Base unit, trip class 20 | With 3...9 A overload relay | H209 | — |
| | 8538 SCG 12/14, | Feature unit | With 1.5...4.5 A overload relay | H308 | — |
| | 8538 SCA 12/22/14/24, | | With 3...9 A overload relay | H309 | — |
| | 8538 SDG 16, | | | | |
| | 8538 SDA 16/26 | | | | |
| | 8538 SCG 12/14 | Base unit, trip class 10 | With 6...18 A overload relay | H100 | — |
| | 8538 SCA 12/22/14/24, | Base unit, trip class 20 | With 6...18 A overload relay | H200 | — |
| | 8538 SDG 16 | Feature unit | With 6...18 A overload relay | H300 | — |
| | 8538 SDA 16/26 | | | | |
| | 8538 SDG 16, | Base unit, trip class 10 | With 9...27 A overload relay | H101 | — |
| | 8538 SDA 16/26 | Base unit, trip class 20 | With 9...27 A overload relay | H201 | — |
| | | Feature unit | With 9...27 A overload relay | H301 | — |

(1) For Motor Logic solid-state overload relays, see pages 3/2 to 3/7.

(2) Example: **8538 SBG 12 V02 H10 S**.

(3) Standard current ranges, depending on contactor size:

| Size | 00 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-------------------------|-------|--------|--------|---------|---------|----------|----------|---------------|---------------|
| Current ranges A | 3...9 | 6...18 | 9...27 | 15...45 | 30...90 | 45...135 | 90...270 | 180...540 (4) | 270...810 (5) |

(4) Only available with feature unit.


(5) Only available with feature unit with auxiliary contact.


Combination Starters

Type S, NEMA-style starters with
Fusible disconnect switch, Class 8538
(Class R fuse clips) with solid-state overload relay

Associations

| Ratings | | For use on 8538 | Motor Logic solid-state overload relays | | | | | | | | | | | | |
|---------------|-------------------|--------------------|---|-------|--------|--------|----------|-------|--------|--------|--------------------------|-----------|-------|--------|--------|
| Motor voltage | NEMA Size | | Class 10 | | | | Class 20 | | | | Class 10/20 (selectable) | | | | |
| | | | – | 3–9 A | 6–18 A | 9–27 A | – | 3–9 A | 6–18 A | 9–27 A | – | 1.5–4.5 A | 3–9 A | 6–18 A | 9–27 A |
| 200 V | 0 | SBG 32, SBA 42/32 | H10 | H109 | | | H20 | H209 | | | H30 | H308 | H309 | | |
| | 1 | SCG 32, SCA 42/32 | H10 | H109 | H100 | | H20 | H209 | H200 | | H30 | H308 | H309 | H300 | |
| | | SCG 33, SCA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 2 | SDG 32, SDA 42/32 | H10 | | | | H20 | | | | H30 | | | | |
| | 3 | SEG 35, SEA 45/35 | H10 | | | | H20 | | | | H30 | | | | |
| | | SEG 32, SEA 42/32 | H10 | | | | H20 | | | | H30 | | | | |
| | 4 | SFG 35, SFA 45/35 | H10 | | | | H20 | | | | H30 | | | | |
| 5 | SGG 35, SGA 45/35 | H10 | | | | H20 | | | | H30 | | | | | |
| 6 | SHG 33, SHA 43/33 | H10 | | | | H20 | | | | H30 | | | | | |
| 230 V | 0 | SBG 32, SBA 42/32 | H10 | H109 | | | H20 | H209 | | | H30 | H308 | H309 | | |
| | 1 | SCG 32, SCA 42/32 | H10 | H109 | H100 | | H20 | H209 | H200 | | H30 | H308 | H309 | H300 | |
| | | SCG 33, SCA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 2 | SDG 32, SDA 42/32 | H10 | | | | H20 | | | | H30 | | | | |
| | 3 | SEG 35, SEA 45/35 | H10 | | | | H20 | | | | H30 | | | | |
| | | SEG 32, SEA 42/32 | H10 | | | | H20 | | | | H30 | | | | |
| | 4 | SFG 35, SFA 45/35 | H10 | | | | H20 | | | | H30 | | | | |
| 5 | SGG 35, SGA 45/35 | H10 | | | | H20 | | | | H30 | | | | | |
| 6 | SHG 33, SHA 43/33 | H10 | | | | H20 | | | | H30 | | | | | |
| 460 V | 0 | SBG 33, SBA 43/33 | H10 | H109 | | | H20 | H209 | | | H30 | H308 | H309 | | |
| | 1 | SCG 34, SCA 44/34 | H10 | H109 | H100 | | H20 | H209 | H200 | | H30 | H308 | H309 | H300 | |
| | 2 | SDG 36, SDA 46/36 | | H109 | H100 | H101 | | H209 | H200 | H201 | | H308 | H309 | H300 | H301 |
| | 3 | SDG 34, SDA 44/34 | H10 | | | | H20 | | | | H30 | | | | |
| | | SEG 33, SEA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 4 | SFG 33, SFA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 5 | SGG 33, SGA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| 6 | SHG 32, SHA 42/32 | H10 | | | | H20 | | | | H30 | | | | | |
| 575 V | 0 | SBG 33, SBA 43/33 | H10 | H109 | | | H20 | H209 | | | H30 | H308 | H309 | | |
| | 1 | SCG 34, SCA 44/34 | H10 | H109 | H100 | | H20 | H209 | H200 | | H30 | H308 | H309 | H300 | |
| | 2 | SDG 36, SDA 46/36 | | H109 | H100 | H101 | | H209 | H200 | H201 | | H308 | H309 | H300 | H301 |
| | 3 | SDG 34, SDA 44/34 | H10 | | | | H20 | | | | H30 | | | | |
| | | SEG 33, SEA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 4 | SFG 33, SFA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| | 5 | SGG 33, SGA 43/33 | H10 | | | | H20 | | | | H30 | | | | |
| 6 | SHG 32, SHA 42/32 | H10 | | | | H20 | | | | H30 | | | | | |

 Available codes

 Not available

Combination Starters

Type S, NEMA-style starters with Non-fusible disconnect switch, Class 8538 with solid-state overload relays

Associations

| Ratings | Motor voltage | NEMA Size | For use on 8538 | Motor Logic solid-state overload relays | | | | | | | | |
|---------|---------------|-------------------|--------------------|---|-------|--------|----------|-------|--------|--------------------------|-----------|-------|
| | | | | Class 10 | | | Class 20 | | | Class 10/20 (selectable) | | |
| | | | | – | 3–9 A | 6–18 A | – | 3–9 A | 6–18 A | – | 1.5–4.5 A | 3–9 A |
| 200 V | 0 | SBG 11, SBA 21/11 | H10 | H109 | | H20 | H209 | | H30 | H308 | H309 | |
| | 1 | SCG 11, SCA 21/11 | H10 | H109 | H100 | H20 | H209 | H200 | H30 | H308 | H309 | H300 |
| | 2 | SDG 11, SDA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 11, SEA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 11, SFA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 11, SGA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 11, SHA 21/11 | H10 | | | H20 | | | H30 | | | |
| 230 V | 0 | SBG 11, SBA 21/11 | H10 | H109 | | H20 | H209 | | H30 | H308 | H309 | |
| | 1 | SCG 11, SCA 21/11 | H10 | H109 | H100 | H20 | H209 | H200 | H30 | H308 | H309 | H300 |
| | 2 | SDG 11, SDA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 11, SEA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 11, SFA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 11, SGA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 11, SHA 21/11 | H10 | | | H20 | | | H30 | | | |
| 460 V | 0 | SBG 11, SBA 21/11 | H10 | H109 | | H20 | H209 | | H30 | H308 | H309 | |
| | 1 | SCG 11, SCA 21/11 | H10 | H109 | H100 | H20 | H209 | H200 | H30 | H308 | H309 | H300 |
| | 2 | SDG 11, SDA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 11, SEA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 11, SFA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 11, SGA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 11, SHA 21/11 | H10 | | | H20 | | | H30 | | | |
| 575 V | 0 | SBG 11, SBA 21/11 | H10 | H109 | | H20 | H209 | | H30 | H308 | H309 | |
| | 1 | SCG 11, SCA 21/11 | H10 | H109 | H100 | H20 | H209 | H200 | H30 | H308 | H309 | H300 |
| | 2 | SDG 11, SDA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 11, SEA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 11, SFA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 11, SGA 21/11 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 11, SHA 21/11 | H10 | | | H20 | | | H30 | | | |

 Available codes
 Not available


2

Combination Starters

Type S, NEMA-style starters with Mag-Gard® circuit breaker, Class 8539 with solid-state overload relays

Associations

| Ratings | | For use on | Motor Logic solid-state overload relays | | | | | | | | | | | | | |
|-------------------|-------------------|-------------------|---|----------|-------|--------|--------|----------|-------|--------|--------|--------------------------|-----------|-------|--------|--------|
| Motor voltage | NEMA Size | | 8539 | Class 10 | | | | Class 20 | | | | Class 10/20 (selectable) | | | | |
| | | | | – | 3–9 A | 6–18 A | 9–27 A | – | 3–9 A | 6–18 A | 9–27 A | – | 1.5–4.5 A | 3–9 A | 6–18 A | 9–27 A |
| 200 V | 0 | SBG 41, SBA 51/41 | | | | | | | | | | | H308 | | | |
| | | SBG 42, SBA 52/42 | | H109 | | | | H209 | | | | | H308 | H309 | | |
| | | SBG 43, SBA 53/43 | | H109 | | | | H209 | | | | | | H309 | | |
| | 1 | SCG 41, SCA 51/41 | | | | | | | | | | | H308 | | | |
| | | SCG 42, SCA 52/42 | | H109 | | | | H209 | | | | | H308 | H309 | | |
| | | SCG 43, SCA 53/43 | | | H100 | | | | H200 | | | | | | H300 | |
| | | SCG 44, SCA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SCG 45, SCA 55/45 | H10 | | | | H20 | | | | H30 | | | | | |
| | | 2 | SDG 41, SDA 51/41 | | | H100 | | | | H200 | | | | | | H300 |
| | SDG 42, SDA 52/42 | | | | | H101 | | | | H201 | | | | | | H301 |
| | SDG 43, SDA 53/43 | | H10 | | | | H20 | | | | H30 | | | | | |
| | 3 | SEG 42, SEA 52/42 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SFG 43, SFA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | 4 | SFG 42, SFA 52/42 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SFG 43, SFA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SFG 44, SFA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | 5 | SGG 42, SGA 52/42 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SGG 44, SGA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SGG 45, SGA 55/45 | H10 | | | | H20 | | | | H30 | | | | | |
| | 6 | SHG 43, SHA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SHG 44, SHA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| SHG 45, SHA 55/45 | | H10 | | | | H20 | | | | H30 | | | | | | |
| 230 V | 0 | SBG 41, SBA 51/41 | | | | | | | | | | | H308 | | | |
| | | SBG 42, SBA 52/42 | | H109 | | | | H209 | | | | | H308 | H309 | | |
| | | SBG 43, SBA 53/43 | | H109 | | | | H209 | | | | | | H309 | | |
| | 1 | SCG 41, SCA 51/41 | | | | | | | | | | | H308 | | | |
| | | SCG 42, SCA 52/42 | | H109 | | | | H209 | | | | | H308 | H309 | | |
| | | SCG 43, SCA 53/43 | | | H100 | | | | H200 | | | | | | H300 | |
| | | SCG 44, SCA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | 2 | SDG 41, SDA 51/41 | | | H100 | | | | H200 | | | | | | H300 | |
| | | SDG 42, SDA 52/42 | | | | H101 | | | | H201 | | | | | | H301 |
| | | SDG 43, SDA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SDG 44, SDA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | 3 | SEG 42, SEA 52/42 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SFG 43, SFA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | 4 | SFG 43, SFA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SFG 44, SFA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | 5 | SGG 43, SGA 53/43 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SGG 44, SGA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SGG 46, SGA 56/46 | H10 | | | | H20 | | | | H30 | | | | | |
| | 6 | SHG 44, SHA 54/44 | H10 | | | | H20 | | | | H30 | | | | | |
| | | SHG 46, SHA 56/46 | H10 | | | | H20 | | | | H30 | | | | | |
| | 7 | SJG 42, SJA 52 | H10 | | | | H20 | | | | H30 | | | | | |
| SJG 43, SJA 53 | | H10 | | | | H20 | | | | H30 | | | | | | |

 Available codes
 Not available

Combination Starters

Type S, NEMA-style starters with Mag-Gard® circuit breaker, Class 8539 with solid-state overload relays



Associations (continued)

| Ratings | Motor voltage | NEMA Size | For use on 8539 | Motor Logic solid-state overload relays | | | | | | | | | | | | |
|-------------------|---------------|-----------|--------------------|---|-------|--------|--------|----------|-------|--------|--------|--------------------------|-----------|-------|--------|--------|
| | | | | Class 10 | | | | Class 20 | | | | Class 10/20 (selectable) | | | | |
| | | | | – | 3–9 A | 6–18 A | 9–27 A | – | 3–9 A | 6–18 A | 9–27 A | – | 1.5–4.5 A | 3–9 A | 6–18 A | 9–27 A |
| 460 V | 0 | | SBG 41, SBA 51/41 | | | | | | | | | | H308 | | | |
| | | | SBG 42, SBA 52/42 | | H109 | | | | H209 | | | | H308 | H309 | | |
| | | | SBG 43, SBA 53/43 | | H109 | | | | H209 | | | | | H309 | | |
| | 1 | | SCG 41, SCA 51/41 | | | | | | | | | | H308 | | | |
| | | | SCG 42, SCA 52/42 | | H109 | | | | H209 | | | | H308 | H309 | | |
| | | | SCG 43, SCA 53/43 | | | H100 | | | | H200 | | | | | H300 | |
| | 2 | | SDG 41, SDA 51/41 | | | H100 | | | | H200 | | | | | H300 | |
| | | | SDG 42, SDA 52/42 | | | | H101 | | | | H201 | | | | H301 | |
| | | | SDG 43, SDA 53/43 | H10 | | | | H20 | | | | H30 | | | | |
| | 3 | | SEG 41, SEA 51/41 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SEG 42, SEA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| | 4 | | SFG 42, SFA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SFG 44, SFA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| | 5 | | SGG 43, SGA 53/43 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SGG 44, SGA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SGG 46, SGA 56/46 | H10 | | | | H20 | | | | H30 | | | | |
| | 6 | | SHG 43, SHA 53/43 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 44, SHA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 45, SHA 55/45 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 46, SHA 56/46 | H10 | | | | H20 | | | | H30 | | | | |
| | 7 | | SJG 42, SJA 52 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SJG 43, SJA 53 | H10 | | | | H20 | | | | H30 | | | | |
| | 575 V | 0 | | SBG 41, SBA 51/41 | | | | | | | | | | H308 | | |
| | | | | SBG 42, SBA 52/42 | | H109 | | | | H209 | | | | H308 | H309 | |
| SBG 43, SBA 53/43 | | | | | H109 | | | | H209 | | | | | H309 | | |
| 1 | | | SCG 41, SCA 51/41 | | | | | | | | | | H308 | | | |
| | | | SCG 42, SCA 52/42 | | H109 | | | | H209 | | | | H308 | H309 | | |
| | | | SCG 43, SCA 53/43 | | | H100 | | | | H200 | | | | | H300 | |
| 2 | | | SDG 41, SDA 51/41 | | | H100 | | | | H200 | | | | | H300 | |
| | | | SDG 42, SDA 52/42 | | | | H101 | | | | H201 | | | | H301 | |
| | | | SDG 43, SDA 53/43 | H10 | | | | H20 | | | | H30 | | | | |
| 3 | | | SEG 41, SEA 51/41 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SEG 42, SEA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| 4 | | | SFG 42, SFA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SFG 44, SFA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| 5 | | | SGG 41, SGA 51/41 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SGG 42, SGA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SGG 44, SGA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| 6 | | | SHG 42, SHA 52/42 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 43, SHA 53/43 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 44, SHA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SHG 44, SHA 54/44 | H10 | | | | H20 | | | | H30 | | | | |
| 7 | | | SJG 41, SJA 51 | H10 | | | | H20 | | | | H30 | | | | |
| | | | SJG 42, SJA 52 | H10 | | | | H20 | | | | H30 | | | | |

Available codes
 Not available

Combination Starters

Type S, NEMA-style starters with Thermal-magnetic circuit breaker and solid-state overload relay

Associations

| Ratings | | For use on | Motor Logic solid-state overload relays | | | | | | | | | | | |
|---------------|-----------------|-----------------|---|-------|--------|----------|-------|--------|--------------------------|-----------|-------|--------|------|--|
| Motor voltage | NEMA Size | | Class 10 | | | Class 20 | | | Class 10/20 (selectable) | | | | | |
| | | | 8539 | 3-9 A | 6-18 A | - | 3-9 A | 6-18 A | - | 1.5-4.5 A | 3-9 A | 6-18 A | | |
| 200 V | 0 | SBG 1, SBA 11/1 | | H109 | | | H209 | | | | H308 | H309 | | |
| | | SBG 3, SBA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | 1 | SCG 5, SCA 15/5 | H10 | | | H20 | | | H30 | | | | | |
| | | SCG 2, SCA 12/2 | H10 | | | H20 | | | H30 | | | | | |
| | 2 | SDG 1, SDA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | 3 | SEG 3, SEA 13/3 | H10 | | | H20 | | | H30 | | | | |
| | SEG 1, SEA 11/1 | | H10 | | | H20 | | | H30 | | | | | |
| | SEG 5, SEA 15/5 | | H10 | | | H20 | | | H30 | | | | | |
| | 4 | SFG 3, SFA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | | SFG 4, SFA 14/4 | H10 | | | H20 | | | H30 | | | | | |
| | 5 | SGG 6, SGA 16/6 | H10 | | | H20 | | | H30 | | | | | |
| | | SGG 1, SGA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | SGG 4, SGA 14/4 | H10 | | | H20 | | | H30 | | | | | |
| | 6 | SHG 4, SHA 14/4 | H10 | | | H20 | | | H30 | | | | | |
| | | SHG 3, SHA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | | SHG 5, SHA 15/5 | H10 | | | H20 | | | H30 | | | | | |
| | 230 V | 0 | SBG 1, SBA 11/1 | | H109 | | | H209 | | | | H308 | H309 | |
| | | | SBG 3, SBA 13/3 | H10 | | | H20 | | | H30 | | | | |
| | | 1 | SCG 1, SCA 11/1 | H10 | | | H20 | | | H30 | | | | |
| | | | SCG 6, SCA 16/6 | H10 | | | H20 | | | H30 | | | | |
| 2 | | SDG 1, SDA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | SDG 7, SDA 17/7 | H10 | | | H20 | | | H30 | | | | | |
| 3 | | SEG 3, SEA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | | SEG 1, SEA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | SEG 5, SEA 15/5 | H10 | | | H20 | | | H30 | | | | | |
| 4 | | SFG 1, SFA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | SFG 4, SFA 14/4 | H10 | | | H20 | | | H30 | | | | | |
| 5 | | SGG 3, SGA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | | SGG 1, SGA 11/1 | H10 | | | H20 | | | H30 | | | | | |
| | | SGG 2, SGA 12/2 | H10 | | | H20 | | | H30 | | | | | |
| 6 | | SHG 4, SHA 14/4 | H10 | | | H20 | | | H30 | | | | | |
| | | SHG 3, SHA 13/3 | H10 | | | H20 | | | H30 | | | | | |
| | | SHG 7, SHA 17/7 | H10 | | | H20 | | | H30 | | | | | |
| 7 | | SJG 2, SJA 12 | H10 | | | H20 | | | H30 | | | | | |
| | | SJG 3, SJA 13 | H10 | | | H20 | | | H30 | | | | | |

Available codes
Not available

Combination Starters

Type S, NEMA-style starters with Thermal magnetic circuit breaker with solid-state overload relays

Associations (continued)

| Ratings | | For use on | Motor Logic solid-state overload relays | | | | | | | | | |
|---------------|-----------------|-----------------|---|-------|--------|----------|-------|--------|--------------------------|-----------|-------|--------|
| Motor voltage | NEMA Size | | Class 10 | | | Class 20 | | | Class 10/20 (selectable) | | | |
| | | | 8539 | 3-9 A | 6-18 A | - | 3-9 A | 6-18 A | - | 1.5-4.5 A | 3-9 A | 6-18 A |
| 460 V | 0 | SBG 2, SBA 12/2 | | H109 | | | H209 | | | H308 | H309 | |
| | 1 | SCG 3, SCA 13/3 | | | H100 | | | H200 | | | | H300 |
| | | SCG 7, SCA 17/7 | | | H100 | | | H200 | | | | H300 |
| | | 2 | SDG 3, SDA 13/3 | H10 | | | H20 | | | H30 | | |
| | SDG 4, SDA 14/4 | | H10 | | | H20 | | | H30 | | | |
| | SDG 5, SDA 15/5 | | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 6, SEA 16/6 | H10 | | | H20 | | | H30 | | | |
| | | SEG 3, SEA 13/3 | H10 | | | H20 | | | H30 | | | |
| | | SEG 1, SEA 11/1 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 5, SFA 15/5 | H10 | | | H20 | | | H30 | | | |
| | | SFG 3, SFA 13/3 | H10 | | | H20 | | | H30 | | | |
| | | SFG 4, SFA 14/4 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 3, SGA 13/3 | H10 | | | H20 | | | H30 | | | |
| | | SGG 1, SGA 11/1 | H10 | | | H20 | | | H30 | | | |
| | | SGG 2, SGA 12/2 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 4, SHA 14/4 | H10 | | | H20 | | | H30 | | | |
| | | SHG 3, SHA 13/3 | H10 | | | H20 | | | H30 | | | |
| | | SHG 5, SHA 15/5 | H10 | | | H20 | | | H30 | | | |
| | | SHG 7, SHA 17/7 | H10 | | | H20 | | | H30 | | | |
| | 7 | SJG 2, SJA 12 | H10 | | | H20 | | | H30 | | | |
| | | SJG 3, SJA 13 | H10 | | | H20 | | | H30 | | | |
| 575 V | 0 | SBG 2, SBA 12/2 | | H109 | | | H209 | | | H308 | H309 | |
| | 1 | SCG 8, SCA 18/8 | | | H100 | | | H200 | | | | H300 |
| | | SCG 3, SCA 13/3 | | | H100 | | | H200 | | | | H300 |
| | 2 | SDG 8, SDA 18/8 | H10 | | | H20 | | | H30 | | | |
| | | SDG 9, SDA 19/9 | H10 | | | H20 | | | H30 | | | |
| | | SDG 4, SDA 14/4 | H10 | | | H20 | | | H30 | | | |
| | 3 | SEG 4, SEA 14/4 | H10 | | | H20 | | | H30 | | | |
| | | SEG 6, SEA 16/6 | H10 | | | H20 | | | H30 | | | |
| | | SEG 3, SEA 13/3 | H10 | | | H20 | | | H30 | | | |
| | 4 | SFG 6, SFA 16/6 | H10 | | | H20 | | | H30 | | | |
| | | SFG 5, SFA 15/5 | H10 | | | H20 | | | H30 | | | |
| | | SFG 1, SFA 11/1 | H10 | | | H20 | | | H30 | | | |
| | 5 | SGG 7, SGA 17/7 | H10 | | | H20 | | | H30 | | | |
| | | SGG 6, SGA 16/6 | H10 | | | H20 | | | H30 | | | |
| | | SGG 1, SGA 11/1 | H10 | | | H20 | | | H30 | | | |
| | 6 | SHG 6, SHA 16/6 | H10 | | | H20 | | | H30 | | | |
| | | SHG 4, SHA 14/4 | H10 | | | H20 | | | H30 | | | |
| | | SHG 2, SHA 12/2 | H10 | | | H20 | | | H30 | | | |
| | | SHG 3, SHA 13/3 | H10 | | | H20 | | | H20 | | | |
| | 7 | SJG 1, SJA 11 | H10 | | | H20 | | | H30 | | | |
| | | SJG 2, SJA 12 | H10 | | | H20 | | | H30 | | | |

 Available codes

 Not available



Combination Starters

Type S, NEMA-style
Accessories

2

| Characteristics | | | | | |
|--------------------|---------|----|-----------------------------------|-------|-----------------------------|
| Class | | | 9999 | | |
| Type | | | Single-pole electrical interlocks | | |
| Electrical ratings | | | Make | Break | Continuous carrying current |
| Maximum current | | | | | |
| 50/60 Hz | ~ 120 V | A | 40 | 15 | 15 |
| | ~ 240 V | A | 20 | 10 | 15 |
| | ~ 480 V | A | 10 | 8 | 15 |
| | ~ 600 V | A | 8 | 6 | 15 |
| Class | | | 9999 | | |
| Type | | | 2-pole electrical interlocks | | |
| Electrical ratings | | | Make | Break | Continuous carrying current |
| Maximum current | | | | | |
| 50/60 Hz | ~ 120 V | A | 30 | 3 | 10 |
| | | VA | 3450 | 345 | - |
| | ~ 240 V | A | 15 | 1.5 | 10 |
| | | VA | 3450 | 345 | - |
| | ~ 480 V | A | 7.5 | 0.75 | 10 |
| | | VA | 3450 | 345 | - |
| | ~ 600 V | A | 6 | 0.6 | 10 |
| | | VA | 3450 | 345 | - |

Combination Starters

Type S, NEMA-style Accessories

Variants

| Type | For use on | Description | Suffix to the starter reference (1) | Weight kg (lb) |
|----------------------|--|----------------------------|-------------------------------------|----------------|
| Interlocks | Disconnect-switch starters 8538 S●● or circuit-breaker starters 8539 S●● | Single-pole | Y74 | — |
| | | 2-pole | Y75 | — |
| Control transformers | Disconnect-switch starters 8538 S●● or circuit-breaker starters 8539 S●● | Standard capacity | F4T | — |
| | | 50 VA additional capacity | F4T10 | — |
| | | 100 VA additional capacity | F4T11 | — |
| | | 200 VA additional capacity | F4T12 | — |

Interlocks

| Type | For use on Class Type (2) | Description | Reference | Weight kg (lb) |
|------------|---|-------------|-----------|----------------|
| Interlocks | 8538 SB, SC, SD (Series B) (3) | Single-pole | 9999 R6 | — |
| | | 2-pole | 9999 R7 | — |
| | SD (Series C) | Single-pole | 9999 R43 | — |
| | | 2-pole | 9999 R44 | — |
| | SB, SC (Series C) | Single-pole | 9999 R45 | — |
| | | 2-pole | 9999 R46 | — |
| | SE, SF (Series A) | Single-pole | 9999 R8 | — |
| | | 2-pole | 9999 R9 | — |
| | SE (Series B and C) | Single-pole | 9999 R41 | — |
| | | 2-pole | 9999 R42 | — |
| | SF (Series B and C) | Single-pole | 9999 R39 | — |
| | | 2-pole | 9999 R40 | — |
| | SG | Single-pole | 9999 R35 | — |
| | | 2-pole | 9999 R36 | — |
| | SBA, SCA, SBG, SCG (Series D) | Single-pole | 9999 TC11 | — |
| | | 2-pole | 9999 TC21 | — |
| | SBAS8, SCAS8, SBGS8, SCGS8 (Series D), SDA, SDA (3), SDG, SDG (3) (Series D), SEA, SEG (Series D) | Single-pole | 9999 TC10 | — |
| | | 2-pole | 9999 TC20 | — |
| | 8539 SB, SC, SD, SE, SF, SG (4) | Single-pole | 9999 R26 | — |
| | | 2-pole | 9999 R27 | — |

(1) Example: **8538 SBG 12 V01 Y74**.

(2) Series A, B, C and D are product versions.

(3) Class 8538 type numbers ending in suffix "S8".

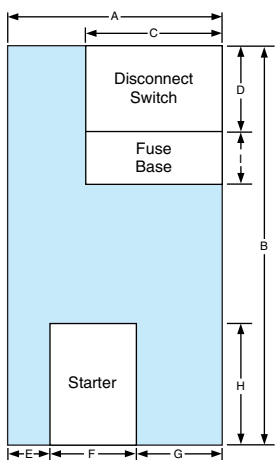
(4) No interlocks available when used with the G.J.L. circuit-breaker.

Combination Starters

Type S, NEMA-style starters with Disconnect switch or Circuit breaker

Dimensions in mm (25.4 mm = 1 inch)

Combination starters 8538 S●G

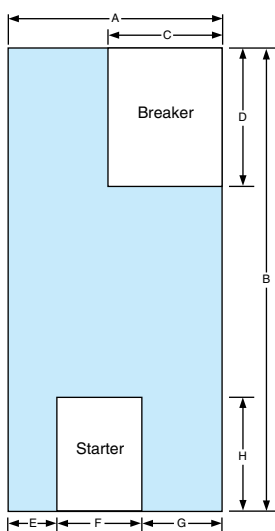


Available space for field requirements

| | A | B | C | D | E | F | G | H | I |
|--------------|-------|--------|-------|--------|------|-------|-------|-------|-------|
| 8538 SBG | 175.3 | 469.9 | 175.3 | 165.1 | 0 | 88.9 | 86.4 | 175.3 | 101.6 |
| 8538 SCG | 175.3 | 469.9 | 175.3 | 165.1 | 0 | 88.9 | 86.4 | 175.3 | 101.6 |
| 8538 SDG | 200.7 | 558.8 | 190.5 | 177.8 | 78.7 | 121.9 | 0 | 195.6 | 152.4 |
| 8538 SEG | 304.8 | 749.3 | 228.6 | 195.6 | 0 | 142.2 | 162.6 | 327.7 | 134.6 |
| 8538 SFG | 330.2 | 990.6 | 279.4 | 292.1 | 0 | 177.8 | 152.4 | 330.2 | 228.6 |
| 8538 SGG (1) | 439.4 | 1498.6 | 342.9 | 635.0 | 0 | 274.3 | 165.1 | 520.7 | — |
| 8538 SHG | 812.8 | 2082.8 | 812.8 | 1016.0 | 0 | 330.2 | 482.6 | 889.0 | — |

(1) Combination starter does not contain a full-size panel. No usable panel space is available.

Combination starters 8539 S●G



Available space for field requirements

| | A | B | C | D | E | F | G | H |
|------------------------|-------|--------|-------|--------|------|-------|-------|-------|
| 8539 SBG | 175.3 | 469.9 | 165.1 | 200.7 | 0 | 88.9 | 86.4 | 175.3 |
| 8539 SCG | 175.3 | 469.9 | 165.1 | 200.7 | 0 | 88.9 | 86.4 | 175.3 |
| 8539 SDG | 200.7 | 558.8 | 165.1 | 162.6 | 78.7 | 121.9 | 0 | 195.6 |
| 8539 SEG + FAL (1) | 304.8 | 749.3 | 165.1 | 215.9 | 0 | 142.2 | 162.6 | 327.7 |
| 8539 SEG + KAL (1) | 304.8 | 749.3 | 172.7 | 266.7 | 0 | 142.2 | 162.6 | 327.7 |
| 8539 SFG | 330.2 | 990.6 | 172.7 | 317.5 | 0 | 177.8 | 152.4 | 330.2 |
| 8539 SGG + KAL (1) (2) | 439.4 | 1498.6 | 172.7 | 584.2 | 0 | 274.3 | 165.1 | 520.7 |
| 8539 SGG + LAL (1) (2) | 439.4 | 1498.6 | 228.6 | 622.3 | 0 | 274.3 | 165.1 | 520.7 |
| 8539 SHG + LAL (1) | 812.8 | 2082.8 | 228.6 | 647.7 | 0 | 330.2 | 482.6 | 889.0 |
| 8539 SHG + MAL (1) | 812.8 | 2082.8 | 317.5 | 1028.7 | 0 | 330.2 | 482.6 | 889.0 |

(1) Circuit-breaker.

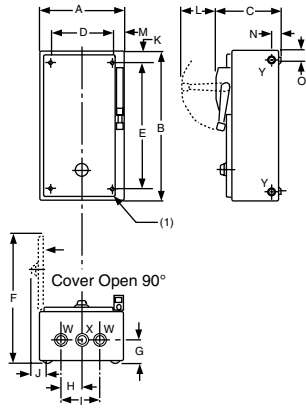
(2) Combination starter does not contain a full-size panel. No usable panel space is available.

Combination Starters

Type S, NEMA-style starters with Disconnect switch or Circuit breaker

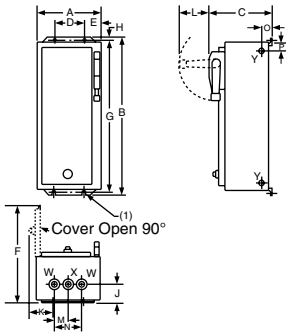
Dimensions in mm (25.4 mm = 1 inch)

Combination starters 8538/8539 SBG to SDG (NEMA 1 enclosure)



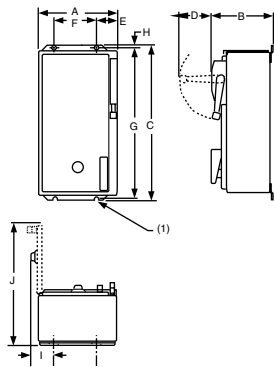
| | A | B | C | D | E | F | G | H | I | J |
|---------------|-------|-------|-------|-------|-------|-----------|-----------|------|-------|------|
| 8538/8539 SBG | 241.3 | 571.5 | 211.8 | 161.9 | 520.7 | 372.1 | 46.0 | 42.7 | 76.2 | 58.7 |
| 8538/8539 SCG | 241.3 | 571.5 | 211.8 | 161.9 | 520.7 | 372.1 | 46.0 | 42.7 | 76.2 | 58.7 |
| 8538/8539 SDG | 266.7 | 660.4 | 243.6 | 187.3 | 609.6 | 429.3 | 54.0 | 50.8 | 101.6 | 25.4 |
| | K | L | M | N | O | W | X | Y | | |
| 8538/8539 SBG | 26.9 | 82.6 | 55.4 | 31.8 | 22.2 | 12.7–19.1 | 12.7–19.1 | 12.7 | | |
| 8538/8539 SCG | 26.9 | 82.6 | 55.4 | 31.8 | 22.2 | 12.7–19.1 | 12.7–19.1 | 12.7 | | |
| 8538/8539 SDG | 26.9 | 82.6 | 55.4 | 31.8 | 22.2 | 25.4–31.8 | 12.7–19.2 | 12.7 | | |

Combination starters 8538/8539 SEG to SJG (NEMA 1 enclosure)



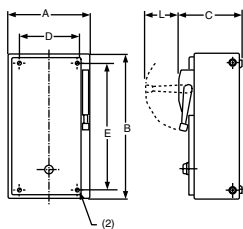
| | A | B | C | D | E | F | G | H | J | K |
|---------------|-------|--------|--------|-------|-----------|-----------|--------|------|------|-------|
| 8538 SEG | 387.4 | 1066.8 | 269.0 | 235.0 | 76.2 | 576.8 | 1041.4 | 12.7 | 71.6 | 89.7 |
| 8539 SEG | 387.4 | 1066.8 | 269.0 | 235.0 | 76.2 | 576.8 | 1041.4 | 12.7 | 71.6 | 89.7 |
| 8538/8539 SFG | 406.4 | 1333.5 | 267.5 | 254.0 | 76.2 | 600.7 | 1308.1 | 12.7 | 71.6 | 89.7 |
| 8538 SGG | 508.0 | 1981.2 | 393.7 | 304.8 | 101.6 | 746.8 | 1955.8 | 12.7 | 89.2 | 114.6 |
| 8539 SGG | 508.0 | 1676.4 | 348.2 | 304.8 | 101.6 | 746.8 | 1651.0 | 12.7 | 89.2 | 114.6 |
| 8538/8539 SHG | 914.4 | 2286.0 | 534.2 | – | – | 1050.9 | – | – | – | – |
| 8539 SJG | 863.6 | 533.4 | 2286.0 | – | – | 1257.3 | – | – | – | – |
| | L | M | N | O | W | X | Y | | | |
| 8538 SEG | 127.0 | 68.1 | 136.5 | 32.5 | 25.4–31.8 | 12.7–19.2 | 12.7 | | | |
| 8539 SEG | 127.0 | 68.1 | 136.5 | 32.5 | 50.8–63.5 | 12.7–19.3 | 12.7 | | | |
| 8538/8539 SFG | 127.0 | 68.1 | 136.5 | 32.5 | 63.5 | 12.7–19.4 | 12.7 | | | |
| 8538 SGG | 235.0 | 80.8 | – | – | 12.7–19.1 | 76.2 | – | | | |
| 8539 SGG | 127.0 | 80.8 | – | – | 12.7–19.2 | 76.2 | – | | | |
| 8538/8539 SHG | 127.0 | – | – | – | – | – | – | | | |
| 8539 SJG | 127.0 | – | – | – | – | – | – | | | |

Combination starters 8538/8539 S●A (NEMA 12 enclosure)



| | A | B | C | D | E | F | G | H | I | J |
|---------------|-------|-------|--------|-------|-------|-------|--------|------|-------|--------|
| 8538/8539 SBA | 241.3 | 211.8 | 609.6 | 82.6 | 63.5 | 114.3 | 596.9 | 15.0 | 112.5 | 363.5 |
| 8538/8539 SCA | 241.3 | 211.8 | 609.6 | 82.6 | 63.5 | 114.3 | 596.9 | 15.0 | 112.5 | 363.5 |
| 8538/8539 SDA | 266.7 | 243.6 | 704.9 | 82.6 | 63.5 | 139.7 | 685.8 | 9.5 | 104.8 | 420.6 |
| 8538/8539 SEA | 387.4 | 269.0 | 1066.8 | 127.0 | 76.2 | 235.0 | 1041.4 | 12.7 | 128.5 | 566.7 |
| 8538 SFA | 406.4 | 267.5 | 1333.5 | 127.0 | 76.2 | 254.0 | 1308.1 | 12.7 | 106.2 | 583.2 |
| 8539 SFA | 406.4 | 267.5 | 1333.5 | 127.0 | 76.2 | 254.0 | 1308.1 | 12.7 | 131.6 | 583.2 |
| 8538 SGA | 508.0 | 348.2 | 1981.2 | 235.0 | 101.6 | 304.8 | 1955.8 | 12.7 | 197.6 | 746.8 |
| 8539 SGA | 508.0 | 348.2 | 1676.4 | 127.0 | 101.6 | 304.8 | 1651.0 | 12.7 | 197.6 | 696.0 |
| 8538/8539 SHA | 914.4 | 431.8 | 2286.0 | 127.0 | – | – | – | – | – | 1203.3 |
| 8539 SJA | 863.6 | 533.4 | 2286.0 | 127.0 | – | – | – | – | – | 1257.3 |

Combination starters 8538/8539 S●G ●● S8 and 8538/8539 S●A ●● S8 (NEMA 12 enclosure)



| | A | B | C | D | E | L |
|---------------------|-------|-------|-------|-------|-------|------|
| 8538/8539 S●G ●● S8 | 381.0 | 730.3 | 243.6 | 295.3 | 666.8 | 82.6 |
| 8538/8539 S●A ●● S8 | 381.0 | 787.4 | 278.4 | 228.6 | 768.4 | 82.6 |

(2) 0.31 in. (8 mm) dia. mounting holes.

(1) 0.31 in. (8 mm) dia. mounting holes for Sizes 0, 1, and 2, 0.44 in. (11 mm) dia. mounting holes for Sizes 3 and 4, 0.56 in. (14 mm) dia. mounting holes located on 14 external flanges for Size 5.

- Motor Logic® base unit
 - General, description. *page 3/2*
 - Characteristics *page 3/3*
 - References *page 3/6*
 - Dimensions *page 3/8*
- Motor Logic® feature unit
 - General, description. *page 3/2*
 - Characteristics *page 3/3*
 - References *page 3/6*
 - Dimensions *page 3/8*
- Motor Logic® Plus programmable unit
 - General, description. *page 3/2*
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- Motor Logic® Plus II programmable unit
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Solid-State Overload Relays

Motor Logic® base unit

Motor Logic® feature unit

Motor Logic® Plus programmable unit

General

Overload relays are intended to protect motors, controllers and branch-circuit conductors against excessive heating due to prolonged motor overcurrents up to and including locked rotor currents. Protection of the motor and the other branch-circuit components from higher currents, due to short-circuits or earth faults, is a function of the branch-circuit fuses, circuit-breakers or motor short-circuit protectors.

Electric motors make up a large percentage of power system loads. Market demands for reduced downtime and increased productivity have compelled the motor control industry to continuously evaluate motor protection technology. Technology advancements now allow the motor control industry to offer several options for motor protection.

This briefly reviews traditional motor protection technologies and discusses the new, electronic motor protection options. Important factors to consider in determining the appropriate overload protection include:

- Application requirements.
 - Cost per feature of a given technology.
 - Willingness and ability of all parts of the user's organization to embrace and implement the new technology.
- Motor failure may be the result of electrical or mechanical factors. A study commissioned by the Electrical Research Associates (ERA) of the United Kingdom indicated that the most common causes of motor failure are:

| | | |
|---|----------------------|------|
| 1 | Overcurrent | 30 % |
| 2 | Contamination | 18 % |
| 3 | Single phasing | 15 % |
| 4 | Bearing failure | 12 % |
| 5 | Aging (natural wear) | 10 % |
| 6 | Rotor fault | 5 % |
| 7 | Miscellaneous | 7 % |

Failure modes 1, 3 and 7 are attributable to electrical issues. Modes 2, 4, 5 and 6 are the result of mechanical (and some manufacturing) issues.

Historically, motor protection provided with the controller was only able to address the electrical causes of motor failure. These electrical issues account for at least 45% of the most common causes of motor failure. Motor branch circuits are protected against short circuits (instantaneous overload currents) and steady-state or low-level sustained overloads. In the U.S., this protection is provided by the short-circuit protective device (SCPD) and the motor overload relay, when they are applied according to the National Electrical Code (NEC).

Motor Logic solid-state overload relay base unit

As the market leader in motor control products, Square D offers the Motor Logic solid-state overload relay base unit. It provides the most complete electronic overload protection available to date for the price.

Motor Logic solid-state overload relay feature unit

The Motor Logic solid-state overload relay feature unit offers the same features as the base unit, along with the following:

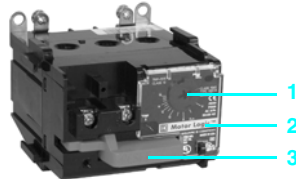
- Class II earth fault detection to protect motors from hard-to-find earth fault conditions.
- Switch-selectable trip class (Class 10 or Class 20) for application flexibility in a single unit.

Motor Logic Plus programmable solid-state overload relay

The Motor Logic Plus programmable solid-state overload relay is a fully programmable overload relay designed to monitor three-phase a.c. motor systems. It has 16 programming parameters of which eight can be viewed from the 3-digit alphanumeric LED display screen on the face of the overload relay. Additionally, these parameters can be viewed through the use of a personal computer for remote access to motor performance and adjustments.

Description

Motor Logic solid-state overload relays **9065 S●** include:



- 1 Adjustment dial
- 2 Tamper-proof cover
- 3 Reset button

Motor Logic Plus programmable solid-state overload relays **9065 SP** include:



- 1 Mode select switch (1)
- 2 3-digit alphanumeric LED display screen
- 3 Display/Program switch
- 4 Communication port (on side)
- 5 Reset/Program button

(1) Low voltage set point, High voltage set point, Voltage unbalance set point, Overcurrent trip point, Undercurrent trip point, Current unbalance trip point, Trip class (5, 10, 15, 20, 30), Rapid cycle timer (RD1), Overload restart delay (RD2), Underload restart delay (RD3), Number of restarts after an overload, Unbalance, Single phasing (manual or automatic), RS-485 address, Number of restarts after an underload fault, Underload trip delay and Earth fault trip point, Individual line voltages, Current levels, as well as Average voltage and Average current.

Solid-State Overload Relays

Motor Logic® base unit

Motor Logic® feature unit

Motor Logic® Plus programmable unit

Environment

| | | |
|---|-----------|-------------------------------------|
| Conforming to standards | | UL 508, NEMA ICS-2, IEC 60947-4-1 |
| Product certifications | | UL Listed, CSA certified, C€ marked |
| Ambient air temperature around the device | Storage | °C - 40...+ 80 |
| | Operation | °C - 25...+ 70 |

Electrical characteristics

Motor Logic solid-state overload relays

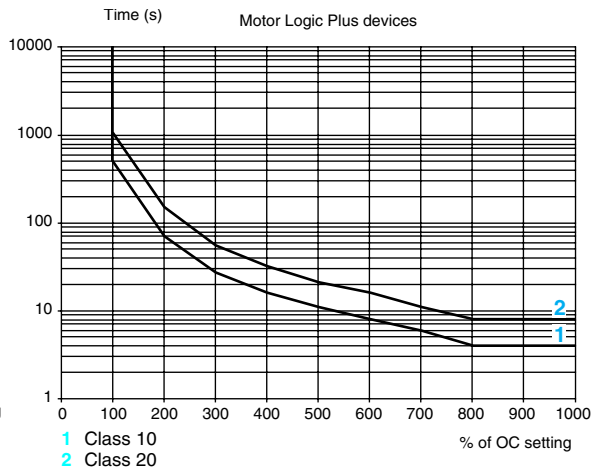
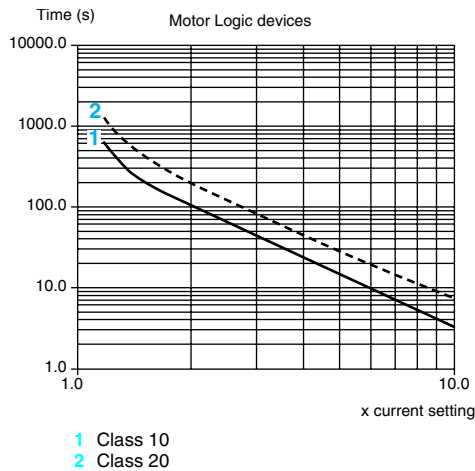
| | | | | | | | | | | | |
|--------------------------------|------------------------------------|-------|--------|--------|------------|--------------|-------------------------------|-------------|--------------------------------|--------------------------------|--|
| Class | 9065 | | | | | | | | | | |
| Type | S●B | S●C | S●0 | S●1 | S●2 | S●3 | S●4 | S●5 | ST 620 | ST 720 | |
| Current ranges | A 1.5...4.5 | 3...9 | 6...18 | 9...27 | 15...45 | 30...90 | 45...135 | 90...270 | 180...540 | 270...810 | |
| Withstand rating (stand alone) | A 5000 RMS symmetrical, 600 V | | | | | | 10 000 RMS symmetrical, 600 V | | | | |
| Rated insulation voltage | ~ V 600 | | | | | | | | | | |
| Control voltage | Self-powered | | | | | | | | | | |
| Frequency limits | Hz 48...62 | | | | | | | | | | |
| Trip contact ratings | A600/P300 | | | | | | | | | | |
| Repeat trip time accuracy | ± 2 % | | | | | | | | | | |
| Power wire connection | Through hole device | | | | # 14-4 AWG | # 14-1/0 AWG | # 8-250 MCM | # 4-500 MCM | 250-500 MCM (1 or 2 per phase) | 250-500 MCM (1 to 4 per phase) | |
| Control wire | # 16-12 AWG (two per terminal) | | | | | | | | | | |
| Lug kit power wire | # 14-8 AWG | | | | # 14-4 AWG | # 14-1/0 AWG | # 8-250 MCM | N/A | N/A | N/A | |
| DIN adapter | 35 mm DIN rail, 7.5 mm track depth | | | | | | | | | | |

Motor Logic Plus programmable solid-state overload relays

| | | | | | | | | |
|--------------------------------|---|-------|----------------------------|---------|---------|----------|-----------|-----------|
| Class | 9065 | | | | | | | |
| Type | SPB● | SPC● | SP 1● | SP 2● | SP 3● | SP 4● | SP 5● | SP 6● |
| Current ranges | A 0.5...2.3 | 2...9 | 6...27 | 10...45 | 20...90 | 60...135 | 120...270 | 240...540 |
| Withstand rating (stand alone) | A 100 000 (RMS symmetrical, 600 V) UL 100 000 (RMS symmetrical, 600 V) CSA | | | | | | | |
| Rated insulation voltage | ~ V 600 | | | | | | | |
| Control voltage | 3-phase, 50/60 Hz | | ~ V 200 to 480, 500 to 600 | | | | | |
| Frequency limits | Hz 48...66 | | | | | | | |
| Trip contact ratings | B300 | | | | | | | |
| Repeat trip time accuracy | Voltage ± 0.5 % of nominal voltage | | | | | | | |
| | Current ± 1 % (50 % min to 120 % max overcurrent) | | | | | | | |
| Screen | 3-digit alphanumeric LED display screen | | | | | | | |
| Programming parameters | 16 | | | | | | | |
| Power wire connection | Through-hole device | | | | | | | |
| Control wire | # 12-22 AWG (two per terminal) | | | | | | | |
| Lug kit power wire | # 1/0-14 AWG | | | | | | | |

Tripping curves

Average operating time related to multiples of the current setting



3



9065 SP2 with 9999 DN2



9999 MLPD



9999 MMS



9999CCKIT
(battery not included)

General

The Motor Logic Plus II programmable solid-state overload relay is separately powered from a 110/120 Vac, 50/60 Hz source. It has three internal current transformers for measuring phase currents from 0.5–90 A, and one internal zero-sequence current transformer for measuring earth ground faults up to 10 A. Current measurements from 90–540 A require the use of external CTs and result in a residual ground fault detection system. LED indicators on the front face of the overload relay display the product status and the states of the fault relay, the inputs, and the outputs. A reset button is located on the face for manual reset.

Four digital inputs are available via field wiring terminals. All digital inputs are internally pulled down to the board reference. One power terminal (P) is used to source the inputs to +24 Vdc. Inputs 1 and 4 can be used as standard digital inputs, or they can be independently configured through programming as PTC (positive temperature coefficient) and Reset inputs, respectively. When Input 1 is configured as a PTC input, the return reference is to the G terminal.

Three relay outputs are available via field wiring terminals: one Form C relay (single-pole, double-throw) for fault; and two Form A relays (single-pole, single-throw) for contactor control. A Form C relay has one normally open (N.O.) and one normally closed (N.C.) set of contacts that share a common terminal; when energized, both sets of contacts change state. The Form A relays are normally open and wired to share a common terminal; however, their operation is independent.

Two-wire Modbus® communication is internal to the overload relay and allows for direct connection to a Motor Logic Plus display (9999 MLPD)⁽¹⁾ or motor management system (9999 MMS) via the terminal blocks located on the front face. The DeviceNet communication module (9999 DN2) connects to the Sub-D connector on the right side of the product.

The Motor Logic Plus II programmable overload relay provides the following protection features for 3-phase (default) and single-phase motors:

- Thermal Overload
- Undercurrent
 - Programmable trip delay from 2 to 60 seconds
- Jam
- Current Unbalance (3-phase only)
 - Programmable from 2 to 25%
- Phase Loss (3-phase only)
- Ground Fault (enabled/disabled)
 - Zero sequence transformer core
 - Programmable from 1 to 10 A
 - Ground fault inhibit programmable from 1 to 255 seconds
- Reverse Phase (3-phase only)
- Single Phase (3-phase only)
- PTC Thermistor

Other features include:

- Programmable overload trip class: 5, 10, 15, 20, or 30
- Manual and automatic reset option
- Warning of impending faults
- Motor thermal capacity
- Restart delay timers
 - Rapid cycle: programmable from 0 to 500 seconds
 - Motor cool down: programmable from 2 to 500 minutes
 - Dry well recovery: programmable from 2 to 500 minutes

Description

Motor Logic Plus II programmable solid-state overload relay **9065 SP2**



- 1 Status, Trip/Warn, and output LEDs
- 2 3 fault relay outputs
- 3 3 outputs
- 4 4 input LEDs
- 5 Sub-D connector for DeviceNet module (on side)
- 6 3 network terminals
- 7 4 digital inputs
- 8 Reset/Test Trip button

(1) The Motor Logic Plus display is powered using the cable configuration kit (9999CCKIT) and a 9 V battery (not included).

Trip Class (TC)

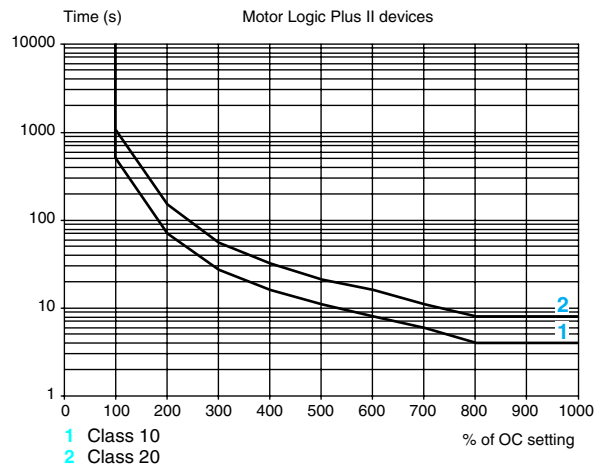
The trip class for overload protection, described in the following table, defines the trip delay upon detection of a thermal overload. (Refer to the tripping curves.) The motor and application determine the trip class. Consult the motor manufacturer for the proper setting.

Note: Class 20 is the default setting for all Motor Logic Plus units.

| Trip Class | Application Description |
|--------------------|--|
| 5 | Small, fractional-horsepower motors where acceleration time is almost instantaneous or where extremely quick trip times are required |
| 10 (Fast Trip) | Hermetic refrigerant motors, compressors, submersible pumps, and general-purpose motors that reach rated speed in less than 4 seconds |
| 15 | Certain specialized applications |
| 20 (Standard Trip) | Most NEMA general-purpose motors are protected by this setting |
| 30 (Slow Trip) | Motors with long acceleration times (>10 seconds) or high-inertia loads |
| J Prefix | Programming any trip class with the J prefix enables jam protection. This additional protection is enabled 1 minute after the motor starts and provides a 2 second trip time for motors exceeding 400% of the overcurrent setting, regardless of trip class. |

Tripping curves

Average operating time related to multiples of the current setting

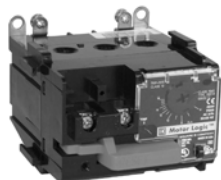


Solid-State Overload Relays

Motor Logic® base unit

Motor Logic® feature unit

551203



9065 SSC 10

3

Motor Logic solid-state overload relays base unit

| NEMA Size 3-phase | Full-load current range | Open type | Reference | Weight |
|--|-------------------------|---------------|-------------|----------------|
| | | | | kg (lb) |
| Motor Logic base unit for separate mounting | | | | |
| 00C (1) | 3...9 | Trip Class 10 | 9065 SSC 10 | 0.5 (1) |
| | | Trip Class 20 | 9065 SSC 20 | 0.5 (1) |
| 0 (1) | 6...18 | Trip Class 10 | 9065 SS 010 | 0.5 (1.2) |
| | | Trip Class 20 | 9065 SS 020 | 0.5 (1.2) |
| 1 (1) | 9...27 | Trip Class 10 | 9065 SS 110 | 0.5 (1.2) |
| | | Trip Class 20 | 9065 SS 120 | 0.5 (1.2) |
| 2 | 15...45 | Trip Class 10 | 9065 SS 210 | 0.7 (1.5) |
| | | Trip Class 20 | 9065 SS 220 | 0.7 (1.5) |
| 3 | 30...90 | Trip Class 10 | 9065 SS 310 | 1.3 (2.9) |
| | | Trip Class 20 | 9065 SS 320 | 1.3 (2.9) |
| 4 | 45...135 | Trip Class 10 | 9065 SS 410 | 1.6 (3.6) |
| | | Trip Class 20 | 9065 SS 420 | 1.6 (3.6) |

Motor Logic base unit for retrofitting existing Type S starters (2)

| | | | | |
|---------|----------|---------------|-------------|-----------|
| 00C (1) | 3...9 | Trip Class 10 | 9065 SSC 10 | 0.5 (1) |
| | | Trip Class 20 | 9065 SSC 20 | 0.5 (1) |
| 0 (1) | 6...18 | Trip Class 10 | 9065 SS 010 | 0.5 (1.2) |
| | | Trip Class 20 | 9065 SS 020 | 0.5 (1.2) |
| 1 (1) | 9...27 | Trip Class 10 | 9065 SS 110 | 0.5 (1.2) |
| | | Trip Class 20 | 9065 SS 120 | 0.5 (1.2) |
| 2 | 15...45 | Trip Class 10 | 9065 SR 210 | 0.7 (1.5) |
| | | Trip Class 20 | 9065 SR 220 | 0.7 (1.5) |
| 3 | 30...90 | Trip Class 10 | 9065 SR 310 | 1.3 (2.9) |
| | | Trip Class 20 | 9065 SR 320 | 1.3 (2.9) |
| 4 | 45...135 | Trip Class 10 | 9065 SR 410 | 1.6 (3.6) |
| | | Trip Class 20 | 9065 SR 420 | 1.6 (3.6) |

Motor Logic solid-state overload relays feature unit

| NEMA Size 1/3-pole | Full-load current range | Open type | Reference | Weight |
|---|-------------------------|------------------|-------------|----------------|
| | | | | kg (lb) |
| Motor Logic feature unit for separate mounting | | | | |
| 00B (1) | 1.5...4.5 | Trip Class 10/20 | 9065 SFB 20 | 0.5 (1) |
| 00C (1) | 3...9 | Trip Class 10/20 | 9065 SFC 20 | 0.5 (1) |
| 0 (1) | 6...18 | Trip Class 10/20 | 9065 SF 020 | 0.5 (1.2) |
| 1 (1) | 9...27 | Trip Class 10/20 | 9065 SF 120 | 0.5 (1.2) |
| 2 | 15...45 | Trip Class 10/20 | 9065 SF 220 | 0.7 (1.5) |
| 3 | 30...90 | Trip Class 10/20 | 9065 SF 320 | 1.3 (2.9) |
| 4 | 45...135 | Trip Class 10/20 | 9065 SF 420 | 1.6 (3.6) |

Motor Logic feature unit for retrofitting existing Type S starters (2)

| | | | | |
|---------|-----------|------------------|-------------|-----------|
| 00B (1) | 1.5...4.5 | Trip Class 10/20 | 9065 SFB 20 | 0.5 (1) |
| 00C (1) | 3...9 | Trip Class 10/20 | 9065 SFC 20 | 0.5 (1) |
| 0 (1) | 6...18 | Trip Class 10/20 | 9065 SF 020 | 0.5 (1.2) |
| 1 (1) | 9...27 | Trip Class 10/20 | 9065 SF 120 | 0.5 (1.2) |
| 2 | 15...45 | Trip Class 10/20 | 9065 ST 220 | 0.7 (1.5) |
| 3 | 30...90 | Trip Class 10/20 | 9065 ST 320 | 1.3 (2.9) |
| 4 | 45...135 | Trip Class 10/20 | 9065 ST 420 | 1.6 (3.6) |
| 5 (3) | 90...270 | Trip Class 10/20 | 9065 ST 520 | 0.5 (1.2) |
| 6 (3) | 180...540 | Trip Class 10/20 | 9065 ST 620 | 0.5 (1.2) |
| 7 (3) | 270...810 | Trip Class 10/20 | 9065 ST 720 | 0.5 (1.2) |

Kits

| Type | Kit description | For use on | Reference | Weight |
|------------------|---|------------------------------|-----------|--------|
| Lug-lug kit | For separate mounting | 9065 S● (Sizes 00C/0/1 only) | 9999 LLO | – |
| Lug-extender kit | For retrofitting existing Type S starters | 9065 S● (Sizes 00C/0/1 only) | 9999 LBO | – |

(1) Size supplied without lugs.

(2) For Type S starter references, see pages 1/6 to 1/13.

(3) Replacement for Type S starters with an existing Motor Logic solid-state overload relay. Does not include primary current transformer or additional components.

Solid-State Overload Relays

Motor Logic® Plus programmable unit
Motor Logic® Plus II programmable unit



9065 SPB 4

Motor Logic Plus programmable solid-state overload relays

| NEMA Size 3-phase | Product current range | | Voltage V | Reference | Weight kg (lb) |
|----------------------|--------------------------|-----------|--------------|------------|-------------------|
| | A | V | | | |
| 00 | 0.5...2.3 | 200...480 | 600 | 9065 SPB 4 | 1 (3) |
| | | 600 | | 9065 SPB 6 | 1 (3) |
| 0 | 2...9 | 200...480 | 600 | 9065 SPC 4 | 1 (3) |
| | | 600 | | 9065 SPC 6 | 1 (3) |
| 1 | 6...27 | 200...480 | 600 | 9065 SP 14 | 1 (3) |
| | | 600 | | 9065 SP 16 | 1 (3) |
| 2 | 10...45 | 200...480 | 600 | 9065 SP 24 | 1 (3) |
| | | 600 | | 9065 SP 26 | 1 (3) |
| 3 | 20...90 | 200...480 | 600 | 9065 SP 34 | 1 (3) |
| | | 600 | | 9065 SP 36 | 1 (3) |
| 4 (1) | 60...135 | 200...480 | 600 | 9065 SP 44 | 1 (3) |
| | | 600 | | 9065 SP 46 | 1 (3) |
| 5 (2) | 120...270 | 200...480 | 600 | 9065 SP 54 | 1 (3) |
| | | 600 | | 9065 SP 56 | 1 (3) |
| 6 (3) | 240...540 | 200...480 | 600 | 9065 SP 64 | 1 (3) |
| | | 600 | | 9065 SP 66 | 1 (3) |

Variants of Type S starters

| Description | Current range A | Factory modification | Reference Suffix | Weight |
|--|--------------------|---------------------------------|------------------|---------|
| | | | | kg (lb) |
| Motor Logic Plus programmable solid-state overload relays (add to the starter reference) (4) | 0.5...2.3 | No modification for 200...480 V | B20 | — |
| | | No modification for 600 V | B24 | — |
| | 2...9 | No modification for 200...480 V | B30 | — |
| | | No modification for 600 V | B34 | — |
| | 6...27 | No modification for 200...480 V | B40 | — |
| | | No modification for 600 V | B44 | — |
| | 10...45 | No modification for 200...480 V | B50 | — |
| | | No modification for 600 V | B54 | — |
| | 20...90 | No modification for 200...480 V | B60 | — |
| | | No modification for 600 V | B64 | — |
| | 60...135 | No modification for 200...480 V | B70 | — |
| | | No modification for 600 V | B74 | — |
| | 120...270 | No modification for 200...480 V | B80 | — |
| | | No modification for 600 V | B84 | — |
| | 240...540 | No modification for 200...480 V | B90 | — |
| | | No modification for 600 V | B94 | — |

Motor Logic Plus II programmable solid-state overload relays

| NEMA Size 3-phase | Product current range | | Voltage V | Reference | Weight kg (lb) |
|----------------------|--------------------------|-----|--------------|-------------|-------------------|
| | A | V | | | |
| 00 | 0.5...2.3 | 600 | 600 | 9065 SP2 B6 | 1 (3) |
| 0 | 2...9 | 600 | 600 | 9065 SP2 C6 | 1 (3) |
| 1 | 6...27 | 600 | 600 | 9065 SP2 16 | 1 (3) |
| 2 | 10...45 | 600 | 600 | 9065 SP2 26 | 1 (3) |
| 3 | 20...90 | 600 | 600 | 9065 SP2 36 | 1 (3) |
| 4 (1) | 60...135 | 600 | 600 | 9065 SP2 46 | 1 (3) |
| 5 (2) | 120...270 | 600 | 600 | 9065 SP2 56 | 1 (3) |
| 6 (3) | 240...540 | 600 | 600 | 9065 SP2 66 | 1 (3) |

Variants of Type S starters

| Description | Current range A | Factory modification | Reference Suffix | Weight |
|--|--------------------|---------------------------|------------------|---------|
| | | | | kg (lb) |
| Motor Logic Plus programmable solid-state overload relays (add to the starter reference) (4) | 0.5...2.3 | No modification for 600 V | H50 | — |
| | | No modification for 600 V | H51 | — |
| | 2...9 | No modification for 600 V | H52 | — |
| | | No modification for 600 V | H53 | — |
| | 6...27 | No modification for 600 V | H54 | — |
| | | No modification for 600 V | H55 | — |
| | 10...45 | No modification for 600 V | H56 | — |
| | | No modification for 600 V | H57 | — |

(1) Size 4 requires the use of external current transformer. Ratio of 150: 5 recommended.
 (2) Size 5 requires the use of external current transformer. Ratio of 300: 5 recommended.
 (3) Size 6 requires the use of external current transformer. Ratio of 600: 5 recommended.
 (4) For Type S Open style starter references, see pages 1/6 to 1/13.



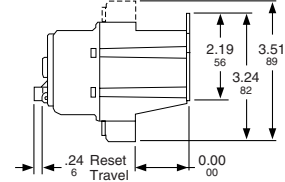
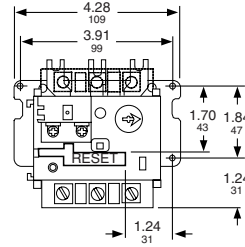
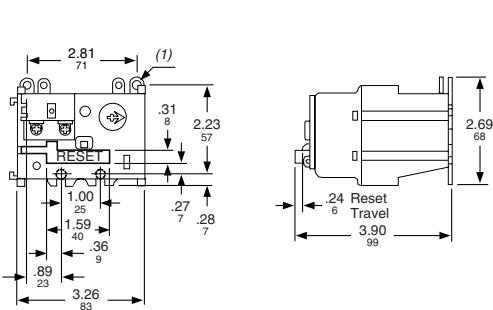
9065 SP2

Dimensions are $\frac{\text{inch}}{\text{mm}}$

Motor Logic solid-state overload relays

9065 S●10 / S●20

9065 SS 2●0 / SR 2●0 / SF 220 / ST 220

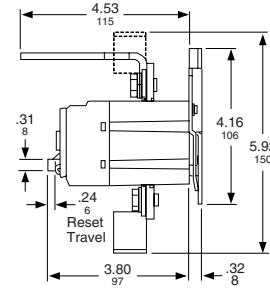
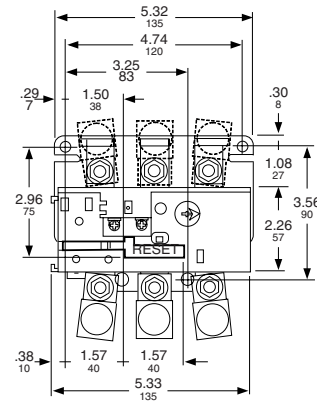
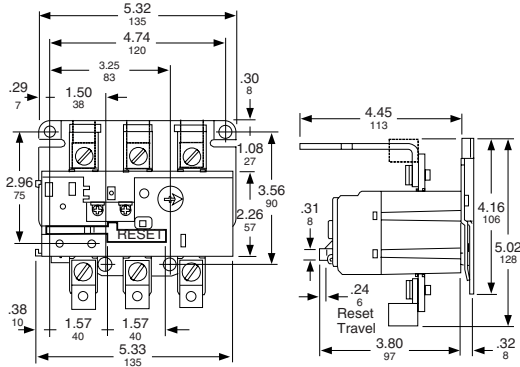


3

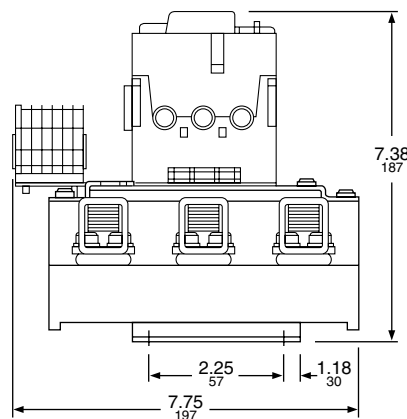
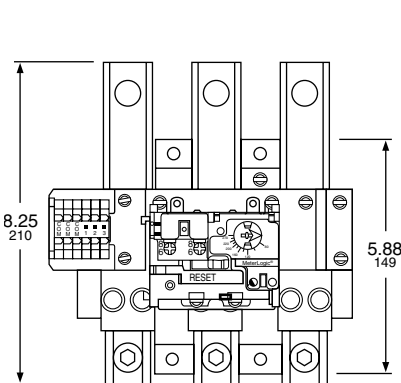
(1) 2 holes. 2 slots for 8-32 mounting screws.

9065 SS 3●0 / SR 3●0 / SF 320 / ST 320

9065 SS 4●0 / SR 4●0 / SF 420 / ST 420



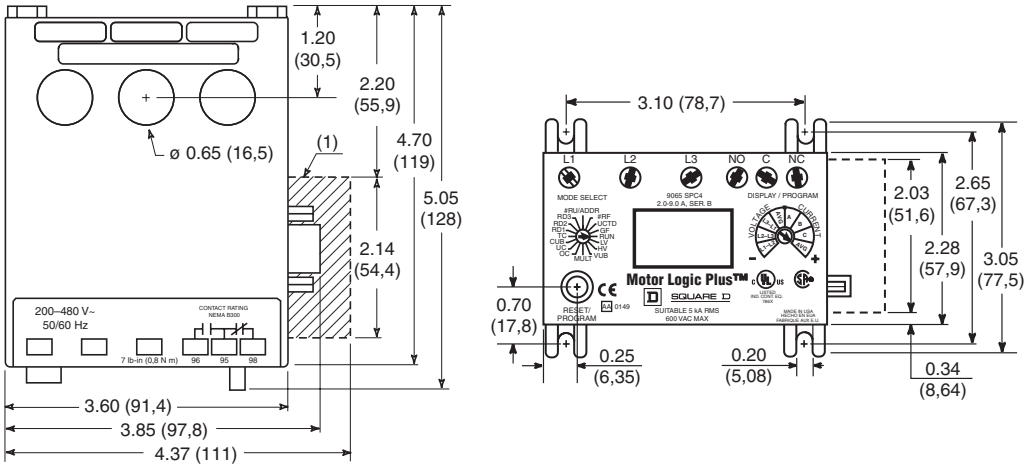
9065 ST 520



Dimensions are $\frac{\text{inch}}{\text{mm}}$

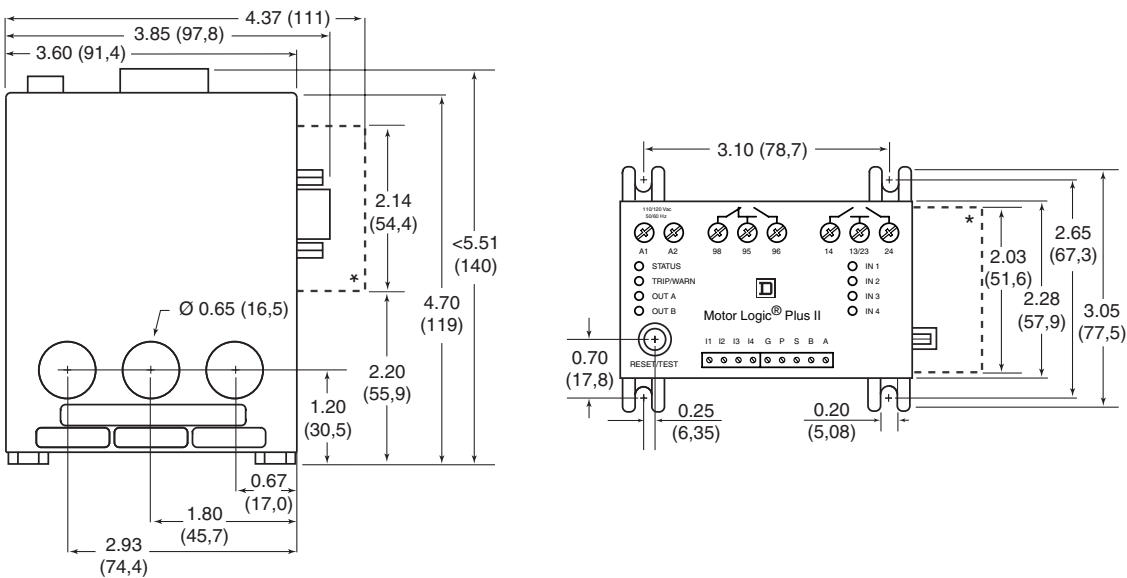
Motor Logic Plus programmable solid-state overload relays

9065 SPB / SPC / SP



Motor Logic Plus II programmable solid-state overload relays

9065 SP2 ●6



(1) Optional communication module.

■ Types DP and DPA Class 8910

- General page 4/2
- Characteristics page 4/3
- References page 4/4
- Accessories page 4/6
- Dimensions page 4/8

Definite Purpose Contactors

Types DP and DPA Class 8910

General

Definite purpose contactors

Definite purpose contactors are ideal for heating, air conditioning, refrigeration, data processing and food service equipment. New compact single- and 2-pole contactors are available, as well as full-size 2-, 3- and 4-pole devices.

■ Features:

- compact design,
- industry standard mounting,
- double break contacts,
- low coil VA,
- straight-through wiring,
- low cost,
- open contact constructions for easier contact inspection,
- optional cover over contacts.

They feature quick-connect terminals and binding head screws for easy wiring. Box lugs are standard on 40 A contactors and larger.

An exclusive DIN track mounting option may reduce installation costs.

Coils can be changed on the Type DPA contactors quickly without a tool.

Auxiliary contact modules snap on either side of the Type DPA contactors.

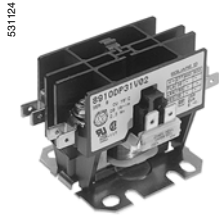
Contactors with fuse blocks

The DPA fused-type contactor provides an integrally mounted fuse block with fuse clips electrically connected to the contactor. This factory assembled unit not only provides space savings but reduces installation cost as well, with only six field connections for a 3-pole unit and featuring one unit for two functions, i.e., short-circuit protection for branch circuits and remote or manual power circuit interruption. The fused contactor thus meets the provisions of the National Electric Code (NEC) Article 424 for overcurrent protection as well as limit controls for fixed electric space heating.

By a unique fuse clip arrangement, these devices can accommodate a variety of fuses for other electrical or electronic applications. This fused cover accommodates the Type SC 300 volt fuse, which is UL listed under Type G, as well as the standard 10 mm x 38 mm fuses (1).

Only UL-listed, Class G, K, H or J fuses meet branch circuit requirements when applied in accordance with NEC Article 240. Supplementary fuses shown may be used for additional equipment protection as defined in NEC 240-30. Consult the manufacturer of the selected fuse for proper application.

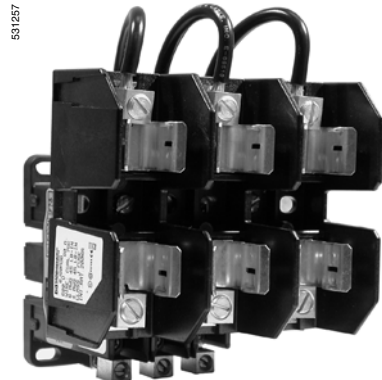
(1) Dimensions in mm (25.4 mm = 1 inch).



8910 DP 31 V02
Single-pole contactor



8910 DPA 33 V02
3-pole contactor



8910 DPA 23 V02 DFM1
Contactor with fuse block

| Characteristics | | | | | | | | | | | | | | |
|--|----------|---|----------------------|----------|--------------------|--|--------------|--------------|-----------|-----------|-----------|----------------------|-----------------|-----|
| Class | 8910 | | | | | | | | | | | | | |
| Type | DP 11/12 | DP 21/22 | DP 31/32 | DP 41/42 | DPA 12/13/14 | DPA 22/23/24 | DPA 32/33/34 | DPA 42/43/44 | DPA 52/53 | DPA 62/63 | DPA 72/73 | DPA 92/93 | DPA 122/123 | |
| Environment | | | | | | | | | | | | | | |
| Rated insulation voltage Conforming to UL, CSA | V | 600 | | | | | | | | | | | | |
| Rated impulse withstand voltage | kV | 5 | | | | | | | | | | | | |
| Conforming to standards | | | | | | | | | | | | | | |
| NEMA ICS-1, ICS-2 | | Yes | | | | | | | | | | | | |
| UL 508 | | Yes | | | | | | | | | | | | |
| Product certifications | | | | | | | | | | | | | | |
| UL | | Yes | | | | | | | | | | | | |
| CSA | | Yes | | | | | | | | | | | | |
| CE | | Yes | | | | | | | | | | | | |
| Ambient air temperature around the device | | | | | | | | | | | | | | |
| Storage | °C | 0...65 | | | | | | | | | | | - 30... + 65 | |
| Operation | °C | 0...65 | | | | | | | | | | | 0...40 | |
| Operating position Without derating | | | | | | | | | | | | | | |
| | | Vertical | | | | | | | | | | | | |
| Pole characteristics | | | | | | | | | | | | | | |
| Number of poles (P) | | 1, 2 | | | 2, 3, 4 | | | | 2, 3 | | | | | |
| Rated operational voltage Up to | V | 600 | | | | | | | | | | | | |
| Frequency limits Of the operational current | | | | | | | | | | | | | | |
| | Hz | 50/60 | | | | | | | | | | | | |
| Conventional thermal current (FLA) | A | 20 | 25 | 30 | 40 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 90 | 120 |
| Rated making capacity (LRA) | | | | | | | | | | | | | | |
| At 240 V | A | - | | | | 120 | 150 | 180 | 240 | 300 | 360 | 450 | 540 | 720 |
| At 277 V | A | 100 | 125 | 150 | 200 | - | | | | | | | | |
| At 480 V | A | 100 | 125 | 150 | 150/200 | 100 | 125 | 150 | 200 | 250 | 300 | 375 | 450 | 600 |
| At 600 V | A | 80 | 100 | 120 | 150/160 | 80 | 100 | 120 | 160 | 200 | 240 | 300 | 360 | 480 |
| Resistive rating At 600 V | | | | | | | | | | | | | | |
| | A | 30/30 | 30/35 | 40/40 | 50/50 | 25 | 35 | 40 | 50 | 62 | 75 | 94 | 120 | |
| a.c. control circuit characteristics | | | | | | | | | | | | | | |
| Rated control circuit voltage | V | 600 | | | | | | | | | | | 24/ 600 | |
| Average consumption 60Hz | | | | | | | | | | | | | | |
| Inrush | VA | 30 | | | | 56 (1) | | | | 109 | | 214 | | 700 |
| Sealed | VA | 6 | | | | 6 (1) | | | | 10 | | 19 | | 46 |
| Heat dissipation 60 Hz | | | | | | | | | | | | | | |
| Sealed | W | 2.5 | | | | 2.7 (2) | | | | 3.3 | | 7.5 | | 14 |
| Mechanical durability (3) In thousands of operating cycles | | | | | | | | | | | | | | |
| | | 500 | | | | | | | | | | | | |
| Power circuit connections | | | | | | | | | | | | | | |
| Type of termination | | Binding head screw | Screw clamp terminal | Box lug | Binding head screw | | | | Box lug | | | | | |
| Wire sizes (Min./max.) (4) | | #14 - #8 | | | #14 - #6 | #14 - #8 | | | #14 - #6 | #14 - #2 | | #14 - #1/0 | | |
| Control circuit connections | | | | | | | | | | | | | | |
| Type of termination | | .250" Quick connect | | | | .250" Quick connect/binding head screw | | | | | | Screw clamp terminal | | |
| Wire sizes (Min./max.) (4) | | #16 - #12 | | | | | | | | | | | | |
| (1) 4-pole has 109 VA inrush, 10 VA sealed. (2) 4-pole Watts are 3.3. (3) Operating cycles are without a load (mechanical durability). (4) Solid or stranded copper wire (AWG). | | | | | | | | | | | | | | |
| External auxiliary contacts | | | | | | | | | | | | | | |
| Type | | 9999 D10/D01/D11/D20/SX6/SX7/SX8/SX9/SX10 | | | | | | | | | | | | |
| Voltage | ~ V | 120 or less | | | | | | | | | | | | |
| Making current | ~ A | 60 (35% power factor) | | | | | | | | | | | | |
| Breaking current | ~ A | 6 (35% power factor) | | | | | | | | | | | | |
| Continuous current | A | 10 | | | | | | | | | | | | |

Definite Purpose Contactors

Types DP and DPA Class 8910



8910 DPA 33

4

| Full-load Amperes | Locked rotor Amperes | | | Resistive load Amperes | Motor power ratings | | | | | | | | N/O poles | N/C poles (1) | Basic reference Add code indicating control circuit voltage (2) | Weight |
|---|----------------------|------|------|------------------------|---------------------|-----|-------------------|------|--------------|------|------------------|-----|-----------|---------------|---|-----------|
| | 277V | 480V | 575V | | 115V single-phase | | 230V single-phase | | 230V 3-phase | | 460/575V 3-phase | | | | | |
| A | A | A | A | A | hp | kW | hp | kW | hp | kW | hp | kW | | | | kg (lb) |
| Compact single-pole contactors | | | | | | | | | | | | | | | | |
| 20 | 100 | 100 | 80 | 25 | 1 | 1.1 | 2 | 1.5 | - | - | - | - | 1 | - | 8910 DP 11 (2) | 0.2 (0.5) |
| 25 | 125 | 125 | 100 | 30 | 2 | 1.5 | 3 | 2.2 | - | - | - | - | 1 | - | 8910 DP 21 (2) | 0.2 (0.5) |
| 30 | 150 | 150 | 120 | 40 | 2 | 1.5 | 3 | 2.2 | - | - | - | - | 1 | - | 8910 DP 31 (2) | 0.2 (0.5) |
| 40 | 240 | 200 | 160 | 50 (3) | 2 | 1.5 | 5 | 3.7 | - | - | - | - | 1 | - | 8910 DP 41 (2) | 0.2 (0.5) |
| Compact 2-pole contactors (4) | | | | | | | | | | | | | | | | |
| 20 | 100 | 100 | 80 | 30 | 1 | 1.1 | 2 | 1.5 | - | - | - | - | 2 | - | 8910 DP 12 (2) | 0.2 (0.5) |
| 25 | 125 | 125 | 100 | 35 | 2 | 1.5 | 3 | 2.2 | - | - | - | - | 2 | - | 8910 DP 22 (2) | 0.2 (0.5) |
| 30 | 150 | 150 | 120 | 40 | 2 | 1.5 | 5 | 3.7 | - | - | - | - | 2 | - | 8910 DP 32 (2) | 0.2 (0.5) |
| 40 | 240 | 200 | 160 | 50 | 2 | 1.5 | 5 | 3.7 | - | - | - | - | 2 | - | 8910 DP 42 (2) | 0.2 (0.5) |
| 2-, 3- and 4-pole contactors (4) | | | | | | | | | | | | | | | | |
| 20 | 120 | 100 | 80 | 25 | 1 | 1.1 | 2 | 1.5 | 5 | 3.7 | 7.5 | 5.5 | 2 | - | 8910 DPA 12 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 13 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 14 (2) | 0.6 (1.3) |
| 25 | 150 | 125 | 100 | 35 | 2 | 1.5 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | 2 | - | 8910 DPA 22 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 23 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 24 (2) | 0.6 (1.3) |
| 30 | 180 | 150 | 120 | 40 | 2 | 1.5 | 5 | 3.7 | 10 | 7.5 | 15 | 11 | 2 | - | 8910 DPA 32 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 33 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 34 (2) | 0.6 (1.3) |
| 40 | 240 | 200 | 160 | 50 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | 20 | 15 | 2 | - | 8910 DPA 42 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 43 (2) | 0.5 (1) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 44 (2) | 0.7 (1.5) |
| 50 | 300 | 250 | 200 | 62 | 3 | 2.2 | 10 | 7.5 | 15 | 11 | 30 | 22 | 2 | - | 8910 DPA 52 (2) | 0.7 (1.5) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 53 (2) | 0.7 (1.5) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 54 (2) | 0.7 (1.5) |
| 60 | 360 | 300 | 240 | 75 | 5 | 3.7 | 10 | 7.5 | 25 | 18.5 | 30 | 22 | 2 | - | 8910 DPA 62 (2) | 0.7 (1.5) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 63 (2) | 0.7 (1.5) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 64 (2) | 0.7 (1.5) |
| 75 | 450 | 375 | 300 | 94 | 5 | 3.7 | 15 | 11 | 25 | 18.5 | 40 | 30 | 2 | - | 8910 DPA 72 (2) | 1.6 (3.5) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 73 (2) | 1.7 (3.7) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 74 (2) | 1.7 (3.7) |
| 90 | 540 | 450 | 360 | 120 | 7.5 | 5.5 | 20 | 15 | 30 | 22 | 50 | 37 | 2 | - | 8910 DPA 92 (2) | 1.4 (3) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 93 (2) | 1.7 (3.7) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 94 (2) | 1.7 (3.7) |
| 120 | 720 | 600 | 480 | 120 | 10 | 7.5 | 25 | 18.5 | 40 | 30 | 75 | 55 | 2 | - | 8910 DPA 122 (2) | 2 (4.4) |
| | | | | | | | | | | | | | 3 | - | 8910 DPA 123 (2) | 5.9 (13) |
| | | | | | | | | | | | | | 4 | - | 8910 DPA 124 (2) | 5.9 (13) |
| 4-pole contactors (4) | | | | | | | | | | | | | | | | |
| 20 | 120 | 100 | 80 | 25 | 1 | 1.1 | 2 | 1.5 | 5 | 3.7 | 7.5 | 5.5 | 2 | 2 | 8910 DPA 14 (2) Y392 | 0.6 (1.3) |
| 25 | 150 | 125 | 100 | 35 | 2 | 1.5 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | 2 | 2 | 8910 DPA 24 (2) Y392 | 0.6 (1.3) |
| 30 | 180 | 150 | 120 | 40 | 2 | 1.5 | 5 | 3.7 | 10 | 7.5 | 15 | 11 | 2 | 2 | 8910 DPA 34 (2) Y392 | 0.6 (1.3) |
| 40 | 240 | 200 | 160 | 50 | 3 | 2.2 | 7.5 | 5.5 | 10 | 7.5 | 20 | 15 | 2 | 2 | 8910 DPA 44 (2) Y392 | 0.7 (1.5) |

(1) N/C poles on outside. N/C poles open before N/O poles close.

(2) Standard control circuit voltage for 8910 DP/DPA:

| Volts | 24 | 110 | 120 | 208-240 | 220 | 277 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|---------|-----|-----|---------|---------|---------|---------|
| 50 Hz | V14 | V02 | - | - | V09 | - | V06 (5) | - | V07 (6) | - |
| 60 Hz | V14 | - | V02 | V09 | - | V04 | - | V06 (5) | - | V07 (6) |

Standard control circuit voltage for 8910 DPA 122/DPA 123:

| Volts | 24 | 110 | 120 | 208 | 220 | 230-240 | 440 | 480 | 550 | 600 |
|-------|---------|-----|-----|-----|-----|---------|-----|-----|-----|-----|
| 50 Hz | V12 | V02 | - | - | V03 | - | V06 | - | V07 | - |
| 60 Hz | V01 (7) | - | V02 | V08 | - | V03 | - | V06 | - | V07 |

(3) 50 A resistive limited to 277V. All others rated 40 A resistive (above 277V).

(4) Above 240V, all lines must be switched.

(5) Not available for Type 8910 DP 11 to 8910 DP 31 single-pole devices.

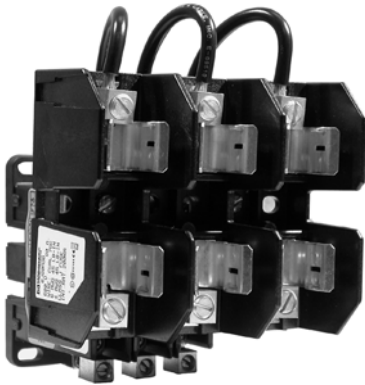
(6) Not available for Type 8910 DP single- and 2-pole devices.

(7) Only available on Types 8910 DPA 122/DPA 123.

Definite Purpose Contactors

Types DP and DPA Class 8910

531257



8910 DPA 23 V02 DFM1

Contactors with fuse blocks (1)

| Contactors | Fuse | | Dimen- sions (2) | Class | Suffix to the contactor reference (3) | Weight |
|----------------------|--------|------------------------------|------------------------|--------|---|------------|
| | Rating | Maximum rating voltage | | | | |
| | A | V | mm | | | kg (lb) |
| 8910 DPA 13/23/33/43 | 3 | 600 | 10 x 38 | CC | (3) DFC1 | 0.35 (0.8) |
| | 60 | 480 | 10 x 57 | G | (3) DFG1 | 0.35 (0.8) |
| | 30 | 480 | 10 x 41 | G | (3) DFG2 | 0.35 (0.8) |
| | 30 | 250 | 14 x 51 | H or K | (3) DFH1 | 0.35 (0.8) |
| | 60 | 250 | 20 x 76 | H or K | (3) DFH2 | 0.35 (0.8) |
| | 30 | 600 | 20 x 57 | J | (3) DFJ1 | 0.40 (0.9) |
| | 60 | 600 | 26 x 60 | J | (3) DFJ2 | 0.40 (0.9) |
| | 30 | 600 | 10 x 38 | M | (3) DFM1 | 0.40 (0.9) |
| | 30 | 250 | 14 x 51 | R | (3) DFR1 | 0.35 (0.8) |
| | 60 | 250 | 20 x 76 | R | (3) DFR2 | 0.35 (0.8) |
| | 30 | 300 | 14 x 22 | T | (3) DFT1 | 0.35 (0.8) |
| | 60 | 300 | 14 x 22 | T | (3) DFT2 | 0.35 (0.8) |
| | 30 | 600 | 14 x 22 | T | (3) DFT3 | 0.40 (0.9) |
| | 60 | 600 | 25 x 39 | T | (3) DFT4 | 0.40 (0.9) |

(1) For dimensions, see page 4/9.

(2) Dimensions in mm (25.4 mm = 1 inch).

(3) 8910 DPA 13 or 23 or 33 or 43 plus standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208-240 | 220 | 277 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|
| 50 Hz | V14 | V02 | – | – | V09 | – | V06 | – | V07 | – |
| 60 Hz | V14 | – | V02 | V09 | – | V04 | – | V06 | – | V07 |

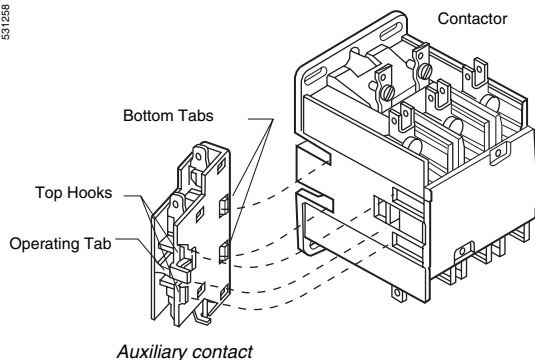
Example: 8910 DPA 33 V02 DFG1.

Definite Purpose Contactors

Types DP and DPA Class 8910

Accessories

531258



External auxiliary contacts

| For use with | Description | Reference | Weight kg (lb) |
|-------------------------|-----------------------------------|------------------|-------------------|
| 8910 DPA | 1 N/O contact | 9999 D10 | 0.03 (0.07) |
| | 1 N/C contact | 9999 D01 | 0.03 (0.07) |
| | 1 N/O and 1 N/C contacts | 9999 D11 | 0.04 (0.09) |
| | 2 N/O contacts | 9999 D20 | 0.04 (0.09) |
| 8910 DPA 122/123 | 1 N/O contact | 9999 SX6 | 0.03 (0.07) |
| | 1 N/C contact | 9999 SX7 | 0.03 (0.07) |
| | 1 N/O and 1 N/C isolated contacts | 9999 SX8 | 0.04 (0.09) |
| | 1 N/O make before break contact | 9999 SX9 | 0.03 (0.07) |
| | 1 N/C make before break contact | 9999 SX10 | 0.03 (0.07) |

NEMA 1 general purpose enclosures

| For use with | Full-load Amperes A | Poles | Reference | Weight kg (lb) |
|--------------------|---------------------------|---------|------------------|-------------------|
| 8910 DP (1) | 20...40 | 1 and 2 | 9991 DPG1 | 1.1 (2.5) |
| 8910 DPA | 20...40 | 2 and 3 | 9991 DPG1 | 1.1 (2.5) |
| | 50 | 2 and 3 | 9991 DPG2 | 1.8 (4) |
| | 20...40 | 4 | 9991 DPG2 | 1.8 (4) |
| | 60...75 | 2 and 3 | 9991 DPG3 | 3 (7) |
| | 90...120 | 2 and 3 | 9991 DPG4 | 4 (9) |

Variants

| Type | For use on | Suffix to the contactor reference (2) | Weight kg (lb) |
|---|----------------------------|---|-------------------|
| Screw clamp terminal connectors | 8910 DPA 1●/2●/3● | Y122 | — |
| Box lugs | 8910 DPA 1●/2●/3● | Y124 | — |
| DIN mounting bracket attachment (35 mm wide) | 8910 DPA 1●/2●/3●/4●/5●/6● | Y135 | — |

(1) Optional contact cover **9999 DRC1**, only available for **8910 DP** compact single-pole or 2-pole contactors.

(2) Example: **8910 DPA 12 V02 Y122**.

Definite Purpose Contactors

Types DP and DPA Class 8910

Accessories

Replacement coils

| Type | For use on | Poles | Average consumption (60 Hz) | | Basic reference Add code indicating control circuit voltage (1) | Weight kg (lb) |
|-------------------|----------------------|---------|-----------------------------|--------|---|-------------------|
| | | | Inrush | Sealed | | |
| | | | VA | VA | | |
| Replacement coils | 8910 DPA 1●/2●/3●/4● | 2 and 3 | 56 | 6 | 9998 DA1 ●●● | – |
| | 8910 DPA ●4 | 4 | 109 | 10 | 9998 DA2 ●●● | – |
| | 8910 DPA 5●/6● | 2 and 3 | 109 | 10 | 9998 DA2 ●●● | – |
| | 8910 DPA 7●/9● | 2 and 3 | 214 | 19 | 9998 DA3 ●●● | – |

Replacement parts kits

| Type | Kit description | For use on | Reference | Weight kg (lb) |
|------------------------|--|--------------|------------|-------------------|
| Replacement parts kits | Contains the necessary movable and stationary contacts, contact springs and additional hardware for one pole | 8910 DPA 1● | 9998 DRC1 | – |
| | | 8910 DPA 2● | 9998 DRC2 | – |
| | | 8910 DPA 3● | 9998 DRC3 | – |
| | | 8910 DPA 4● | 9998 DRC4 | – |
| | | 8910 DPA 5● | 9998 DRC5 | – |
| | | 8910 DPA 6● | 9998 DRC6 | – |
| | | 8910 DPA 7● | 9998 DRC7 | – |
| | | 8910 DPA 9● | 9998 DRC9 | – |
| | | 8910 DPA 12● | 9998 DRC12 | – |

Miscellaneous parts

| Type | For use on | Reference | Weight kg (lb) |
|----------------------------|------------|-----------|-------------------|
| DIN mounting adaptor plate | 8910 DPA | 9999 DMB1 | – |

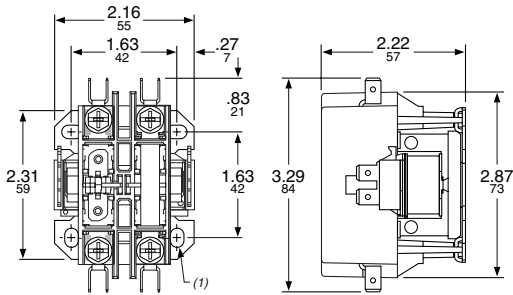
(1) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208–240 | 220 | 277 | 440 | 480 | 550 | 600 |
|-------|-----|-----|-----|---------|-----|-----|-----|-----|-----|-----|
| 50 Hz | V14 | V02 | – | – | V09 | – | V06 | – | V07 | – |
| 60 Hz | V14 | – | V02 | V09 | – | V04 | – | V06 | – | V07 |

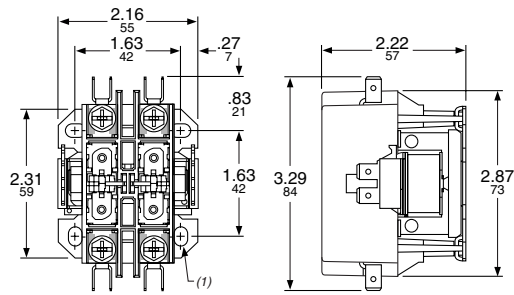
Example: 9998 DA1 V02.

Dimensions are **inch**
mm

8910 DP 11/21/31/41 (single-pole)



8910 DP 12/22/32/42 (2-pole)

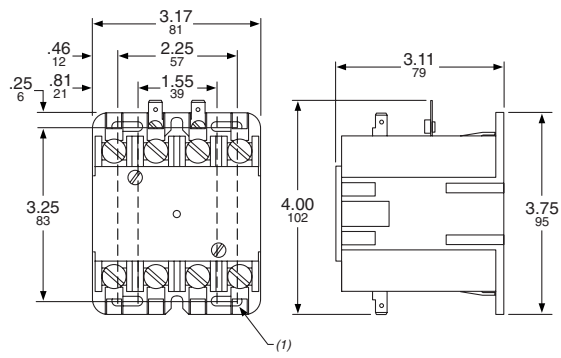
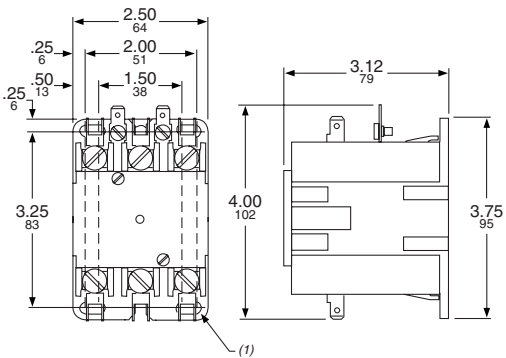


(1) Provisions for #10 or M5 mounting screws.

(1) Provisions for #10 or M5 mounting screws.

8910 DPA 12/13/22/23/32/33/42/43 (2 and 3-pole/20–40 A)

8910 DPA 14/24/34/44 (4-pole/20–40 A)

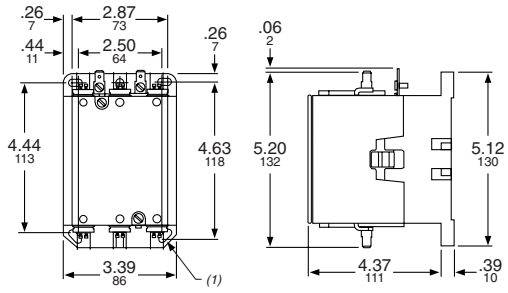
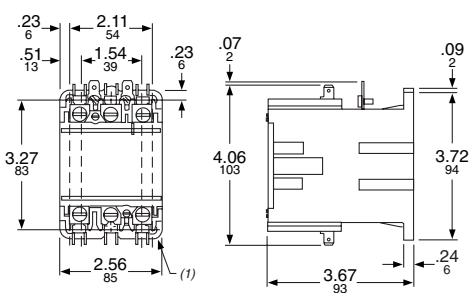


(1) Provisions for #10 or M5 mounting screws.

(1) Provisions for #10 or M5 mounting screws.

8910 DPA 5/6/6 (2 and 3-pole/50–60 A)

8910 DPA 7/9/9 (2 and 3-pole/75–90 A)

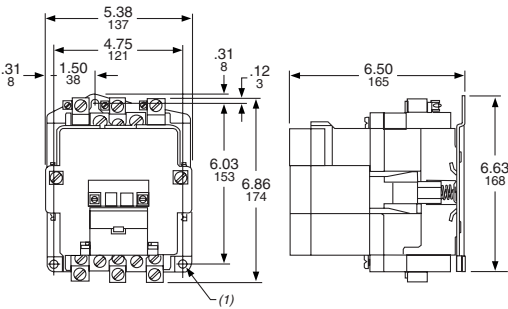


(1) Provisions for #10 or M5 mounting screws.

(1) Provisions for #10 or M5 mounting screws.

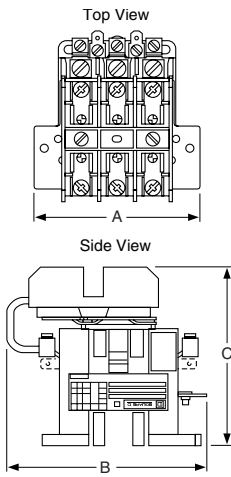
Dimensions are $\frac{\text{inch}}{\text{mm}}$

8910 DPA 122/123 (120 A)



(1) Provision for 1/4" mounting screw.

Contactors with fuse blocks



| (2) | A | B | C |
|----------------------|-----|-----|-----|
| 8910 DPA ●3 ●●● DFC1 | 91 | 150 | 117 |
| 8910 DPA ●3 ●●● DFG1 | 91 | 155 | 119 |
| 8910 DPA ●3 ●●● DFG2 | 91 | 150 | 114 |
| 8910 DPA ●3 ●●● DFH1 | 91 | 150 | 119 |
| 8910 DPA ●3 ●●● DFH2 | 107 | 168 | 135 |
| 8910 DPA ●3 ●●● DFJ1 | 91 | 150 | 132 |
| 8910 DPA ●3 ●●● DFJ2 | 119 | 152 | 135 |
| 8910 DPA ●3 ●●● DFM1 | 91 | 150 | 117 |
| 8910 DPA ●3 ●●● DFR1 | 91 | 152 | 119 |
| 8910 DPA ●3 ●●● DFR2 | 107 | 168 | 136 |
| 8910 DPA ●3 ●●● DFT1 | 91 | 150 | 114 |
| 8910 DPA ●3 ●●● DFT2 | 91 | 150 | 114 |
| 8910 DPA ●3 ●●● DFT3 | 119 | 155 | 114 |
| 8910 DPA ●3 ●●● DFT4 | 119 | 150 | 114 |

(2) Dimensions in mm (25.4 mm = 1 inch)

- Multipole lighting contactors, Types L, LX and S Class 8903
 - General, characteristics *page 5/2*
- Multipole lighting contactors, Types L and LX Class 8903
 - References *page 5/4*
- Multipole lighting contactors, Type S Class 8903
 - References *page 5/5*
- Multipole lighting contactors, Types L, LX and S Class 8903
 - Accessories *page 5/7*
 - Variants *page 5/8*
 - Dimensions *page 5/10*

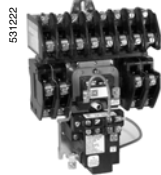
Lighting Contactors

Multipole lighting contactors Types L, LX and S Class 8903

General



8903 L ●
Electrically held



8903 LX ●
Mechanically held



8903 S ● ●
Electrically held



8903 S ● ● ●
Mechanically held

Lighting contactors have evolved from the need for more than just simple on-off manual control of lights. Today's requirements call for the development of new and varied types of control. Often the application will call for remote control of lighting from some distant location. This control may not be in addition to a master control station at a central location. Certain applications include the use of automatic control by time clocks or photoelectric cells. Whatever the need may be, applications are increasing and lighting contactors are designed to meet the ever-changing requirements.

Typical installations include:

- Parking lots.
- Industrial plants.
- Office buildings.
- Theatres and auditoriums.
- Hospitals and institutions.
- Shopping centres.
- Stadiums.
- Airports.

Multipole lighting contactors, Types L and LX Class 8903

Features:

- 30 A fluorescent lighting rating.
- 20 A tungsten lighting rating.
- Electrically and mechanically held.
- 2 to 12-pole versions.
- Field-convertible contacts with N/O and N/C indicators (8 N/C contacts maximum).

Multipole lighting contactors, Type S Class 8903

Features:

- 30...800 A lighting ratings.
- Electrically and mechanically held.
- 2- to 5-pole versions (5-pole to 200 A).
- UL-listed short-circuit rating up to 100 000 A.
- Mixed load ratings (lighting and motor).
- Factory-wired controls and clearly marked termination points.

Characteristics

| Class | | 8903 | | | | | | | | | |
|--|---|--------|---|--------|---------------|----------------|----------------|----------------|----------------|----------------|----------------------|
| Type | | L●/LX● | SM● | SP● | SQ● | SV● | SX● | SY● | SZ● | SJ● | |
| Environment | | | | | | | | | | | |
| Rated insulation voltage | Conforming to UL, CSA... | ~V | 600 | | | | | | | | |
| Conforming to standards | | | NEMA ICS-1, ICS-2, UL 508, CSA 22-2 n° 14 | | | | | | | | |
| Product certifications | | | UL, CSA | | | | | | | | |
| Ambient air temperature around the device | Storage | °C | - 30...+ 65 | | | | | | | | |
| | Operation | °C | 0...+ 40 | | | | | | | | |
| Max. operating altitude | Without derating | m | 2000 | | | | | | | | |
| Operating position | Without derating | | Vertical | | | | | | | | |
| Power circuit connections | | | | | | | | | | | |
| Type of termination | | | Screw clamp terminal | | Box lug | | | | | | |
| Wire sizes (Min./max.) (AWG) | Solid or stranded copper wire | | #14-#10 | #14-#8 | #14-#2 (1) | #14-#2/0 (1) | #6-350 MCM (1) | #4-600 MCM (1) | #6-350 MCM (1) | #4-600 MCM (1) | #30/0-750MCM (1) (4) |
| (1) Solid or stranded aluminium wire. (2) Two wires #4-250 MCM. (3) Two holes. (4) Four holes. | | | | | | | | | | | |
| Control circuit connections | | | | | | | | | | | |
| Type of termination | | | Screw clamp terminal | | | | | | | | |
| Wire sizes (Min./max.) | Solid or stranded copper wire (AWG) | | #16-#12 | | | | | | | | |
| Pole characteristics | | | | | | | | | | | |
| Number of poles (P) | | | 2-12 | | 2-5 | | | | 2-3 | | |
| Rated operating voltage | Up to | ~V | 600 | | | | | | | | |
| Frequency limits | Of the operating current | Hz | 50/60 | | | | | | | | |
| Conventional thermal current (FLA) | | A | 30 | 60 | 100 | 200 | 300 | 400 | 600 | 800 | |
| Rated making capacity | Tungsten | A | 10 x rated current | | | | | | | | |
| | Ballast | A | 3 x rated current | | | | | | | | |
| Resistance heating rating | At 600V | A | 20 | 30 | 60 | 100 | 200 | 300 | 400 | 600 | 800 |
| a.c. control circuit characteristics | | | | | | | | | | | |
| Rated control circuit voltage | | ~V | 24-600 (2-6P) (8-12P) | 24-600 | 24-600 (2-3P) | 110-600 (4-5P) | 110-600 | | | | |
| Average consumption 60Hz Electrically held | Inrush | VA | 150/180 | 245 | 311/438 | 700/1185 | 1185 | 1300 | 1780 | 1960 | |
| | Sealed | VA | 30/35 | 27 | 37/38 | 41/89 | 89 | 14 | 48 | 59 | |
| Average consumption 50Hz Electrically held | Inrush | VA | 140/170 | 232 | 296/429 | 678/1260 | 1260 | 1300 | 1495 | - | |
| | Sealed | VA | 30/35 | 26 | 36/37 | 47/89 | 89 | 14 | 56 | - | |
| Heat dissipation 60Hz | Electrically held - Sealed | W | 6.5/9.5 | 7.8 | 14/14 | 14/22 | 22 | 13 | 32 | 36 | |
| Heat dissipation 50Hz | Electrically held - Sealed | W | - | 7.7 | 12/12 | 15/23 | 23 | - | 27 | - | |
| Inrush 60 Hz Mechanically held | Latch coil | VA | 150/180 | 245 | 311/438 | 700/973 | 973 | 2970 | 1530 | - | |
| | Unlatch coil | VA | 25/25 | 140 | 140/140 | 550/550 | 550 | - | - | 2100 | |
| Inrush 50 Hz Mechanically held | Latch coil | VA | 140/170 | 232 | 296/429 | 678/- | - | 2970 | 1250 | - | |
| | Unlatch coil | VA | - | - | - | - | - | - | - | - | |
| Mechanical durability | Electrically held | | 4000 | 10,000 | 3000 | | 2000 | 1500 | 500 | | |
| | In x 10 ³ of operating cycles Mechanically held | | 1000 | | 500 | | | | | | |

References:
pages 5/4 to 5/9

Dimensions:
pages 5/10 and 5/11

Lighting Contactors

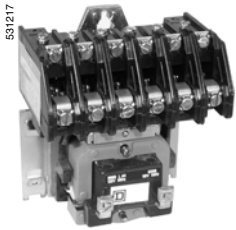
Multipole lighting contactors Types L, LX and S Class 8903

| Electrical characteristics (continued) | | | | | | | | | | | |
|--|------------------|----------|-------------|-----------|---------|---------|--------|--------|---------|--------|-----|
| Class | 8903 | | | | | | | | | | |
| Type | L●/LX● | SM● | SP● | SQ● | SV● | SX● | SY● | SZ● | SJ● | | |
| Contactor continuous rating | A | 30 | 30 | 60 | 100 | 200 | 300 | 400 | 600 (1) | 800 | |
| ~ Voltage ratings | | | | | | | | | | | |
| Tungsten lamp loads | | | | | | | | | | | |
| Single-pole to load | ~ V | 20 A/277 | 277 | | | | | | | – | |
| 2-pole to load on single-phase and 3-pole to load on 3-phase | ~ V | 20 A/480 | 480 | | | | | | | – | |
| Ballast loads | | | | | | | | | | | |
| Single-pole to load | ~ V | 277 (2) | 347 | | | | | | | | |
| 2-pole to load on single-phase and 3-pole to load on 3-phase | ~ V | 480 (2) | 600 | | | | | | | | |
| Resistive loads | | | | | | | | | | | |
| Single-pole to load | ~ V | 20 A/600 | 600 | | | | | | | | |
| 2-pole to load on single-phase and 3-pole to load on 3-phase | ~ V | 20 A/600 | 600 | | | | | | | | |
| === Voltage ratings | | | | | | | | | | | |
| Tungsten lamp or resistance loads | | | | | | | | | | | |
| 2-pole in series | === V | | 125 | 250 | | | | | | – | |
| 3-pole in series | === V | 20 A/250 | 250 | | | | | | | | |
| UL-listed short-circuit rating | | | | | | | | | | | |
| Contactors protected by fused disconnect switches | | | | | | | | | | | |
| Maximum Class RK5 fuse rating | A | 30 | 30 | 60 | 100 | 200 | 400 | 400 | – | – | |
| Maximum voltage | V | 600 | | | | 480 | 600 | | – | – | |
| Available Amperes (RMS sym) | kA | 100 | | | | | | | – | 30 (5) | |
| Contactors protected by circuit breakers | | | | | | | | | | | |
| Maximum circuit breaker rating | A | 25 | 40 | 80/90 | 125 | 250/225 | 400 | 800 | 800 | 1200 | |
| Recommended circuit breaker type | Thermal-magnetic | | | | | | | | | | |
| Maximum voltage | V | 240/480 | 480/600/480 | | 600/480 | | | 600 | | | |
| Available Amperes (RMS sym) | kA | 22/14 | 10/5/100 | 18/14/100 | 10/100 | 14/100 | 22/100 | 22 | | 30 | |
| Kilowatt ratings (3) | | | | | | | | | | | |
| Voltage | ~ | | | | | | | | | | |
| ~ 200 V | kW | 6.9 | 10.3 | 20.7 | 34.6 | 69.2 | 103.9 | 138.5 | 207.8 | 277.1 | |
| ~ 230 V | kW | 7.9 | 11.9 | 23.9 | 39.8 | 79.6 | 119.5 | 159.3 | 239 | 318.7 | |
| ~ 380 V | kW | 13.1 | 19.7 | 39.4 | 65.8 | 131.6 | 197.4 | 263.2 | 394.9 | 526.5 | |
| ~ 460 V | kW | 15.9 | 23.9 | 47.8 | 79.8 | 159.3 | 239 | 318.6 | 478 | 637.4 | |
| ~ 575 V | kW | 19.9 | 30 | 60 | 99 | 199 | 299 | 398.4 | 597.6 | 796.7 | |
| Motor power ratings equivalent to NEMA Size contactor | | | | | | | | | | | |
| | | – | Size 1 | Size 2 | Size 3 | Size 4 | Size 5 | Size 6 | Size 6 | Size 7 | |
| Mixed load ratings | | | | | | | | | | | |
| Percent lighting (and/or resistive) load: 0% | | | | | | | | | | | |
| Motor voltage and phases (4) | | | | | | | | | | | |
| 200 V / 3-phase | Max. motor | hp | – | 7.5 | 10 | 25 | 40 | 75 | 125 | 150 | 250 |
| 230 V / 3-phase | Max. motor | hp | – | 7.5 | 15 | 30 | 50 | 100 | 150 | 200 | 300 |
| 380 V / 3-phase | Max. motor | hp | – | 10 | 25 | 50 | 75 | 150 | 250 | 300 | 400 |
| 460...575 V / 3-phase | Max. motor | hp | – | 10 | 25 | 50 | 100 | 200 | 300 | 400 | 600 |
| 115 V / single-phase | Max. motor | hp | – | 2 | 3 | 7.5 | – | – | – | – | – |
| 230 V / single-phase | Max. motor | hp | – | 3 | 7.5 | 15 | – | – | – | – | – |
| Percent lighting (and/or resistive) load: 75% | | | | | | | | | | | |
| 200 V / 3-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | 150 | 225 | 300 | 450 | 600 |
| | Max. motor | hp | – | 1.5 | 3 | 5 | 15 | 20 | 30 | 50 | 60 |
| 230 V / 3-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | 150 | 225 | 300 | 450 | 600 |
| | Max. motor | hp | – | 2 | 3 | 7.5 | 15 | 25 | 30 | 50 | 75 |
| 380 V / 3-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | 150 | 225 | 300 | 450 | 600 |
| | Max. motor | hp | – | 3 | 7.5 | 10 | 30 | 40 | 60 | 75 | 125 |
| 460...575 V / 3-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | 150 | 225 | 300 | 450 | 600 |
| | Max. motor | hp | – | 3 | 10 | 15 | 30 | 50 | 75 | 100 | 150 |
| 115 V / single-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | – | – | – | – | – |
| | Max. motor | hp | – | 0.33 | 0.75 | 2 | – | – | – | – | – |
| 230 V / single-phase | Max. non-motor | A | – | 22.5 | 45 | 75 | – | – | – | – | – |
| | Max. motor | hp | – | 0.75 | 2 | 3 | – | – | – | – | – |

(1) 600 A devices are derated to 540 A for resistance heating loads when aluminium wire is used.
 (2) Types L and LX contactors also have a ballast lamp rating of 15 A/~ 347 V when connected single-pole to load and a 600 V when connected 2-pole to load on single-phase and 3-pole to load on 3-phase.
 (3) Resistance heating only (3-phase system).
 (4) Select lighting contactor on basis of rated motor voltage, whether non-motor load is connected line-to-line or line-to-neutral.
 (5) 30 kA also applies for Class J and Class K5, time-delay, 600 A maximum fuses. Additionally, 30 kA ratings apply to Class T, 1200 A maximum and Class L, 1600 A maximum fuses.

Lighting Contactors

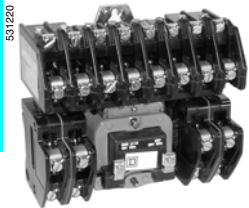
Multipole lighting contactors Types L and LX Class 8903



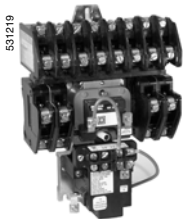
8903 LO 60 ●●●



8903 LO 80 ●●●



8903 LO 1200 ●●●



8903 LXO 1200 ●●●

Multipole lighting contactors, Types L and LX (4)

| Contact Ampere ratings | Number of poles | Enclosure type (1) | Basic reference (2) Add code indicating control circuit voltage (3) and enclosure type (5) | Weight kg (lb) | |
|--------------------------|--------------------------|--|---|--------------------|-----------|
| A | | | | kg (lb) | |
| Electrically held | | | | | |
| 30 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 20 (3) | 1.3 (2.8) | |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 30 (3) | 1.3 (2.8) | |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 40 (3) | 1.3 (2.8) | |
| | 6 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 60 (3) | 1.5 (3.2) | |
| | 8 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 80 (3) | 1.7 (3.7) | |
| | 10 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 1000 (3) | 1.9 (4.1) | |
| 30 | 12 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 L (2) 1200 (3) | 2 (4.4) | |
| | Mechanically held | | | | |
| | 30 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 20 (3) | 2 (4.4) |
| | | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 30 (3) | 2.1 (4.6) |
| | | 4 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 40 (3) | 2.1 (4.6) |
| | | 6 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 60 (3) | 2.3 (5) |
| 8 | | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 80 (3) | 2.4 (5.4) | |
| 10 | | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 1000 (3) | 2.6 (5.8) | |
| 30 | 12 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 LX (2) 1200 (3) | 2.8 (6) | |

(1) **Open:** separate enclosures are available for these devices. Delivery time might be improved by ordering an open-type contactor and a separate Class 9991 enclosure; please consult your regional sales office.

NEMA 1: general purpose enclosure.

NEMA 1+: flush-mounting, general-purpose enclosure with plaster adjustment.

NEMA 12: dust-tight and drip-tight industrial-use enclosure.

(2) Insert "O" for Open, "G" for NEMA 1, "F" for NEMA 1+, "A" for NEMA 12. Example: 8903 LO 20 V02.

(3) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 277 | 440 | 480 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | — | V02 | — | — | V03 | — | — | V06 | — |
| 60 Hz | V01 | — | V02 | V08 | — | V03 | V04 | — | V06 |

(4) All lighting contactors are provided with separate control as standard.

(5) Factory conversion of N/O contacts to N/C, order following the example below.

Example: for 2 N/O + 2 N/C (NEMA 1 enclosure) the reference is 8903 LG 22.

There is a maximum of eight N/C poles for Type 8903 L contactors and a maximum of six N/C poles for Type 8903 LX contactors (field conversion only). Versions are available with up to 12 N/C poles (factory only).

Lighting Contactors

Multipole lighting contactors

Type S Class 8903



8903 SGO 1 ●●●

Multipole lighting contactors, Type S (4)

| Contact Ampere ratings | Number of poles | Enclosure type (1) | Basic reference Add code indicating control circuit voltage (3) and enclosure type | Weight kg (lb) |
|--------------------------|-----------------|--|--|--------------------------|
| A | | | | kg (lb) |
| Electrically held | | | | |
| 30 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 1 (3) | 1.4 (3.1) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 2 (3) | 1.4 (3.1) |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 3 (3) | 1.7 (3.7) |
| | 5 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 4 (3) | 1.7 (3.7) |
| | 60 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 1 (3) |
| 3 | | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 2 (3) | 2.5 (5.5) |
| 4 | | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 3 (3) | 3.1 (6.9) |
| 5 | | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 4 (3) | 3.3 (7.2) |
| 100 | | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SQ (2) 1 (3) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SQ (2) 2 (3) | 9.9 (22) |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SQ (2) 3 (3) | 15.5 (34) |
| | 5 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SQ (2) 4 (3) | 28.4 (63) |
| | 200 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 1 (3) |
| 3 | | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 2 (3) | 14.5 (32) |
| 4 | | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 3 (3) | 29.4 (65) |
| 5 | | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 4 (3) | 29.4 (65) |
| 300 | | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SX (2) 1 (3) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SX (2) 2 (3) | 31.3 (69) |
| 400 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SY (2) 1 (3) | 43.5 (96) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SY (2) 2 (3) | 45 (99) |
| 600 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SZ (2) 1 (3) | 61.2 (135) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SZ (2) 2 (3) | 63 (139) |
| 800 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 1 (3) | 85.2 (188) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 2 (3) | 87.9 (193) |

(1) **Open:** separate enclosures are available for 30, 60 and 100 A devices.

NEMA 1: general purpose enclosure.

NEMA 1+: flush-mounting, general-purpose enclosure with plaster adjustment.

NEMA 12: dust-tight and drip-tight industrial-use enclosure.

(2) Insert "O" for Open, "G" for NEMA 1, "F" for NEMA 1+, "A" for NEMA 12.

Example: **8903 SMO 1 V02**.

(3) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 277 | 440 | 480 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | — | V02 | — | — | V03 | — | — | V06 | — |
| 60 Hz | V01 | — | V02 | V08 | — | V03 | V04 | — | V06 |

(4) All lighting contactors are provided with separate control as standard, except electrically held 400, 600 and 800 A devices. Electrically held 400, 600 and 800 A devices are provided with common control.

Lighting Contactors

Multipole lighting contactors

Type S, Class 8903

531224_1



8903 SMO 10 ●●●

Multipole lighting contactors, Type S (continued) (4)

| Contact Ampere ratings | Number of poles | Enclosure type (1) | Basic reference (2) Add code indicating control circuit voltage (3) and enclosure type | Weight kg (lb) |
|--------------------------|-----------------|--|---|-------------------|
| A | | | | kg (lb) |
| Mechanically held | | | | |
| 30 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 10 (3) | 2.9 (6.5) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 11 (3) | 2.7 (5.9) |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 12 (3) | 3 (6.8) |
| 60 | 5 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SM (2) 13 (3) | 3.8 (8.3) |
| | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 10 (3) | 3.9 (8.6) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 11 (3) | 4 (8.8) |
| 100 | 4 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 12 (3) | 5.3 (11.7) |
| | 5 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SP (2) 13 (3) | 5.3 (11.7) |
| | 2 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SQ (2) 10 (3) | 8 (18) |
| 200 | 3 | Open ("O"), NEMA 1 ("G"), NEMA 1+ ("F"), NEMA 12 ("A") | 8903 SQ (2) 11 (3) | 8.4 (18.6) |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SQ (2) 12 (3) | 9.6 (21.1) |
| | 5 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SQ (2) 13 (3) | 9.6 (21.1) |
| 300 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 10 (3) | 19.9 (43.8) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 11 (3) | 20.5 (45.4) |
| | 4 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SV (2) 12 (3) | 28.5 (62.9) |
| 400 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SY (2) 16 (3) | 31.2 (68.9) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SY (2) 17 (3) | 31.2 (68.9) |
| 600 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SZ (2) 18 (3) | 38.7 (85.4) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SZ (2) 19 (3) | 39 (86.2) |
| 800 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 10 (3) | 61.2 (135) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 11 (3) | 63 (139) |
| 800 | 2 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 10 (3) | 85 (187.6) |
| | 3 | Open ("O"), NEMA 1 ("G"), NEMA 12 ("A") | 8903 SJ (2) 11 (3) | 87.9 (194) |

(1) **Open:** separate enclosures are available for 30, 60 and 100 A devices.

NEMA 1: general purpose enclosure.

NEMA 1+: flush-mounting, general-purpose enclosure with plaster adjustment.

NEMA 12: dust-tight and drip-tight industrial-use enclosure.

(2) Insert: "O" for Open, "G" for NEMA 1, "F" for NEMA 1+, "A" for NEMA 12.

Example: **8903 SMO 10 V02**.

(3) Standard control circuit voltage:

| Volts | 24 | 110 | 120 | 208 | 220 | 240 | 277 | 440 | 480 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 50 Hz | — | V02 | — | — | V03 | — | — | V06 | — |
| 60 Hz | V01 | — | V02 | V08 | — | V03 | V04 | — | V06 |

(4) All lighting contactors are provided with separate control as standard, except electrically held 400, 600 and 800 A devices. Electrically held 400, 600 and 800 A devices are provided with common control.

Lighting Contactors

Multipole lighting contactors Types L, LX and S Class 8903 Accessories



8903 L1L



8903 L1R



8903 L3L



8903 L3R

Kits

| Type | Kit description | For use on | Reference | Weight kg (lb) |
|---|-----------------|----------------------|------------------|-------------------|
| Power-pole adder kits | | | | |
| Power-pole adder kits (used to add 30 A power poles to existing contactors when additional circuits are required) | Single pole | 8903 LO 60/80 | 8903 L1L | — |
| | | 8903 LXO 60/80 | 8903 L1R | — |
| | Double pole | 8903 LO 80/1000 (1) | 8903 L3L | — |
| | | 8903 LXO 80/1000 (1) | 8903 L3R | — |
| Single-pole and double-pole kits | | | | |
| Single-pole kits (2) | 1 N/O | 8903 SM● | 9999 SB6 | — |
| | | 8903 SP● (3) | 9999 SB21 | — |
| | 1 N/C | 8903 SM● | 9999 SB7 | — |
| Double-pole kits (2) | 1 N/O and 1 N/C | 8903 SM● | 9999 SB8 | — |
| | | 8903 SP● (3) | 9999 SB23 | — |
| | 2 N/O | 8903 SM● | 9999 SB9 | — |
| | | 8903 SP● (3) | 9999 SB24 | — |
| | 2 N/C | 8903 SM● | 9999 SB10 | — |
| | | 8903 SP● (3) | 9999 SB25 | — |
| Solid neutral terminal block kits | | | | |
| Solid neutral terminal block kits | 30/60/100 A | 8903 L/LX/SM/SP/SQ | 9999 SN1 | — |
| | 200/300 A | 8903 SV/SX | 9999 SN2 | — |
| | 400/600/800 A | 8903 SY/SZ/SJ | 9999 SN3 | — |

| Type | Kit description | For use on | Reference | Weight kg (lb) |
|--|---|---|------------------------------------|-------------------|
| Mechanically held | | | | |
| Push button (On-Off) | NEMA 1 enclosure | 8903 L●/LX● | 9999 BLX + 9999 LXPB | — |
| | | 8903 SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KA2 + 9999 SA3 (4) | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KA2 + 9999 SA3 (4) | — |
| Selector switch (2-position) | NEMA 1 enclosure | 8903 L●/LX● | 9999 BLX + 9999 LXS | — |
| | | 8903 SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KN244 + 9001 KS11BH1 | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KN244 + 9001 KS11BH1 | — |
| Selector switch (3-position) | NEMA 1 enclosure (must include two-wire control relay) | 8903 L●/LX● | 9999 BLX + 9999 SC2 | — |
| | | 8903 SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KN260 + 9001 KS46BH2 | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KN260 + 9001 KS46BH2 | — |
| Two-wire control relay Suffix R6 (5) | — | 8903 L●/LX● | 9999 RLX + CA2SK11 | — |
| | | 8903 SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 8501 X011 | — |
| Electrically held | | | | |
| Pilot lights (red) | NEMA 1 and NEMA 12 enclosures | 8903 L●/LX● | 9999 SP28R | — |
| | | 8903 SM● | 9999 SP2R + 9999 SP28R | — |
| | | 8903 SP● | 9999 SP3R + 9999 SP28R | — |
| | | 8903 SQ● | 9999 SP14R + 9999 SP28R (6) | — |
| | | 8903 SV●/SX●/SY●/SZ●/SJ● | 9999 SP28R + 9999 SP28R (7) | — |
| Push buttons (8) | NEMA 1 enclosure | 8903 L●/LX● | 9999 BLX + 9999 SA10 | — |
| | | 8903 SM●/SP● | 9999 SA10 | — |
| | | 8903 SQ●/SV●/SX●/SY●/SZ●/SJ● | 9999 SA3 | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9999 SA3 | — |
| Selector switch (2-position) | NEMA 1 enclosure | 8903 L●/LX● | 9999 BLX + 9999 SC22 | — |
| | | 8903 SM●/SP●/SQ● | 9999 SC22 | — |
| | | 8903 SV●/SX●/SY●/SZ●/SJ● | 9001 KN244 + 9001 KS11BH1 | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9001 KN244 + 9001 KS11BH1 | — |
| Selector switch (3-position) | NEMA 1 enclosure | 8903 L●/LX● | 9999 BLX + 9999 SC2 | — |
| | | 8903 SM●/SP●/SQ● | 9999 SC2 | — |
| | | 8903 SV●/SX●/SY●/SZ●/SJ● | 9999 SC8 | — |
| | NEMA 12 enclosure | 8903 L●/LX●/SM●/SP●/SQ●/SV●/SX●/SY●/SZ●/SJ● | 9999 SC8 | — |

(1) Single-pole power pole must be removed before double-pole power pole can be installed.

(2) A single-pole or double-pole kit can be added to any 2- or 3-pole, 30 or 60 A Type S lighting contactor to make a 4- or 5-pole device. Factory assembled 4- and 5-pole contactors use the basic 3-pole device with a single- or double-pole kit installed. Only one power pole can be added per contactor. Sufficient room is provided in all enclosure styles for the addition of the power pole kit.

(3) When power pole is added to a 60 A contactor (8903 SP●), a 4-pole coil is also required. 60 A power poles are suitable for use with copper or aluminium wire.

(4) Mechanically held contactors need two distinct signals to operate. It is necessary to add a N/O contact block to the Class 9999 Type SA3 push button kit.

(5) Form R6 available for 24 V, 120 V, 240 V and 277 V only.

(6) Choice for 2- or 3-pole only; for 4- or 5-pole, use Class 9999 SP15R.

(7) The coil voltage must be the same as the pilot light rating. Kit contains one Class 9001 KP1R6 (120 V / 60 Hz) red pilot light control unit. For other voltages, refer to the Class 9001 KP control section of the Digest.

(8) Requires holding circuit interlock or additional power pole on Type L devices.

Lighting Contactors

Multipole lighting contactors Types L, LX and S Class 8903 Variants

Variants

| Type | Enclosure type | For use on | Description | Suffix to the lighting contactor reference (1) | Weight kg (lb) |
|---|--------------------|---|---|--|----------------|
| "ON-OFF" push button | NEMA 1, NEMA 12 | Mechanically held | Pulsed contact | A3 | – |
| "ON-OFF" push button | Any | Electrically held | With holding circuit interlock | A12 | – |
| "HAND-OFF-AUTO" selector switch | NEMA 1, NEMA 12 | Electrically held, Mechanically held | (2) | C | – |
| "ON-OFF" selector switch | NEMA 1, NEMA 12 | Electrically held, Mechanically held | (2) | C6 | – |
| Control circuit fuses | Any | Electrically held, Mechanically held | 1 fuse | F | – |
| | | | 2 fuses | F4 | – |
| Control circuit transformers standard capacity (50/60 Hz) (3) | NEMA 1, NEMA 12 | Electrically held, Mechanically held | Fuses: 2 (primary), 0 (secondary) | F4T | – |
| | | | Fuses: 2 (primary), 1 (secondary) | FF4T | – |
| Additional capacity (50/60 Hz) Two fuses in primary and one fuse in secondary (3) | NEMA 1, NEMA 12 | Electrically held, Mechanically held | 100 VA additional capacity | FF4T11 | – |
| | | | 200 VA additional capacity | FF4T12 | – |
| | | | 300 VA additional capacity | FF4T13 | – |
| Noise-reduced enclosure and shock-mounted panel | Any | Electrically held | – | G4 | – |
| Addition of photoelectric receptacle | NEMA 1, NEMA 12 | Electrically held | – | G10 | – |
| | | | With photo-cell installed | G101 | – |
| | | Mechanically held | And relay R6 (4) | G10R6 | – |
| | | | With photo-cell installed (4) | G101R6 | – |
| Addition of terminal blocks (other than standard) (5) | Any | Electrically held, Mechanically held | Wired | G56●● | – |
| | | | Unwired | G50●● | – |
| Bracketing for internally mounted pilot device | Any | Electrically held, Mechanically held | – | G53 | – |
| Addition of time clock | NEMA 1, NEMA 12 | Electrically held, Mechanically held | 24 hour (120–127 V only) | K14 | – |
| | | | 24 hour w/day omission (120–127 V only) | K141 | – |
| | | | 7 day (120–127 V only) | K142 | – |
| Addition of solid neutral terminal block | NEMA 1, NEMA 12 | Electrically held, Mechanically held | – | N | – |

(1) Example: 8903 LXG 20 V02 A3.

(2) To substitute a key operated selector switch, use suffix "C33" and specify positions, legend marking and key removal. This suffix must be used with another selector switch suffix.

(3) Control circuit transformer selection table:

| Primary-secondary | 120-24 | 208-120 | 240-24 | 240-120 | 277-120 | 480-24 | 480-120 | 480-240 | 600-120 |
|-------------------|--------|---------|--------|---------|---------|--------|---------|---------|---------|
| 60 Hz | V89 | V84 | V82 | V80 | V85 | V83 | V81 | V87 | V86 |

(4) Available for 24 V, 120 V, 240 V and 277 V applications only.

(5) At the end of suffix, ●● represents the number of terminals needed.

Lighting Contactors

Multipole lighting contactors Types L, LX and S Class 8903 Variants

Variants (continued)

| Type | Enclosure type | For use on | Description | Suffix to the lighting contactor reference (1) | Weight kg (lb) |
|---|----------------|---|---|--|----------------|
| Red pilot light | Any | Electrically held, Mechanically held | – | P1 | – |
| Two or more lights (each) (2) | Any | Electrically held, Mechanically held | – | P | – |
| Red push-to-test pilot light | Any | Electrically held, Mechanically held | – | P21 | – |
| Interlock | Any | Electrically held, Mechanically held | Necessary for pilot light, one needed for each additional pilot light | (3) | – |
| Two-wire interfaces | Any | Mechanically held | (4) | R6 | – |
| Addition of under- and overvoltage relay | Any | Electrically held, Mechanically held | – | R44 | – |
| Three-wire control for long distance applications | Any | Mechanically held | (4) | R62 | – |
| Auxiliary contacts (5) | Any | Electrically held, Mechanically held | 0 N/O + 1 N/C | X01 | – |
| | | | 0 N/O + 2 N/C | X02 | – |
| | | | 0 N/O + 3 N/C | X03 | – |
| | | | 0 N/O + 4 N/C | X04 | – |
| | | | 1 N/O + 0 N/C | X10 | – |
| | | | 1 N/O + 1 N/C | X11 | – |
| | | | 1 N/O + 2 N/C | X12 | – |
| | | | 1 N/O + 3 N/C | X13 | – |
| | | | 2 N/O + 0 N/C | X20 | – |
| | | | 2 N/O + 1 N/C | X21 | – |
| 2 N/O + 2 N/C | X22 | – | | | |
| 3 N/O + 0 N/C | X30 | – | | | |
| 3 N/O + 1 N/C | X31 | – | | | |
| 4 N/O + 0 N/C | X40 | – | | | |
| Addition of DC coil to Type L (7 poles maximum) | Any | Electrically held | – | Y48 | – |
| Coil transient suppressor (~ 120 V only) | Any | Electrically held, Mechanically held | – | Y145 | – |
| Addition of lightning arrestor | Any | Electrically held, Mechanically held | – | Y1532 | – |
| Substitute copper only lugs for standard | Any | Electrically held, Mechanically held | – | Y157 | – |
| Substitute Anderson VC crimp style lugs for standard (per lug adder), specify lug | Any | Electrically held, Mechanically held | – | Y1574 | – |

(1) Example: **8903 LXG 20 V02 P1**.

(2) For electrically held enclosed devices, the first pilot light is wired in parallel with the coil. Operating interlocks are required for all additional pilot lights. Mechanically held devices require operating interlocks for all pilot lights.

(3) Do not use suffix "X" for any interlock which is wired in series with pilot light, but do specify how pilot light and interlock are to be wired into the circuit.

(4) Available for 24 V, 120 V, 240 V and 277 V applications only.

(5) Electrically held (Type L) multipole contactors cannot add interlocks. Additional poles can be used for the same function, however. Mechanically held (Type LX) contactors provide one double-throw auxiliary (or status) contact as standard.
Maximum number of external auxiliary units:

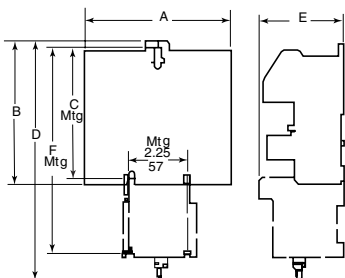
| Contactors | Maximum number |
|-----------------------------------|---|
| 8903 SM/SP | 4 N/O or 4 N/C |
| | 3 N/O or N/C plus 1 attached timer (on- or off-delay) |
| | 2 N/O or N/C plus 1 power-pole adder (single- or 2-pole, N/O or N/C) |
| | 1 attached timer plus 1 power-pole adder (single- or 2-pole, N/O or N/C) plus auxiliary contact |
| 8903 SQ/SV/SY (Size 3 and Size 4) | 4 N/O or N/C |
| | 2 N/O or N/C plus 1 attached timer (on- or off-delay) |
| 8903 SQ/SV/SY (Size 5) | 3 N/O or N/C plus 1 attached timer (on- or off-delay) |
| | 2 N/O or N/C plus 1 NEMA Size 0–1 or Size 2 power-pole adder (single- or 2-pole, N/O or N/C) |
| 8903 SZ/SJ | 4 N/O or N/C |
| | 3 N/O or N/C plus 1 attached timer (on- or off-delay) |
| | 2 N/O or N/C plus 1 NEMA Size 0–1 or Size 2 power-pole adder (single- or 2-pole, N/O or N/C) |

Lighting Contactors

Multipole lighting contactors
Types L, LX and S Class 8903

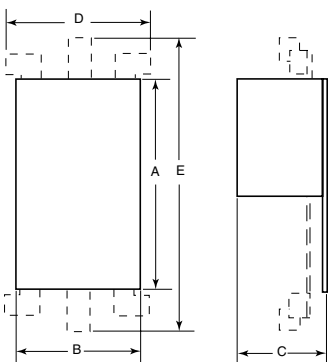
Dimensions in mm (25.4 mm = 1 inch)

8903 LO/LXO



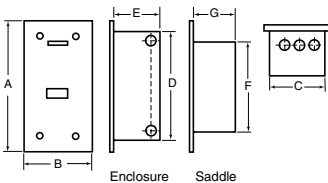
| | A | B | C | D | E | F |
|-----------------------|-----|-----|-----|-----|----|-----|
| 8903 LO 20/30/40 | 73 | 127 | 117 | - | 79 | - |
| 8903 LO 60 | 108 | 127 | 117 | - | 79 | - |
| 8903 LO 80/1000/1200 | 143 | 127 | 117 | - | 79 | - |
| 8903 LXO 20/30/40 | 73 | - | - | 224 | 83 | 196 |
| 8903 LXO 60 | 108 | - | - | 224 | 83 | 196 |
| 8903 LXO 80/1000/1200 | 143 | - | - | 224 | 83 | 196 |

8903 S●O



| | A | B | C | D | E |
|----------------|-----|-----|-----|---|------|
| 8903 SMO 1/2 | 110 | 82 | 107 | - | - |
| 8903 SMO 3/4 | 110 | 108 | 107 | - | - |
| 8903 SPO 1/2 | 135 | 110 | 125 | - | - |
| 8903 SPO 3/4 | 158 | 143 | 125 | - | - |
| 8903 SQO 1/2 | 180 | 139 | 165 | - | - |
| 8903 SQO 3/4 | 199 | 248 | 165 | - | - |
| 8903 SVO 1/2 | 232 | 152 | 165 | - | - |
| 8903 SVO 3/4 | 232 | 248 | 165 | - | - |
| 8903 SXO 1/2 | 313 | 220 | 222 | - | - |
| 8903 SYO 1/2 | - | 313 | 229 | - | 706 |
| 8903 SZO 1/2 | - | 313 | 229 | - | 706 |
| 8903 SJO 1/2 | - | 313 | 303 | - | 1085 |
| 8903 SMO 10/11 | 182 | 96 | 119 | - | - |
| 8903 SMO 12/13 | 182 | 116 | 119 | - | - |
| 8903 SPO 10/11 | 210 | 117 | 133 | - | - |
| 8903 SPO 12/13 | 221 | 150 | 133 | - | - |
| 8903 SQO 10/11 | 257 | 151 | 171 | - | - |
| 8903 SQO 12/13 | 268 | 248 | 171 | - | - |
| 8903 SVO 10/11 | 293 | 152 | 171 | - | - |
| 8903 SVO 12 | 293 | 248 | 171 | - | - |
| 8903 SXO 13/14 | 313 | 220 | 267 | - | - |
| 8903 SYO 16/17 | - | 220 | 267 | - | 533 |
| 8903 SZO 18/19 | - | 220 | 267 | - | 533 |
| 8903 SJO 10/11 | - | 220 | 303 | - | 898 |

8903 LF/LXF/S●F



| Class/Type | Variants | A | B | C | D | E | F | G |
|------------------|----------------|-----|-----|-----|-----|-----|-----|-----|
| 8903 LF | F/R6/Y48 | 386 | 227 | 194 | 327 | 138 | 278 | 130 |
| 8903 LXF | F/R6/Y48 | 386 | 227 | 194 | 327 | 138 | 278 | 130 |
| 8903 LF | A3/A12/C/C6/P | 610 | 445 | 381 | 489 | 181 | - | - |
| 8903 LXF | A3/A12/C/C6/P | 610 | 445 | 381 | 489 | 181 | - | - |
| 8903 SMF | A12/C/C6/P/X | 341 | 183 | 149 | 283 | 121 | 233 | 114 |
| 8903 SMF 1 | X | 341 | 183 | 149 | 283 | 121 | 233 | 114 |
| 8903 SMF 1/2/3/4 | N | 610 | 445 | 381 | 489 | 146 | - | - |
| 8903 SMF 1 | A3/C/C6/N/P/R6 | 610 | 445 | 381 | 489 | 146 | - | - |
| 8903 SPF 1/2/3/4 | A12/C/C6/P/X | 386 | 227 | 194 | 327 | 138 | 278 | 130 |
| 8903 SPF 1 | X | 386 | 227 | 194 | 327 | 138 | 278 | 130 |
| 8903 SPF 1/2/3/4 | N | 610 | 445 | 381 | 489 | 146 | - | - |
| 8903 SPF 1 | A3/C/C6/N/P/R6 | 610 | 445 | 381 | 489 | 146 | - | - |
| 8903 SQF | - | 787 | 425 | 362 | 667 | 203 | - | - |

Lighting Contactors

Multipole lighting contactors

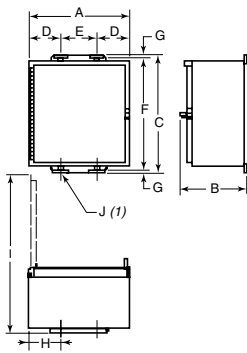
Types L, LX and S Class 8903

Dimensions in mm (25.4 mm = 1 inch)

8903 LG/LXG/S●G

| Class/Type | Variants | Width | Height | Depth |
|------------------|----------------------|-------|--------|-------|
| 8903 LG | A3/A12/C/C6/F/R6/Y48 | 198 | 322 | 153 |
| 8903 LXG | A3/A12/C/C6/F/R6/Y48 | 198 | 322 | 153 |
| 8903 LG | P | 302 | 302 | 189 |
| 8903 LXG | P | 302 | 302 | 189 |
| 8903 LG | K14/K141/K142 | 406 | 559 | 181 |
| 8903 LXG | K14/K141/K142 | 406 | 559 | 181 |
| 8903 SMG 1/2/3/4 | A12/C/C6/P/X | 152 | 254 | 134 |
| 8903 SMG 1 | X | 152 | 254 | 134 |
| 8903 SMG 1/2/3/4 | N | 378 | 359 | 192 |
| 8903 SMG 1 | N/R6 | 378 | 359 | 192 |
| 8903 SMG 1 | A3/C/C6/P | 206 | 359 | 247 |
| 8903 SPG 1/2/3/4 | A12/C/C6/P/X | 198 | 322 | 153 |
| 8903 SPG | N/R6 | 378 | 359 | 192 |
| 8903 SPG 1 | A3/C/C6/P/X | 206 | 359 | 247 |
| 8903 SQG 1/2 | A12/C/C6/F/P/X | 286 | 639 | 288 |
| 8903 SQG 10/11 | F/X | 286 | 639 | 288 |
| 8903 SQG 1/2 | N/R6/K●●● | 461 | 740 | 234 |
| 8903 SQG 10/11 | A3/C/C6/N/R6/K●●● | 461 | 740 | 234 |
| 8903 SQG 3/4 | A12/C/C6/F/P/X | 286 | 639 | 288 |
| 8903 SQG 12/13 | F/X | 286 | 639 | 288 |
| 8903 SQG 3/4 | K●●● | 461 | 740 | 234 |
| 8903 SQG 12/13 | A3/C/C6 | 461 | 740 | 234 |
| 8903 SQG 3/4 | N/R6 | 563 | 994 | 260 |
| 8903 SQG 12/13 | N/R6 | 563 | 994 | 260 |
| 8903 SVG | – | 563 | 994 | 260 |
| 8903 SXG | – | 437 | 1123 | 325 |
| 8903 SYG | – | 513 | 1670 | 333 |
| 8903 SZG | – | 513 | 1670 | 333 |
| 8903 SJG | – | 876 | 2362 | 597 |

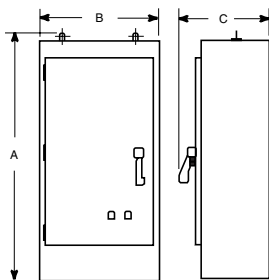
8903 LA/LXA/S●A



(1) 4 diameter mounting holes

| Class/Type | Variants | A | B | C | D | E | F | G | H | I | J |
|------------------|---------------------|-----|-----|------|-----|-----|------|----|-----|-----|----|
| 8903 LA | F/R6/Y48 | 206 | 216 | 400 | 40 | 127 | 381 | 8 | 54 | 375 | 8 |
| 8903 LXA | F/R6/Y48 | 206 | 216 | 400 | 40 | 127 | 381 | 8 | 54 | 375 | 8 |
| 8903 LA | A3/A12/C/C6/P | 302 | 197 | 343 | 97 | 108 | 324 | 10 | 125 | 460 | 8 |
| 8903 LXA | A3/A12/C/C6/P | 302 | 197 | 343 | 97 | 108 | 324 | 10 | 125 | 460 | 8 |
| 8903 SMA 1/2/3/4 | A12/C/C6/P/X | 162 | 217 | 324 | 40 | 83 | 305 | 10 | 90 | 318 | 8 |
| 8903 SMA 1 | F/P/X | 162 | 217 | 324 | 40 | 83 | 305 | 10 | 90 | 318 | 8 |
| 8903 SMA 1/2/3/4 | N/R6 | 378 | 200 | 406 | 65 | 248 | 381 | 13 | 93 | 540 | 8 |
| 8903 SMA 1 | A3/C/C6/N/P/R6 | 378 | 200 | 406 | 65 | 248 | 381 | 13 | 93 | 540 | 8 |
| 8903 SPA 1/2/3/4 | A12/C/C6/P/X | 206 | 236 | 406 | 40 | 127 | 381 | 13 | 93 | 391 | 8 |
| 8903 SPA 1 | A3/C/C6/P/X | 206 | 236 | 406 | 40 | 127 | 381 | 13 | 93 | 391 | 8 |
| 8903 SPA 1/2/3/4 | N/R6 | 378 | 200 | 406 | 65 | 248 | 381 | 10 | 93 | 540 | 8 |
| 8903 SPA 1 | A3/C/C6/N/P/R6 | 378 | 200 | 406 | 65 | 248 | 381 | 10 | 93 | 540 | 8 |
| 8903 SQA 1/2 | A12/C/C6/F/N/R6/P/X | 461 | 234 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 8903 SQA 10/11 | A3/C/C6/F/N/P/R6/X | 461 | 234 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 8903 SQA 3/4 | A12/C/C6/F/N/P/K●●● | 461 | 234 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 8903 SQA 12/13 | A3/C/C6/P/K●●● | 461 | 234 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 8903 SQA 3/4 | N/R6/K●●● | 563 | 260 | 1054 | 78 | 406 | 1029 | 13 | 93 | 805 | 11 |
| 8903 SQA 12/13 | N/R6/K●●● | 563 | 260 | 1054 | 78 | 406 | 1029 | 13 | 93 | 805 | 11 |
| 8903 SVA | – | 563 | 260 | 1054 | 78 | 406 | 1029 | 15 | 93 | 805 | 11 |
| 8903 SXA | – | 437 | 339 | 1193 | 104 | 229 | 1168 | 13 | 117 | 719 | 14 |
| 8903 SYA | – | 513 | 330 | 1651 | 104 | 305 | 1625 | 13 | 135 | 784 | 18 |
| 8903 SZA | – | 513 | 330 | 1651 | 104 | 305 | 1625 | 13 | 135 | 784 | 18 |

8903 SJA



| | A | B | C |
|----------|------|-----|-----|
| 8903 SJA | 2362 | 876 | 597 |

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Manual Starters and Switches

Manual starters Class 2510

Manual switches Class 2510

Reversing drum switches Class 2601



2510 FG 2P



2510 KG 1A



2510 TBG 1



2601 AG2



2510 KO 2



2510 MBA 1

Manual starters Class 2510

Type F fractional motor power starters provide overload protection as well as manual "On-Off" control for small motors in a variety of industrial and commercial installations. Typical applications include fans, conveyors, pumps and small machine tools.

They are available in single- or 2-pole versions. Both single- and 2-pole versions are suitable for use with single-phase \sim motors rated up to 1 hp. 2-pole starters may also be used with \equiv motors rated up to 0.75 hp.

Note: Manual starters include motor overload protection. After tripping, the overload relay must be reset before the motor can restart.

Single units Type F

- Basic starters.
- Starters with handle guard/lock-off.

Duplex units Type F

- One starter in duplex enclosure.
- Two starters in one enclosure.
- Starters and "AUTO-OFF-HAND" selector switch.

Manual switches Class 2510

Type K motor-starting switches provide manual "On-Off" control of single- or 3-phase \sim motors, where overload protection is not required or is provided separately. These devices are suitable for use with 3-phase \sim motors rated up to 20 hp. Compact construction and a 600 V rating make these switches suitable for a wide range of industrial and commercial uses. Typical applications include small machine tools, pumps, fans, conveyors and many other types of electrical machinery. They may also be used on non-motor loads such as resistance heaters.

Note: Manual switches do not include motor overload or low-voltage protection. Should the power fail, the contacts will remain closed, and upon re-energization, **the motor will restart immediately.**

Non-reversing Type K

- With toggle operator.
- With removable key.

Integral Horsepower non-reversing Types T and M

Types T and M integral motor power manual starters provide convenient "On-Off" operation of small single-phase, 3-phase or \equiv motors. Typical applications include small machine tools, pumps, fans and conveyors. They feature toggle or push button operators and reliable overload protection. Pilot lights and auxiliary contacts are available.

- Toggle (T) or push button (M) operators.
- Reliable overload protection.
- Pilot light and auxiliary contact available.

Reversing drum switches Class 2601

Reversing drum switches are designed to start and reverse motors by connecting them directly across-the-line. The devices may be used with squirrel-cage motors; single-phase \sim motors designed for reversing service; and series, shunt and compound \equiv motors. The applications should be such that across-the-line starting of the motors is not objectionable, unless other means is provided for limiting starting current and torque. Class 2601 drum switches are field convertible from maintained to pulsed operation.

The reversing drum switches are suited to manual reversing control applications, such as machine tools, woodworking machines and similar types of equipment. Examples include lathes, milling machines, planers, grinders, shapers and boring mills. Other possible applications include door operators, small hoists and conveyor belts.

Note: Reversing drum switches do not include motor overload or low-voltage protection. Should the power fail, the contacts will remain closed, and upon re-energization, **the motor will restart immediately;** however, if the drum switch is assembled for pulsed operation, the handle will stay in the selected position, and the handle position will determine the motor state.

| Environment | | | | | | |
|---|-----------------------|---|--|----------------------|-------------|---------|
| Class | | 2510/2601 | | | | |
| Type | | F/K/T/M | | | | |
| Conforming to standards | Enclosed unit | UL | | | | |
| | Open unit | UL | | | | |
| Product certifications | | CSA | | | | |
| Ambient air temperature around the device | Storage | °C | 0...+ 40 | | | |
| | Operation | °C | 0...+ 40 | | | |
| Electrical characteristics | | | | | | |
| Class | | 2510 | | | | |
| Type | | F | | | | |
| Voltage rating | | V | ~ 277 maximum (single- or 2-pole); --- 230 maximum (2-pole only) | | | |
| Continuous current rating | | A | 16 | | | |
| Maximum Horsepower | | | | | | |
| 115–230 V | ~ Single-phase | Single-pole | hp/kW | 1/0.75 | | |
| | | 2-pole | hp/kW | 1/0.75 | | |
| | --- 2-pole only | hp/kW | 0.75/0.55 | | | |
| 277 V | ~ Single-phase | Single-pole | hp/kW | 1/0.75 | | |
| | | 2-pole | hp/kW | 1/0.75 | | |
| | --- 2-pole only | hp/kW | - | | | |
| Class | | 2510 | | | | |
| Type | | K●●1/K●●3 | K●●2/K●●4 | K●●5 | K●●6 | |
| Number of poles | | 2 | 3 | 2 | 3 | |
| Number of phases | | Single phase | Three phase | Single phase | Three phase | |
| Voltage rating | | V | ~ 600 maximum; --- 230 maximum | | | |
| Continuous current rating | | A | 30 at 600 V maximum | | | |
| Maximum motor power | | | | | | |
| ~ rating | 115 V | hp/kW | 2/1.5 | 2/1.5 | 2/1.5 | 2/1.5 |
| | 230 V | hp/kW | 2/1.5 | 7.5/5.6 | 3/2.2 | 7.5/5.6 |
| | 460 V | hp/kW | 3/2.2 | 10/7.5 | 7.5/5.6 | 15/11.2 |
| | 575 V | hp/kW | 3/2.2 | 10/7.5 | 10/7.5 | 20/14.9 |
| --- rating | 90 V | hp/kW | 1/0.75 | 1/0.75 | 1/0.75 | 1/0.75 |
| | 115 V | hp/kW | 2/1.5 | 2/1.5 | 2/1.5 | 2/1.5 |
| | 230 V | hp/kW | 1.5/1.1 | 1.5/1.1 | 1.5/1.1 | 1.5/1.1 |
| Class | | 2510 | | | | |
| Type | | TB●●/MB●● | TC●●/MC●● | MC●● 2 | | |
| Size | | Available in NEMA Sizes M-0, M-1 and M-1P | | | | |
| Number of poles | | ~ : 2-pole single-phase; 3-pole 3-phase --- : 2-pole (without low voltage protection only) | | | | |
| Voltage rating | | V | ~ 600 maximum; --- 250 maximum | | | |
| Terminals | | | | | | |
| Power terminals | Type of lug | Screw clamp terminal | Screw clamp terminal | Box lug | | |
| | Wire Size (min.-max.) | #14–#8 | #14–#8 | #14–#6 | | |
| Auxiliary interlock terminals | Type of lug | Screw clamp terminal | Screw clamp terminal | Screw clamp terminal | | |
| | Wire Size (min.-max.) | #16–#12 | #16–#12 | #16–#12 | | |
| Class | | 2601 | | | | |
| Type | | AG2/AG2 S2/BG1/BG1 S4 | | | | |
| Voltage rating | | V | ~ 600 maximum; --- 250 maximum | | | |

551176



2510 FG 2P

Single units Type F

| Type of operator | Number of poles | Features | Enclosure type (2) | Specification | Reference | Weight kg (lb) |
|-----------------------|----------------------|---|---|--------------------------------------|-------------|----------------|
| Basic starters | | | | | | |
| Toggle operator (1) | 1 | Standard | Open | – | 2510 FO 1 | 0.14 (0.32) |
| | | | | Standard | 2510 FG 1 | 0.35 (0.72) |
| | | | | Oversized | 2510 FGJ 1 | 0.49 (1.08) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 1 | 0.19 (0.42) |
| | | | | Standard stainless steel flush plate | 2510 FS 1 | 0.20 (0.44) |
| | | | | Jumbo stainless steel flush plate | 2510 FSJ 1 | 0.36 (0.80) |
| | With red pilot light | Open | – | 2510 FO 1P | 0.15 (0.33) | |
| | | | Standard | 2510 FG 1P | 0.36 (0.80) | |
| | | | Oversized | 2510 FGJ 1P | 0.50 (1.12) | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 1P | 0.20 (0.46) | |
| | | | Standard stainless steel flush plate | 2510 FS 1P | 0.20 (0.46) | |
| | | | Jumbo stainless steel flush plate | 2510 FSJ 1P | 0.36 (0.80) | |
| | 2 | Standard | Open | – | 2510 FO 2 | 0.15 (0.33) |
| | | | | Standard | 2510 FG 2 | 0.36 (0.80) |
| | | | | Oversized | 2510 FGJ 2 | 0.50 (1.11) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 2 | 0.20 (0.46) |
| | | | | Standard stainless steel flush plate | 2510 FS 2 | 0.20 (0.46) |
| | | | | Jumbo stainless steel flush plate | 2510 FSJ 2 | 0.36 (0.80) |
| With red pilot light | | Open Type | – | 2510 FO 2P | 0.16 (0.35) | |
| | | | Standard | 2510 FG 2P | 0.35 (0.78) | |
| | | | Oversized | 2510 FGJ 2P | 0.52 (1.15) | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 2P | 0.22 (0.50) | |
| | | | Standard stainless steel flush plate | 2510 FS 2P | 0.20 (0.45) | |
| | | | Jumbo stainless steel flush plate | 2510 FSJ 2P | 0.20 (0.45) | |
| Removable key (1) | 1 | Standard | Open | – | 2510 FO 3 | 0.15 (0.33) |
| | | | | Standard | 2510 FG 3 | 0.35 (0.79) |
| | | | | Oversized | 2510 FGJ 3 | 0.36 (0.80) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 3 | 0.22 (0.50) |
| | | | | Standard stainless steel flush plate | 2510 FS 3 | 0.20 (0.45) |
| | | | | Jumbo stainless steel flush plate | 2510 FSJ 3 | 0.20 (0.45) |
| | With red pilot light | Open | – | 2510 FO 3P | 0.18 (0.40) | |
| | | | Standard | 2510 FG 3P | 0.38 (0.84) | |
| | | | Oversized | 2510 FGJ 3P | 0.36 (0.80) | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 3P | 0.20 (0.46) | |
| | | | Standard stainless steel flush plate | 2510 FS 3P | 0.21 (0.48) | |
| | | | Jumbo stainless steel flush plate | 2510 FSJ 3P | 0.20 (0.45) | |
| | 2 | Standard | Open | – | 2510 FO 4 | 0.18 (0.40) |
| | | | | Standard | 2510 FG 4 | 0.36 (0.80) |
| | | | | Oversized | 2510 FGJ 4 | 0.36 (0.80) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 4 | 0.22 (0.50) |
| | | | | Standard stainless steel flush plate | 2510 FS 4 | 0.20 (0.45) |
| | | | | Jumbo stainless steel flush plate | 2510 FSJ 4 | 0.20 (0.45) |
| With red pilot light | | Open | – | 2510 FO 4P | 0.36 (0.80) | |
| | | | Standard | 2510 FG 4P | 0.36 (0.80) | |
| | | | Oversized | 2510 FGJ 4P | 0.36 (0.80) | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 4P | 0.22 (0.50) | |
| | | | Standard stainless steel flush plate | 2510 FS 4P | 0.20 (0.45) | |
| | | | Jumbo stainless steel flush plate | 2510 FSJ 4P | 0.20 (0.45) | |

(1) One thermal unit required.

(2) Open: no enclosure,

NEMA 1: general purpose enclosure surface mounting.

Single units Type F (continued)

| Type of operator | Number of poles | Features | Enclosure type (2) | Specification | Reference | Weight kg (lb) |
|--|-----------------|----------------------|--------------------|--------------------|-------------------|----------------|
| Starters with handle guard/lock-off | | | | | | |
| Toggle operator (1) | 1 | Standard | NEMA 1 (3) | Standard | 2510 FG 5 | 0.36 (0.80) |
| | | | | Oversized | 2510 FGJ 5 | 0.50 (1.11) |
| | | With red pilot light | NEMA 1 (3) | Standard | 2510 FG 5P | 0.37 (0.82) |
| | 2 | Standard | NEMA 1 (3) | Standard | 2510 FG 6 | 0.37 (0.82) |
| | | | | Oversized | 2510 FGJ 6 | 0.51 (1.13) |
| | | With red pilot light | NEMA 1 (3) | Standard | 2510 FG 6P | 0.38 (0.84) |
| | | | Oversized | 2510 FGJ 6P | 0.53 (1.17) | |

Duplex units Type F

One starter in duplex enclosure

| | | | | | | |
|---------------------|---|----------------------|--------|----------|--------------------|-------------|
| Toggle operator (1) | 2 | Standard | NEMA 1 | Standard | 2510 FG 02 | 0.50 (1.10) |
| | | With red pilot light | NEMA 1 | Standard | 2510 FG 02P | 0.51 (1.12) |
| Removable key (1) | 2 | With red pilot light | NEMA 1 | Standard | 2510 FG 04P | 0.51 (1.12) |

Two starters in one enclosure

| | | | | | | |
|---------------------|--------------------|--------------------------------------|---|--------------------|--------------------|-------------|
| Toggle operator (1) | 2 for each starter | Standard | NEMA 1 | Standard | 2510 FG 22 | 0.70 (1.54) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 22 | 0.70 (1.54) |
| | | With red pilot light on each starter | NEMA 1 | Standard | 2510 FG 22P | 0.70 (1.54) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 22P | 0.70 (1.54) |
| Removable key (4) | 2 for each starter | With red pilot light on each starter | NEMA 1 | Standard | 2510 FG 44P | 0.70 (1.54) |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 44P | 0.70 (1.54) |
| | | Standard | Standard stainless steel flush plate | 2510 FS 22P | 0.70 (1.54) | |
| | | | Standard stainless steel flush plate | 2510 FS 44P | 0.70 (1.54) | |

Starters and "AUTO-OFF-HAND" selector switch (~ only)

| | | | | | | | |
|---------------------|---|----------------------|---|----------------------|---|--------------------|--------------------|
| Toggle operator (1) | 1 | Standard | NEMA 1 | Standard | 2510 FG 71 | 0.81 (1.79) | |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 71 | 0.73 (1.61) | |
| | | | With red pilot light | NEMA 1 | Standard | 2510 FG 71P | 0.72 (1.59) |
| | | 2 | Standard | NEMA 1 | Standard | 2510 FG 72 | 0.80 (1.76) |
| | | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 72 |
| | | | | With red pilot light | NEMA 1 | Standard | 2510 FG 72P |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 72P | 0.80 (1.76) | |
| | | | Standard stainless steel flush plate | 2510 FS 71P | 0.80 (1.76) | | |
| | | | Standard stainless steel flush plate | 2510 FS 72P | 0.80 (1.76) | | |
| Removable key (1) | 2 | With red pilot light | NEMA 1 | Standard | 2510 FG 74P | 0.80 (1.76) | |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 FF 74P | 0.80 (1.76) | |
| | | | Standard stainless steel flush plate | 2510 FS 74P | 0.80 (1.76) | | |

(1) One thermal unit required.

(2) NEMA 1: general purpose enclosure surface mounting.

(3) For general purpose flush mounting enclosure (without pull box), order basic starter plus separate handle guard kit, reference is **2510 FL1**.

(4) Two thermal units required.

Non-reversing Type K (1)

| Type of operator | Number of poles | Features | Enclosure type (2) | Specification | Reference | Weight kg (lb) | |
|--------------------------------------|--------------------------------------|---|---|---|--------------------------------------|-----------------------|-------------------|
| Toggle operator | 2 | Standard | Open | – | 2510 KO 1 | 0.15 (0.35) | |
| | | | NEMA 1 | Standard | 2510 KG 1 | 0.38 (0.85) | |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 1 | 0.22 (0.50) | |
| | | | | Standard stainless steel flush plate | 2510 KS 1 | 0.20 (0.46) | |
| | | | With red pilot light ~ 115 V | Open | – | 2510 KO 1A (3) | 0.16 (0.37) |
| | | | | NEMA 1 | Standard | 2510 KG 1A | 0.38 (0.84) |
| | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 1A | 0.30 (0.66) |
| | | | Standard stainless steel flush plate | | 2510 KS 1A | 0.23 (0.52) | |
| | | | Jumbo stainless steel flush plate | 2510 KSJ 1A | 0.30 (0.66) | | |
| | With red pilot light ~ 230 V | Open | | – | 2510 KO 1B (3) | 0.18 (0.39) | |
| | | NEMA 1 | | Standard | 2510 KG 1B | 0.38 (0.84) | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 1B | 0.30 (0.66) | | |
| | Standard stainless steel flush plate | | 2510 KS 1B | 0.30 (0.66) | | | |
| | Jumbo stainless steel flush plate | 2510 KSJ 1B | 0.30 (0.66) | | | | |
| | 3 | Standard | Standard | Open | – | 2510 KO 2 | 0.18 (0.39) |
| | | | | NEMA 1 | Standard | 2510 KG 2 | 0.30 (0.66) |
| | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 2 | 0.30 (0.66) |
| | | | | | Standard stainless steel flush plate | 2510 KS 2 | 0.30 (0.66) |
| With red pilot light ~ 208...277 V | | | | Open | – | 2510 KO 2B (3) | 0.20 (0.44) |
| | | | | NEMA 1 | Standard | 2510 KG 2B | 0.39 (0.86) |
| | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 2B | 0.30 (0.66) |
| Standard stainless steel flush plate | | | | | 2510 KS 2B | 0.30 (0.66) | |
| Jumbo stainless steel flush plate | | | | 2510 KSJ 2B | 0.30 (0.66) | | |
| With red pilot light ~ 440...600 V | | Open | – | 2510 KO 2C (3) | 0.18 (0.40) | | |
| | | NEMA 1 | Standard | 2510 KG 2C | 0.40 (0.88) | | |
| | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 2C | 0.30 (0.66) | | |
| Standard stainless steel flush plate | | | 2510 KS 2C | 0.30 (0.66) | | | |
| Jumbo stainless steel flush plate | | 2510 KSJ 2C | 0.30 (0.66) | | | | |
| 2 | | Standard | Standard | Open | – | 2510 KO 5 | 0.17 (0.38) |
| | | | | NEMA 1 | Standard | 2510 KG 5 | 0.34 (0.75) |
| | | | | With red pilot light ~ 115 V | Open | – | 2510 KO 5A |
| | | With red pilot light ~ 230 V | NEMA 1 | Standard | 2510 KG 5A | 0.30 (0.66) | |
| | Open | | – | 2510 KO 5B | 0.30 (0.66) | | |
| | NEMA 1 | | Standard | 2510 KG 5B | 0.30 (0.66) | | |
| 3 | Standard | Standard | Open | – | 2510 KO 6 | 0.17 (0.39) | |
| | | | NEMA 1 | Standard | 2510 KG 6 | 0.39 (0.87) | |
| | | | With red pilot light ~ 115 V | Open | – | 2510 KO 6B | 0.20 (0.44) |
| | With red pilot light ~ 230 V | NEMA 1 | Standard | 2510 KG 6B | 0.30 (0.66) | | |
| | | Open | – | 2510 KO 6C | 0.30 (0.66) | | |
| | | NEMA 1 | Standard | 2510 KG 6C | 0.40 (0.88) | | |

(1) See motor power ratings table page 6/3.

(2) Open: no enclosure,

NEMA 1: general purpose enclosure surface mounting.

(3) Do not use as replacement parts for devices. For replacement unit, order Type **2510 KO 1** or **2510 KO 2** and separate pilot light kit, see page 6/9.

531177



2510 KG 1A

531178



2510 KO 2

| Non-reversing Type K (continued) (1) | | | | | | | | |
|---|--------------------------------------|--------------------------------------|---|---|---|--------------------------------------|-------------------|-------------|
| Type of operator | Number of poles | Features | Enclosure type (2) | Specification | Reference | Weight kg (lb) | | |
| Removable key | 2 | Standard | Open | – | 2510 KO 3 | 0.16 (0.35) | | |
| | | | NEMA 1 | Standard | 2510 KG 3 | 0.40 (0.88) | | |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 3 | 0.30 (0.66) | | |
| | | | | Standard stainless steel flush plate | 2510 KS 3 | 0.30 (0.66) | | |
| | | | With red pilot light ~ 115 V | | Open | – | 2510 KO 3A | 0.17 (0.37) |
| | | | | | NEMA 1 | Standard | 2510 KG 3A | 0.40 (0.88) |
| | | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 3A | 0.30 (0.66) |
| | | | | | | Standard stainless steel flush plate | 2510 KS 3A | 0.30 (0.66) |
| | | | | | Jumbo stainless steel flush plate | 2510 KSJ 3A | 0.30 (0.66) | |
| | With red pilot light ~ 230 V | | | | Open | – | 2510 KO 3B | 0.16 (0.35) |
| | | | NEMA 1 | Standard | 2510 KG 3B | 0.40 (0.88) | | |
| | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 3B | 0.30 (0.66) | | |
| | Standard stainless steel flush plate | 2510 KS 3B | | 0.30 (0.66) | | | | |
| | Jumbo stainless steel flush plate | 2510 KSJ 3B | 0.30 (0.66) | | | | | |
| | 3 | Standard | | Open | – | 2510 KO 4 | 0.18 (0.39) | |
| | | | | NEMA 1 | Standard | 2510 KG 4 | 0.39 (0.87) | |
| | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 4 | 0.22 (0.50) | |
| | | | | | Standard stainless steel flush plate | 2510 KS 4 | 0.25 (0.55) | |
| With red pilot light ~ 208...277 V | | | | | Open | – | 2510 KO 4B | 0.18 (0.39) |
| | | | | | NEMA 1 | Standard | 2510 KG 4B | 0.40 (0.88) |
| | | | | | General purpose flush mounting (without pull box) | Grey flush plate | 2510 KF 4B | 0.30 (0.66) |
| | | | | | | Standard stainless steel flush plate | 2510 KS 4B | 0.30 (0.66) |
| | | | | | Jumbo stainless steel flush plate | 2510 KSJ 4B | 0.30 (0.66) | |
| | | With red pilot light ~ 440...600 V | | | Open | – | 2510 KO 4C | 0.20 (0.44) |
| NEMA 1 | | | | Standard | 2510 KG 4C | 0.40 (0.88) | | |
| General purpose flush mounting (without pull box) | | | | Grey flush plate | 2510 KF 4C | 0.30 (0.66) | | |
| | | Standard stainless steel flush plate | 2510 KS 4C | 0.30 (0.66) | | | | |
| Jumbo stainless steel flush plate | | 2510 KSJ 4C | 0.30 (0.66) | | | | | |

(1) See motor power ratings table page 6/3.

(2) Open: no enclosure,

NEMA 1: general purpose enclosure surface mounting.

531179



2510 TBG 1

531180



2510 MBA 1

Integral Horsepower non-reversing Types T and M

| Type of operator | Number of poles | NEMA Size | Ratings | | | Enclosure type (1) | Reference | Weight |
|------------------|-----------------|----------------------|---------------------------------|---------------------------------|--------------|--------------------|----------------|--------|
| | | | Motor voltage | Max. power | | | | |
| | | | | 3-phase | Single-phase | | | |
| V | hp/kW | hp/kW | | kg (lb) | | | | |
| Toggle operator | ~ 2 | M-0 | 115 | – | 1/0.75 | Open | 2510 TBO 1 | 1 (3) |
| | | | 230 | – | 2/1.5 | NEMA 1 | 2510 TBG 1 (2) | 2 (5) |
| | | M-1 | 115 | – | 2/1.5 | Open | 2510 TCO 1 | 1 (3) |
| | | | 230 | – | 3/2.2 | NEMA 1 | 2510 TCG 1 | 2 (5) |
| | | M-1P | 115 | – | 3/2.2 | Open | 2510 TCO 2 | 1 (3) |
| | | | 230 | – | 5/3.7 | NEMA 1 | 2510 TCG 2 | 2 (5) |
| | ~ 3 | M-0 | 200...230, 380...575 | 3/2.2 (230 V), 5/3.7 (575 V) | – | Open | 2510 TBO 2 | 1 (3) |
| | | | – | – | – | NEMA 1 | 2510 TBG 2 (2) | 2 (5) |
| | | M-1 | 200...230, 380...575 | 7.5/5.5 (230 V), 10/7.5 (575 V) | – | Open | 2510 TCO 3 | 1 (3) |
| | | | – | – | – | NEMA 1 | 2510 TCG 3 | 2 (5) |
| | | M-1P | 115 | 1/0.75 | 1/0.75 | Open | 2510 TBO 4 | 1 (3) |
| | | | 230 | 1.5/1.1 | 1.5/1.1 | NEMA 1 | 2510 TBG 4 | 2 (5) |
| Push-button | ~ 2 | M-0 | 115 | – | 1/0.75 | Open | 2510 MBO 1 | 1 (3) |
| | | | 230 | – | 2/1.5 | NEMA 1 | 2510 MBG 1 (2) | 2 (5) |
| | | M-1 | 115 | – | 2/1.5 | Open | 2510 MBO 2 | 1 (3) |
| | | | 230 | – | 3/2.2 | NEMA 1 | 2510 MCG 1 | 2 (5) |
| | | M-1P | 115 | – | 3/2.2 | Open | 2510 MCO 1 | 1 (3) |
| | | | 230 | – | 5/3.7 | NEMA 1 | 2510 MCG 2 | 2 (5) |
| | ~ 3 | M-0 | 200...230, 380...575 | 3/2.2 (230 V), 5/3.7 (575 V) | – | Open | 2510 MBO 2 | 1 (3) |
| | | | – | – | – | NEMA 1 | 2510 MBG 2 (2) | 2 (5) |
| | | M-1 | 200...230, 380...575 | 7.5/5.5 (230 V), 10/7.5 (575 V) | – | Open | 2510 MCO 3 | 1 (3) |
| | | | – | – | – | NEMA 1 | 2510 MCG 3 | 2 (5) |
| | | M-1P | 115 | 1/0.75 | 1/0.75 | Open | 2510 MBO 4 | 1 (3) |
| | | | 230 | 1.5/1.1 | 1.5/1.1 | NEMA 1 | 2510 MBG 4 | 2 (5) |
| ~ 3 | M-0 | 200...230, 380...575 | 3/2.2 (230 V), 5/3.7 (575 V) | – | Open | 2510 MBO 2 | 1 (3) | |
| | | – | – | – | NEMA 1 | 2510 MBG 2 (2) | 2 (5) | |
| | M-1 | 200...230, 380...575 | 7.5/5.5 (230 V), 10/7.5 (575 V) | – | Open | 2510 MCO 3 | 1 (3) | |
| | | – | – | – | NEMA 1 | 2510 MCG 3 | 2 (5) | |
| | M-1P | 115 | 1/0.75 | 1/0.75 | Open | 2510 MBO 4 | 1 (3) | |
| | | 230 | 1.5/1.1 | 1.5/1.1 | NEMA 1 | 2510 MBG 4 | 2 (5) | |
| ~ 3 | M-0 | 200...230, 380...575 | 3/2.2 (230 V), 5/3.7 (575 V) | – | Open | 2510 MBO 2 | 1 (3) | |
| | | – | – | – | NEMA 1 | 2510 MBG 2 (2) | 2 (5) | |
| | M-1 | 200...230, 380...575 | 7.5/5.5 (230 V), 10/7.5 (575 V) | – | Open | 2510 MCO 3 | 1 (3) | |
| | | – | – | – | NEMA 1 | 2510 MCG 3 | 2 (5) | |
| | M-1P | 115 | 1/0.75 | 1/0.75 | Open | 2510 MBO 4 | 1 (3) | |
| | | 230 | 1.5/1.1 | 1.5/1.1 | NEMA 1 | 2510 MBG 4 | 2 (5) | |

(1) Open: no enclosure.

NEMA 1: general purpose enclosure surface mounting.

NEMA 12: dust-tight and drip-tight industrial-use enclosure.

(2) For a NEMA 1 enclosed starter approved for group motor installations, order a loom switch: 2-pole 2510 TBL 1, 3-pole 2510 TBL 2.

Loom switch w/LVP: 2-pole 2510 TBL 21, 3-pole 2510 TBL 22.

(3) Approved for group motor installations per NEC 430-53(c).

531181



2601 AG2

Reversing drum switches

| Voltage | Standard power ratings | | | | | | Reference | Weight |
|---|------------------------|-----|-----------|-----|------|-------|-------------|------------|
| | ~ single-phase | | ~ 3-phase | | = | | | |
| V | hp | kW | hp | kW | hp | kW | kg (lb) | |
| NEMA 1 general purpose enclosure | | | | | | | | |
| 115 | 1.5 | 1.1 | – | – | 0.25 | 0.185 | 2601 AG2 | 0.6 (1.32) |
| 200/230 | – | – | 2 | 1.5 | – | – | | |
| 230 | 2 | 1.5 | – | – | 0.25 | 0.185 | | |
| 460/575 | – | – | 2 | 1.5 | – | – | | |
| 115 | 1.5 | 1.1 | – | – | 2 | 1.5 | 2601 BG1 | 1.1 (2.38) |
| 200/230 | – | – | 5 | 3.7 | – | – | | |
| 230 | 3 | 2.2 | – | – | 2 | 1.5 | | |
| 460/575 | 5 | 3.7 | 7.5 | 5.5 | – | – | | |
| NEMA 1 maintained and pulsed (1) | | | | | | | | |
| 115 | 1.5 | 1.1 | – | – | 0.25 | 0.185 | 2601 AG2 S2 | 0.6 (1.32) |
| 200/230 | – | – | 2 | 1.5 | – | – | | |
| 230 | 2 | 1.5 | – | – | 0.25 | 0.185 | | |
| 460/575 | – | – | 2 | 1.5 | – | – | | |
| 115 | 1.5 | 1.1 | – | – | 2 | 1.5 | 2601 BG1 S4 | 1.1 (2.38) |
| 200/230 | – | – | 5 | 3.7 | – | – | | |
| 230 | 3 | 2.2 | – | – | 2 | 1.5 | | |
| 460/575 | 5 | 3.7 | 7.5 | 5.5 | – | – | | |

Kits

Replacement contact kits (for manual starters, Types T and M Class 2510)

| Type | NEMA Size | Series | Number of poles | Service bulletin | Reference | Weight kg (lb) |
|--------------------------|-----------|--------|-----------------|------------------|-----------|----------------|
| Replacement contact kits | M-0 | A or B | 2 or 3 | 312AS | 9998 ML1 | – |
| | M-1 | A or B | 2 or 3 | 312AS | 9998 ML2 | – |
| | M-1P | A or B | 2 | 312AS | 9998 ML2 | – |

Pilot light kits (for manual starters, Types F and K Class 2510)

| Type | For use on | Voltage | Pilot light | Reference | Weight kg (lb) |
|------------------|----------------|-------------|-------------|------------|----------------|
| Pilot light kits | 2510 FF/FG | ~ 115–240 V | Red | 9998 PL10 | – |
| | | | Green | 9998 PL10G | – |
| | 2510 KF/KG (2) | ~ 110–120 V | Red | 9998 PL11 | – |
| | | | Green | 9998 PL11G | – |
| | | | Red | 9998 PL12 | – |
| | | | Green | 9998 PL12G | – |
| | | | Red | 9998 PL13 | – |
| | | | Green | 9998 PL13G | – |
| | | ~ 208–227 V | Red | 9998 PL12 | – |
| | | | Green | 9998 PL12G | – |
| | | | Red | 9998 PL13 | – |
| | | | Green | 9998 PL13G | – |
| | ~ 440–600 V | Red | 9998 PL13 | – | |
| | | Green | 9998 PL13G | – | |

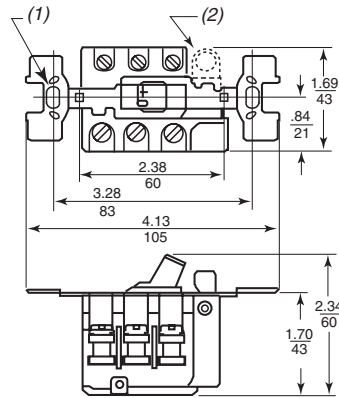
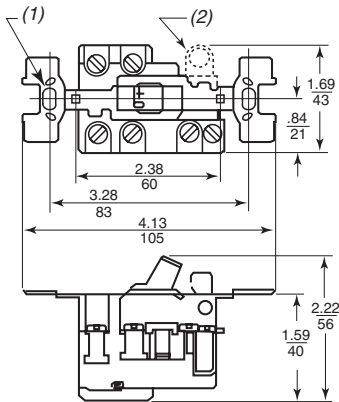
(1) Maintained-"Forward". Pulsed-"Reverse". Not field convertible.

(2) Lens cannot be replaced.

Dimensions are $\frac{\text{inch}}{\text{mm}}$

2510 FO 1/1P/2 (Open)

2510 KO 1/1A/2/2B/2C, 2510 KO 5/5A/5B/6/6B/6C (Open)

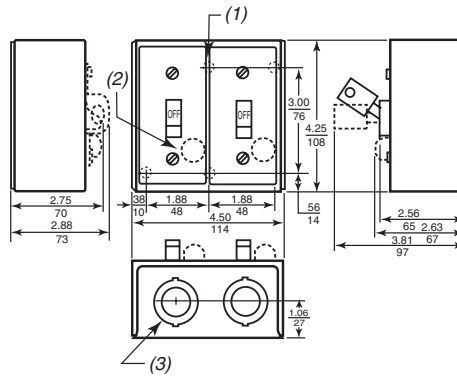
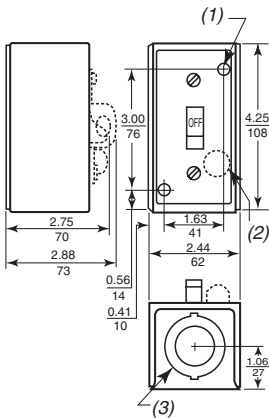


(1) 2 mounting holes for #6-32 screws.
(2) Pilot light.

(1) 2 mounting holes for #6-32 screws.
(2) Pilot light.

2510 FG/KG (NEMA 1 Surface mounting)

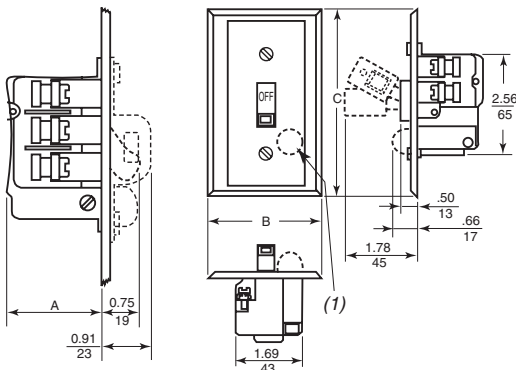
2510 FG 0●●/2●●/44P/7●● (NEMA 1)



(1) 2 x 0.25" diameter mounting holes 25/6.
(2) Pilot light.
(3) 1/2 -3/4" conduit knockout, both ends.

(1) 4 x 0.25" diameter mounting holes.
(2) Pilot light.
(3) 1/2 -3/4" conduit knockout, both ends.

2510 FF/FS/FSJ/KF/KS/KSJ (NEMA 1 Flush mounting)



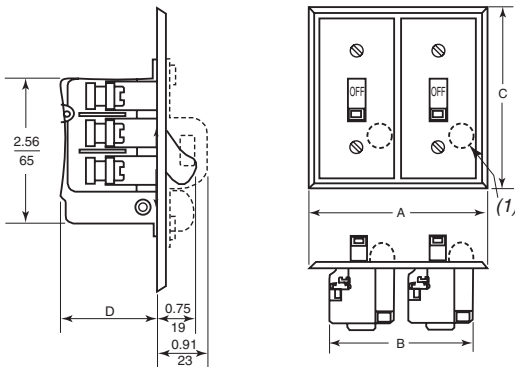
(1) Pilot light.

| (2) | A | B | C |
|-------------------------|------|------|-------|
| 2510 FF 1/1P/2/2P | 36.5 | 69.9 | 114.3 |
| 2510 FS 1/1P/2/2P | 36.5 | 69.9 | 114.3 |
| 2510 FSJ 1P/2P | 36.5 | 88.9 | 133.4 |
| 2510 FF 3/4/4P | 36.5 | 69.9 | 114.3 |
| 2510 FS 3/3P/4/4P | 36.5 | 69.9 | 114.3 |
| 2510 FSJ 3P/4P | 36.5 | 88.9 | 133.4 |
| 2510 KF 1/1A/1B/2/2B/2C | 44.5 | 69.9 | 114.3 |
| 2510 KS 1/1A/1B/2/2B/2C | 44.5 | 69.9 | 114.3 |
| 2510 KSJ 1A/1B/2B/2C | 44.5 | 88.9 | 133.4 |
| 2510 KF 3/3A/3B/4/4B/4C | 44.5 | 69.9 | 114.3 |
| 2510 KS 3/3A/3B/4/4B/4C | 44.5 | 69.9 | 114.3 |
| 2510 KSJ 3A/4B/4C | 44.5 | 88.9 | 133.4 |

(2) Dimensions in mm (25.4 mm = 1 inch).

Dimensions are $\frac{\text{inch}}{\text{mm}}$

2510 FF 22/44/7●, 2510 FS 22/44/7● (General purpose flush mounting plate)



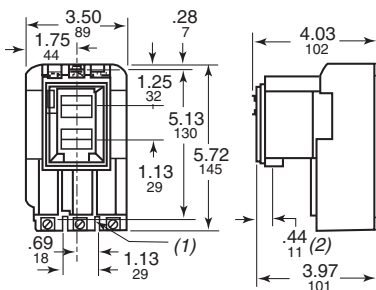
| (2) | A | B | C | D |
|-----------------------|-------|------|-------|------|
| 2510 FF 22/22P | 133.4 | 95.3 | 133.4 | 36.5 |
| 2510 FS 22P | 4.6 | 88.9 | 114.3 | 36.5 |
| 2510 FF 44P | 133.4 | 95.3 | 133.4 | 36.5 |
| 2510 FS 44P | 4.6 | 88.9 | 114.3 | 36.5 |
| 2510 FF 71/71P/72/72P | 133.4 | 19.1 | 133.4 | 50.8 |
| 2510 FS 71P/72P | 4.6 | 88.9 | 114.3 | 50.8 |
| 2510 FF 74P | 133.4 | 95.3 | 133.4 | 50.8 |
| 2510 FS 74P | 4.6 | 88.9 | 114.3 | 50.8 |

(2) Dimensions in mm (25.4 mm = 1 inch).

(1) Pilot light.

2510 T●O ●/M●O ● (Open)

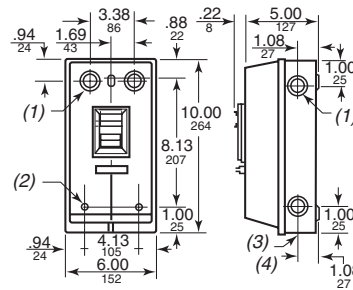
Sizes M-0, M-1 and M-1P



(1) 3 prov. for #10 mounting screws.
(2) Travel to reset.

2510 TCG 2/MCG 2 (NEMA 1)

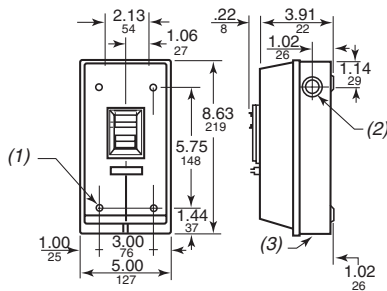
Size M-1P



(1) 3 x 0.22 diameter mounting holes.
(2) 6 x 0.50 - 0.75 knockouts
(3) 1 x 0.50 - 0.75 knockouts
(4) 2 x 0.75 - 1.00 knockouts Top and bottom.

2510 TBG ●/TCG ●/MBG ●/MCG ● (NEMA 1)

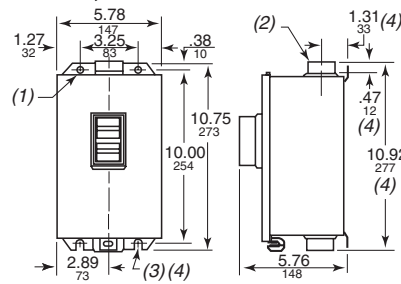
Sizes M-0 and M-1



(1) 4 x 0.22 diameter mounting holes.
(2) 0.50 - 0.75 knockouts Each side.
(3) 1 x 0.50 - 0.75 knockouts and 2 x 0.75 - 1.00 knockouts

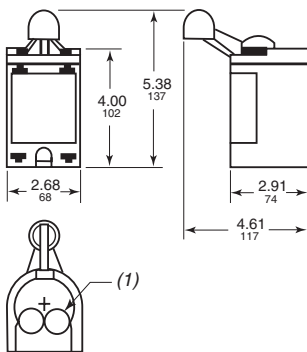
2510 M●A ● (NEMA 12)

Sizes M-0, M-1 and M-1P



(1) 2 x 0.31 diameter mounting holes.
(2) 0.75 conduit hub top and bottom.
(3) 2 x 0.31 wide slots.
(4) NEMA 4 only.

2601 AG2/AG2 S2/BG1/BG1 S4 (NEMA 1)



(1) 2 x 0.50" knockouts



- Separate enclosures
 - References *page 7/2*
- Magnetic coils
 - References *page 7/8*
- Replacement parts kits
 - References *page 7/12*
- Cover-mounted control units
 - References *page 7/14*
- Auxiliary contacts
 - References *page 7/18*
- Power-pole adder kits, Timer attachments, Control circuit fuse holders, Transient suppression modules
 - References *page 7/20*
- Compression lugs, Terminal blocks
 - References *page 7/21*

Accessories for Heavy Industrial NEMA Style Controls

Separate enclosures

NEMA 1 rated (general purpose) separate enclosures

The NEMA 1 rated general purpose separate enclosures listed below, when used with open style components, are equivalent to a standard factory-assembled control device.

| For use with | Type | Number of poles | Reference | Weight kg (lb) | |
|------------------------------------|---|------------------|---------------------------|-----------------------|-----------|
| Manual starters | 2510 F, 2510 K | All | 9991 EN 1 | 0.2 (0.5) | |
| | 2510 M (Sizes M-0 and M-1) | All | 9991 MG 1 | 1.1 (2.4) | |
| | 2510 M (Size M-1P) | All | 9991 MG 2 | 0.5 (1) | |
| Contactors | 8502 SAO/SBO/SCO | 2...4 | 9991 SCG 7 | 1.8 (4) | |
| | 8502 SDO | 2...4 | 9991 SDG 7 | 3.6 (8) | |
| | 8502 SEO | 2...4 | 9991 SEG 7 | 10.4 (23) | |
| | 8502 SFO | 2...4 | 9991 SFG 8 | 15.4 (34) | |
| Starters | 8536 SAO/SBO/SCO | 2...4 | 9991 SCG 8 | 1.8 (4) | |
| | 8536 SDO | 2...4 | 9991 SDG 8 | 3.6 (8) | |
| | 8536 SEO | 2...4 | 9991 SEG 8 (1) | 10.4 (23) | |
| | 8536 SFO | 2...4 | 9991 SFG 8 (1) | 15.4 (34) | |
| | 8536 SGO | 3 | 9991 SGG 8 (1) (5) | 51 (112) | |
| Lighting contactors | 8903 LO, 8903 LXO | All | 9991 LXG 1 (6) | 3.6 (8) | |
| | 8903 SMO | All | 9991 SCG 7 (2) | 1.8 (4) | |
| | 8903 SPO | All | 9991 SDG 7 (2) | 3.6 (8) | |
| | 8903 SQO | All | 9991 SFG 8 (2) | 15.4 (34) | |
| | 8903 SVO | All | 9991 SFG 4 | 16.3 (36) | |
| Definite purpose contactors | 8910 DP | 1...2 | 9991 DPG 1 | 1.1 (2.5) | |
| | 8910 DPA 12/13/22/23, 8910 DPA 32/33/42/43 | 2...3 | 9991 DPG 1 | 1.1 (2.5) | |
| | 8910 DPA 14/24/34/44, 8910 DPA 52/53 | 2...4 | 9991 DPG 2 | 1.8 (4) | |
| | 8910 DPA 62/63 | 2...3 | 9991 DPG 3 | 3.6 (8) | |
| | 8910 DPA 72/73/92/93, 8910 DPA 122/123 | 2...3 | 9991 DPG 4 | 10.4 (23) | |
| | Reversing contactors | 8702 SAO/SBO/SCO | All | 9991 SCG 9 (3) | 7.3 (16) |
| | | 8702 SDO | All | 9991 SDG 9 (3) | 10.9 (24) |
| Reversing starters | 8736 SAO/SBO/SCO | All | 9991 SCG 9 | 7.3 (16) | |
| | 8736 SDO | All | 9991 SDG 9 | 10.9 (24) | |

NEMA 12 rated (dust-tight and drip-tight) separate enclosures

Separate enclosures can be used with open-style devices for field assembly of enclosed controls. These enclosures, plus the open style components, are equivalent to a factory-assembled device.

| For use with | Type | NEMA Size or current rating | Number of closing plates | Reference | Weight kg (lb) |
|---------------------------------|--------------------|-----------------------------|--------------------------|------------------------|----------------|
| Manual starters | 2510 MBO, 2510 MCO | M-0, M-1, M-1P | – | 9991 MA 1 | 2.3 (5) |
| Contactors (4) | 8502 SAO/SBO/SCO | 0, 1 | 2 | 9991 SCA 11 | 4.5 (10) |
| | 8502 SDO | 2 | 2 | 9991 SDA 11 | 6.8 (15) |
| | 8502 SEO | 3 | 3 | 9991 SEA 11 | 23.1 (51) |
| | 8502 SFO | 4 | 3 | 9991 SFA 11 | 23.1 (51) |
| Starters | 8536 SAO/SBO/SCO | 0, 1 | 2 | 9991 SCA 11 | 4.5 (10) |
| | 8536 SDO | 2 | 2 | 9991 SDA 11 | 6.8 (15) |
| | 8536 SEO | 3 | 3 | 9991 SEA 11 (1) | 23.1 (51) |
| | 8536 SFO | 4 | 3 | 9991 SFA 11 (1) | 23.1 (51) |
| Lighting contactors (4) | 8903 LO, 8903 LXO | 30 A | 2 | 9991 SDA 11 | 6.8 (15) |
| | 8903 SMO | 30 A | 2 | 9991 SCA 11 | 4.5 (10) |
| | 8903 SPO | 60 A | 2 | 9991 SDA 11 | 6.8 (15) |
| | 8903 SQO | 100 A | 3 | 9991 SEA 11 (1) | 23.1 (51) |
| Reversing contactors (4) | 8702 SAO/SBO/SCO | 0, 1 | 3 | 9991 SCA 12 | 9.1 (20) |
| | 8702 SDO | 2 | 3 | 9991 SDA 12 | 11.3 (25) |
| Reversing starters | 8736 SAO/SBO/SCO | 0, 1 | 3 | 9991 SCA 12 | 9.1 (20) |
| | 8736 SDO | 2 | 3 | 9991 SDA 12 | 11.3 (25) |

(1) Enclosure suitable for starter with solid-state overload relays only.

(2) For electrically held contactors only.

(3) For horizontally arranged Class 8702 contactors and Class 8922 breakers, replace the reset assembly with a Class 9001 Type K51 closing plate.

(4) For contactors, replace reset assembly with an appropriate closing plate; for NEMA 12 use Class 9001 Type K51 closing plate.

(5) Series B starter enclosure.

(6) If cover-mounted control units are required, select an oversized enclosure listed on page 7/4.

DF 531981



9991 SCG 8

DF 531982

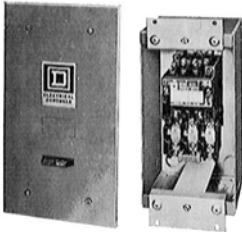


9991 SCA 11

Accessories for Heavy Industrial NEMA Style Controls

Separate enclosures

DF 531883



9991 SCF 2

Flush-mounting separate enclosures

Flush-mounting, general-purpose separate enclosures for Type S Sizes 0–2 (30–60 A) are provided with knock-outs in the cover for field assembly of one Class 9999 push button or selector switch kit and one Class 9999 pilot light kit. For Type S Size 3 (100 A), three closing plates are provided for installation of Class 9001 Type K oil-tight control units.

| For use with | Type | NEMA Size or current rating | Type | Reference | Weight kg (lb) |
|--------------------------------|----------------------|-----------------------------|------------------------|------------------------|----------------|
| Manual starters | 2510 MBO, 2510 MCO | M-0, M-1, M-1P | Flush plates standard | 9991 MF 1 (1) | 3.2 (7) |
| | | | | 9991 MF 2 (2) | 0.9 (2) |
| Contactors (3) | 8502 SBO, 8502 SCO | 0, 1 | Standard | 9991 SCF 11 | 4.5 (10) |
| | | | Stainless steel (4) | 9991 SCF 12 | 4.5 (10) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| | | | Pull box | 9991 SCF 1 | 3.6 (8) |
| | | | Standard | 9991 SDF 11 | 7.7 (17) |
| | | | Stainless steel (4) | 9991 SDF 12 | 1.4 (3.1) |
| | 8502 SDO | 2 | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | | | Standard | 9991 SEF 11 (5) | 21.8 (48) |
| | | | Standard | 9991 SCF 11 | 4.5 (10) |
| | | | Stainless steel (4) | 9991 SCF 12 | 4.5 (10) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| Starters | 8536 SBO, 8536 SCO | 0, 1 | Pull box | 9991 SCF 1 | 3.6 (8) |
| | | | Standard | 9991 SDF 11 | 7.7 (17) |
| | | | Stainless steel (4) | 9991 SDF 12 | 1.4 (3.1) |
| | | | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | | | Standard | 9991 SEF 11 (5) | 21.8 (48) |
| | 8536 SDO | 2 | Standard | 9991 SCF 11 | 4.5 (10) |
| | | | Stainless steel (4) | 9991 SCF 12 | 4.5 (10) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| | | | Pull box | 9991 SCF 1 | 3.6 (8) |
| | | | Standard | 9991 SDF 11 | 7.7 (17) |
| | | | Stainless steel (4) | 9991 SDF 12 | 1.4 (3.1) |
| Lighting contactors (3) | 8903 LO, 8903 LXO | 30 A | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | | | Standard | 9991 SDF 13 | 7.7 (17) |
| | | | Standard | 9991 SCF 11 | 4.5 (10) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| | | | Pull box | 9991 SCF 1 | 3.6 (8) |
| | 8903 SMO 1/2/3/4 | 30 A | Standard | 9991 SCF 13 | 3.6 (8) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| | | | Pull box | 9991 SCF 1 | 3.6 (8) |
| | | | Standard | 9991 SDF 11 | 7.7 (17) |
| | | | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | 8903 SMO 10/11/12/13 | 30 A | Standard | 9991 SDF 13 | 7.7 (17) |
| | | | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | | | Standard | 9991 SCF 11 | 4.5 (10) |
| | | | Mounting strap | 9991 SCF 2 | 3.6 (8) |
| | | | Pull box | 9991 SCF 1 | 3.6 (8) |
| | 8903 SPO 1/2/3/4 | 60 A | Standard | 9991 SDF 11 | 7.7 (17) |
| | | | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| | | | Standard | 9991 SDF 13 | 7.7 (17) |
| | | | Mounting strap | 9991 SDF 2 | 4.5 (10) |
| | | | Pull box | 9991 SDF 1 | 4.5 (10) |
| 8903 SPO 10/11/12/13 | 60 A | Standard | 9991 SDF 13 | 7.7 (17) | |
| | | Mounting strap | 9991 SDF 2 | 4.5 (10) | |
| | | Pull box | 9991 SDF 1 | 4.5 (10) | |
| | | Standard | 9991 SCF 11 | 4.5 (10) | |
| | | Mounting strap | 9991 SCF 2 | 3.6 (8) | |
| | | Pull box | 9991 SCF 1 | 3.6 (8) | |
| 8903 SQO | 100 A | Standard | 9991 SEF 11 (5) | 21.8 (48) | |

(1) With pull box and plaster adjustment.

(2) Without pull box but with mounting strap.

(3) For contactors, replace the reset assembly with an appropriate closing plate. For flush mounting, use Class 9999 Type SG2, except for Class 9991 Type SDF 11, which requires a Class 9001 Type K51 or K11 closing plate. Class 9991 Type SEF 11 is designed for contactors only; reset closing plates are not required.

(4) The standard cabinet has a brushed finish. For electropolished finish, specify Form G16. Example: **9991 SCF 12 G16**.

(5) Enclosure complete.

Accessories for Heavy Industrial NEMA Style Controls

Separate enclosures for addition of control circuit transformer, Control circuit transformers

Separate enclosures for addition of control circuit transformer

The Class 9991 enclosures listed below accept an open-type, Class 8502 or 8536 Type S, NEMA Size 0, 1, 1P or 2 contactor or starter, together with a fused-control circuit transformer (suffix F4T) to allow field assembly of enclosed controllers. In the cover of the Class 9991 Type SCG 1 enclosure, knock-outs are provided for field addition of Class 9999 cover-mounted control units. All other Class 8502 and 8536 enclosures include a panel with space and drilling for an open-type device and a fused control-circuit transformer. In addition, three closing plates are included in each cover for easy installation of Class 9001 Type K or SK control units. Oversized enclosures for open-type, Class 8903 Type L and LX and Type S (30 and 60 A), electrically and mechanically held lighting contactors include a panel with space and drilling for an open-type contactor and fused control-circuit transformer (suffix F4T) and/or an auxiliary relay for use with single-pole pilot devices (suffix R6). When an auxiliary relay is required, use a Class 8501 Type XO 11 relay. Three closing plates are provided as standard for easy installation of Class 9001 Type K or SK control units.

Note : a Class 9991 Type SCG 1, NEMA 1 separate enclosure can also be used for Class 8903 Type SMO (30 A) electrically held lighting contactor if suffix F4T (control transformer), with or without cover control units, is required.

| For use with | Type | NEMA Size or current rating | Number of poles | Enclosure type (1) | Reference | Weight kg (lb) |
|---------------------|-------------------|-----------------------------|-----------------|--------------------|-------------------|----------------|
| Contactors (2) | 8502 SAO/SBO/SCO | 0, 1 | 1...5 | NEMA 1 | 9991 SCG 1 | 3.6 (8) |
| | | | | NEMA 12 | 9991 SCA 4 | 8.3 (18.2) |
| | 8502 SDO | 2 | 2...5 | NEMA 1 | 9991 SDG 4 | 9.5 (21) |
| | | | | NEMA 12 | 9991 SDA 4 | 10.4 (23) |
| | | | | NEMA 1 | 9991 SDG 4 | 9.5 (21) |
| | | | | NEMA 12 | 9991 SDA 4 | 10.4 (23) |
| Starters | 8536 SAO/SBO/SCO | 0, 1 | 1...5 | NEMA 1 | 9991 SCG 1 | 3.6 (8) |
| | | | | NEMA 12 | 9991 SCA 4 | 8.3 (18.2) |
| | 8536 SDO | 2 | 2...5 | NEMA 1 | 9991 SDG 4 | 9.5 (21) |
| | | | | NEMA 12 | 9991 SDA 4 | 10.4 (23) |
| | | | | NEMA 1 | 9991 SDG 3 | 6.8 (15) |
| | | | | NEMA 12 | 9991 SDA 3 | 9.1 (20) |
| Lighting contactors | 8903 LO, 8903 LXO | 30 A | All | NEMA 1 | 9991 SDG 3 | 6.8 (15) |
| | | | | NEMA 12 | 9991 SDA 3 | 9.1 (20) |
| | 8903 SMO | 30 A | 1...5 | NEMA 1 | 9991 SDG 3 | 6.8 (15) |
| | | | | NEMA 12 | 9991 SDA 3 | 9.1 (20) |
| | 8903 SPO | 60 A | 2...5 | NEMA 1 | 9991 SDG 3 | 6.8 (15) |
| | | | | NEMA 12 | 9991 SDA 3 | 9.1 (20) |

Control circuit transformers

| For use with | Type | NEMA Size or current rating | Number of poles | Transformer type | Reference | Weight kg (lb) | | | | |
|------------------------|------------------|-----------------------------|------------------------|------------------------|----------------------|------------------------|------------------------|------------------------|----------------------|---|
| Contactors (2) | 8502 SAO/SBO/SCO | 0, 1 | 1...3 | Standard, 50 VA | 9070 T50 | – | | | | |
| | | | | Extra capacity, 100 VA | 9070 T100 (3) | – | | | | |
| | | | | Extra capacity, 150 VA | 9070 T150 (3) | – | | | | |
| | | | 4 and 5 | Standard, 100 VA | 9070 T100 (3) | – | | | | |
| | | | | Extra capacity, 150 VA | 9070 T150 (3) | – | | | | |
| | | | | Extra capacity, 300 VA | 9070 T300 | – | | | | |
| | 8502 SDO | 2 | 2...5 | Standard, 100 VA | 9070 T100 | – | | | | |
| | | | | Extra capacity, 150 VA | 9070 T150 | – | | | | |
| | | | | Extra capacity, 300 VA | 9070 T300 | – | | | | |
| | | | | Starters | 8536 SAO/SBO/SCO | 0, 1 | 1...3 | Standard, 50 VA | 9070 T50 | – |
| | | | | | | | | Extra capacity, 100 VA | 9070 T100 (3) | – |
| | | | | | | | | Extra capacity, 150 VA | 9070 T150 (3) | – |
| 8536 SDO | 2 | 2...5 | 4 and 5 | Standard, 100 VA | 9070 T100 (3) | – | | | | |
| | | | | Extra capacity, 150 VA | 9070 T150 (3) | – | | | | |
| | | | | Extra capacity, 300 VA | 9070 T300 | – | | | | |
| | | | Lighting contactors | 8903 LO | 30 A | All | Standard, 50 VA | 9070 T50 | – | |
| | | | | | | | Extra capacity, 100 VA | 9070 T100 (3) | – | |
| | | | | | | | Extra capacity, 150 VA | 9070 T150 (3) | – | |
| 8903 LXO | 30 A | All | 8903 SMO | 30 A | 1...3 | Standard, 100 VA | 9070 T100 (3) | – | | |
| | | | | | | Extra capacity, 150 VA | 9070 T150 (3) | – | | |
| | | | | | | 4 and 5 | Standard, 100 VA | 9070 T100 | – | |
| | | | Extra capacity, 150 VA | 9070 T150 | – | | | | | |
| | | | Extra capacity, 300 VA | 9070 T300 | – | | | | | |
| | | | 8903 SPO | 60 A | 2...5 | Standard, 100 VA | 9070 T100 | – | | |
| Extra capacity, 150 VA | 9070 T150 | – | | | | | | | | |
| Extra capacity, 300 VA | 9070 T300 | – | | | | | | | | |

(1) NEMA 1: general purpose enclosure. NEMA 12: dust-tight and drip-tight industrial-use enclosure.

(2) For contactors (Class 8502), a separate closing plate is provided with each enclosure to replace the reset mechanism, with the exception of Class 9991 Type SCG 1, which requires a separate reset closing plate, Class 9999 Type SG2.

(3) For mounting in a 9991 SCG 1 enclosure, a Class 9991 Type S1 adapter bracket is also required.

DF 531389



9991 SCG 1

Accessories for Heavy Industrial NEMA Style Controls

Fuse block, Control unit kits

Fuse block (for use with Class CC fuses)

| For use with | Type | NEMA Size or current rating | Reference | Weight kg (lb) |
|----------------------------|---------------------|-----------------------------|-------------------|----------------|
| Contactors | 8502 SBO/SCO/SDO | 0...2 | 9999 SFR 4 | — |
| Starters | 8536 SBO/SCO/SDO | 0...2 | 9999 SFR 4 | — |
| Lighting contactors | 8903 LO/LXO/SMO/SPO | 30...60 A | 9999 SFR 4 | — |

Control unit kits

Class 9001 Type K oil-tight/water-tight control units can be easily installed in NEMA 12, separate enclosures provided with closing plates.

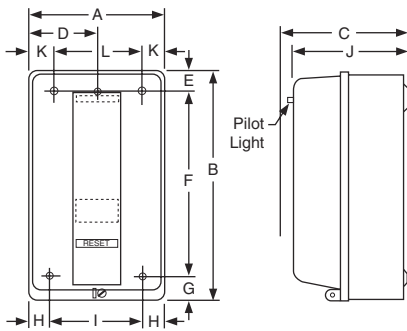
When installing control units, simply remove the closing plates and install the appropriate Class 9001 Type K components. Convenient control unit kits, complete with assembled and pre-wired operators for quick installation, are available as Class 9999 user modification kits.

Class 9001 Type SK, NEMA 4X, corrosion-resistant control units may be used as an alternative.

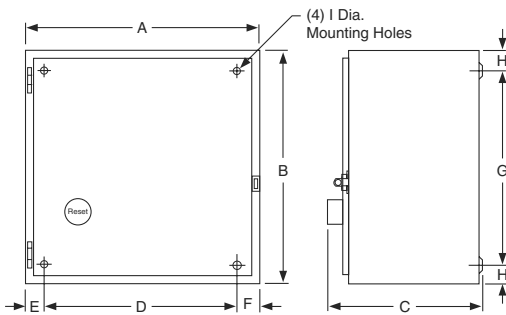
| Kits Control function | Kit contents Description | Reference | Quantity | Reference | Weight kg (lb) |
|--|------------------------------|--------------|----------|--------------------|----------------|
| | | | | | |
| "Start-Stop" push button | Start operator | 9001 KR 1B | 1 | 9999 SA 3 | — |
| | Stop operator | 9001 KR 1R | 1 | | |
| | "Start" legend plate | 9001 KN 201 | 1 | | |
| | "Stop" legend plate | 9001 KN 202 | 1 | | |
| "Hand-Off-Auto" selector switch | Contact block | 9001 KA 1 | 2 | 9999 SC 8 | — |
| | Selector operator switch | 9001 KS 43B | 1 | | |
| | "Hand-Off-Auto" legend plate | 9001 KN 260 | 1 | | |
| Pilot light (120 V) | Contact block | 9001 KA 1 | 1 | 9999 SP 28R | — |
| | Red pilot light | 9001 KP 1R31 | 1 | | |

Dimensions in mm (25.4 mm = 1 inch)

NEMA 1 rated (general purpose) separate enclosures

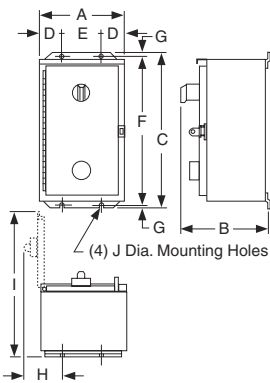


| | Mounting A screws | A | B | C | D | E | F | G | H | I | J | K | L |
|------------------|-------------------|-----|-----|-----|----|----|-----|----|----|-----|-----|----|-----|
| 9991 SCG 7 | 3 x # 10 | 152 | 254 | 134 | 76 | 22 | 206 | 25 | 24 | 105 | 127 | - | - |
| 9991 SDG 7 | 4 x 6.4 | 198 | 322 | 153 | - | 28 | 267 | 28 | 28 | 143 | 146 | 28 | 143 |
| 9991 SEG 7/8 | 4 x 9.5 | 286 | 554 | 203 | - | 39 | 476 | 39 | 39 | 213 | 197 | 39 | 213 |
| 9991 SCG 8/DPG 2 | 3 x # 10 | 152 | 254 | 141 | 76 | 22 | 206 | 25 | 24 | 105 | 127 | - | - |
| 9991 SDG 8/DPG 3 | 4 x 6.4 | 198 | 322 | 160 | - | 28 | 267 | 28 | 28 | 143 | 146 | 28 | 143 |
| 9991 LXG 1 | - | 198 | 322 | 153 | - | 28 | 267 | 28 | 28 | 143 | 146 | 28 | 143 |
| 9991 DPG 1 | - | 127 | 216 | 102 | - | - | - | - | - | - | - | - | - |
| 9991 DPG 4 | 4 x 9.5 | 286 | 554 | 213 | - | 39 | 476 | 39 | 39 | 213 | 197 | 39 | 213 |



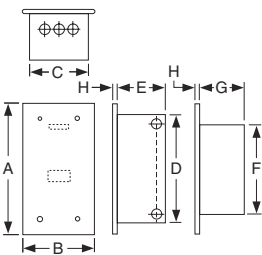
| | Mounting A screws | A | B | C | D | E | F | G | H | I | J | K | L |
|------------|-------------------|-----|------|-----|-----|----|----|-----|----|----|---|---|---|
| 9991 SFG 8 | 4 x 11.1 | 286 | 639 | 228 | 218 | 32 | 32 | 567 | 36 | 11 | - | - | - |
| 9991 SGG 8 | - | 502 | 1129 | 363 | - | - | - | - | - | - | - | - | - |
| 9991 SDG 9 | 4 x 7.9 | 302 | 302 | 188 | 248 | 27 | 27 | 248 | 27 | 8 | - | - | - |
| 9991 SDG 9 | 4 x 7.9 | 378 | 359 | 192 | 324 | 27 | 27 | 305 | 27 | 8 | - | - | - |

NEMA 12 rated (dust-tight and drip-tight) separate enclosures



| | For use with | A | B | C | D | E | F | G | H | I | J |
|-------------|--------------|-----|-----|-----|----|-----|-----|----|-----|-----|----|
| 9991 MA 1 | | 140 | 273 | 114 | - | - | - | - | - | - | - |
| 9991 SCA 11 | | 162 | 217 | 324 | 40 | 83 | 305 | 10 | 90 | 318 | 8 |
| 9991 SDA 11 | | 206 | 236 | 406 | 40 | 127 | 381 | 13 | 90 | 391 | 8 |
| 9991 SEA 11 | | 461 | 235 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 9991 SEA 11 | 8536 SEO | 461 | 243 | 800 | 78 | 305 | 775 | 13 | 114 | 678 | 11 |
| 9991 SFA 11 | 8536 SFO | 461 | 243 | 800 | 78 | 305 | 775 | 13 | 114 | 678 | 11 |
| 9991 SFA 11 | | 461 | 235 | 800 | 78 | 305 | 775 | 13 | 93 | 678 | 11 |
| 9991 SCA 12 | | 336 | 363 | 225 | - | - | - | - | - | - | - |
| 9991 SDA 12 | | 387 | 413 | 230 | - | - | - | - | - | - | - |

Flush mounting separate enclosures



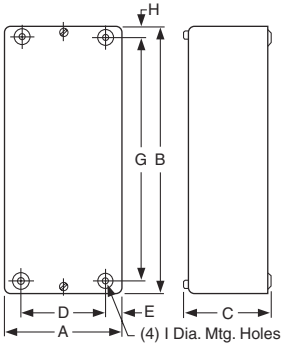
| | A | B | C | D | E | F | G | H |
|-------------|-----|-----|-----|-----|-----|-----|-----|----|
| 9991 MF 1 | 140 | 292 | 102 | - | - | - | - | - |
| 9991 MF 2 | 140 | 292 | 89 | - | - | - | - | - |
| 9991 SCF 11 | 341 | 183 | 149 | 283 | 121 | 233 | 114 | 10 |
| 9991 SCF 12 | 244 | 419 | 99 | - | - | - | - | - |
| 9991 SCF 2 | 175 | 378 | 154 | - | - | - | - | - |
| 9991 SCF 1 | 175 | 378 | 154 | - | - | - | - | - |
| 9991 SDF 11 | 386 | 227 | 194 | 327 | 138 | 278 | 130 | 10 |
| 9991 SDF 12 | 244 | 419 | 99 | - | - | - | - | - |
| 9991 SDF 2 | 175 | 378 | 154 | - | - | - | - | - |
| 9991 SDF 1 | 256 | 416 | 152 | - | - | - | - | - |
| 9991 SEF 11 | 787 | 425 | 362 | 667 | 203 | - | - | 5 |
| 9991 SDF 13 | 386 | 227 | 194 | 327 | 138 | 278 | 130 | 10 |
| 9991 SCF 13 | 337 | 178 | 146 | - | - | - | - | - |

Accessories for Heavy Industrial NEMA Style Controls

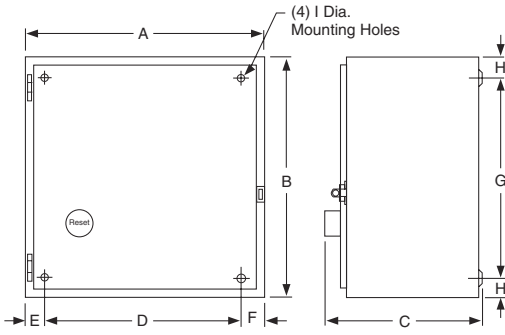
Separate enclosures

Dimensions in mm (25.4 mm = 1 inch)

Separate enclosures for addition of control circuit transformer



| | Mounting screws | A | B | C | D | E | F | G | H | I |
|------------|-----------------|-----|-----|-----|-----|----|-----|----|---|---|
| 9991 SCG 1 | 4 x 7.1 | 161 | 403 | 132 | 118 | 21 | 365 | 19 | 7 | 9 |



| | For use with | Mounting screws | A | B | C | D | E | F | G | H | I |
|------------|--------------|-----------------|-----|-----|-----|-----|----|----|-----|----|---|
| 9991 SDG 4 | 8502 SDO | 4 x 7.9 | 378 | 359 | 192 | 324 | 27 | 27 | 305 | 27 | 8 |
| 9991 SDG 4 | 8536 SDO | 4 x 7.9 | 378 | 359 | 194 | 324 | 27 | 27 | 305 | 27 | 8 |
| 9991 SDG 3 | | 4 x 7.9 | 378 | 359 | 192 | 324 | 27 | 27 | 305 | 27 | 8 |

| | A | B | C | D | E | F | G | H | I |
|------------|-----|-----|-----|---|---|---|---|---|---|
| 9991 SCA 4 | 336 | 363 | 225 | - | - | - | - | - | - |
| 9991 SDA 4 | 387 | 413 | 230 | - | - | - | - | - | - |
| 9991 SDA 3 | 387 | 413 | 230 | - | - | - | - | - | - |

Accessories for Heavy Industrial NEMA Style Controls

Magnetic coils

Replacement a.c. magnetic coils for magnetic contactors and starters

| Equipment to be serviced | | | | Frequency | Voltage | Reference | Weight | |
|--|------|-----------------------------|-----------------|-----------|-------------|-------------|------------|---|
| Device | Type | NEMA Size or current rating | Number of poles | Hz | V | | kg (lb) | |
| Latch coils for present-design magnetic contactors and starters Classes: 8502, 8536, 8538, 8539, 8702, 8736, 8903, 8910 | L | 30 A | 2 to 6 | 50 | 24 | 9998 L 24 | — | |
| | LX | 30 A | 2 to 4 | | 110–115 | 9998 L 44 | — | |
| | | | | | 120 | 9998 L 45 | — | |
| | | | | | 208 | 9998 L 52 | — | |
| | | | | | 220 | 9998 L 53 | — | |
| | | | | | 240 | 9998 L 54 | — | |
| | | | | | 380 | 9998 L 60 | — | |
| | | | | | 440 | 9998 L 62 | — | |
| | | | | | 480 | 9998 L 63 | — | |
| | | | | | 550 | 9998 L 65 | — | |
| | | | | | 600 | 9998 L 66 | — | |
| | | | | | 60 | 24 | 9998 L 23 | — |
| | | | | 120 | | 9998 L 44 | — | |
| | | | | 208 | | 9998 L 50 | — | |
| | | | | 240 | | 9998 L 53 | — | |
| | | | | 277 | | 9998 L 55 | — | |
| | | | | 300 | | 9998 L 56 | — | |
| | | | | 50 | 480 | 9998 L 62 | — | |
| | | | | | 600 | 9998 L 65 | — | |
| | L | 30 A | 8 to 12 | | 60 | 24 | 9998 LH 24 | — |
| | LX | 30 A | 6 to 12 | | | 110–115 | 9998 LH 44 | — |
| | | | | | | 120 | 9998 LH 45 | — |
| | | | | | | 220 | 9998 LH 53 | — |
| | | | | | | 240 | 9998 LH 54 | — |
| | | | 440 | | | 9998 LH 62 | — | |
| | | | 550 | | 9998 LH 65 | — | | |
| | | | 60 | | 24 | 9998 LH 23 | — | |
| | | | | | 120 | 9998 LH 44 | — | |
| | | | | | 208 | 9998 LH 50 | — | |
| | | | | 240 | 9998 LH 53 | — | | |
| | | | | 277 | 9998 LH 55 | — | | |
| | | | | 480 | 9998 LH 62 | — | | |
| | | | 50 | 600 | 9998 LH 65 | — | | |
| SA (1) | 00 | All | | 60 | 110–115 | 9998 SAC 45 | — | |
| Series B | | | | | 220 | 9998 SAC 54 | — | |
| | | | | | 440 | 9998 SAC 62 | — | |
| | | | | | 550 | 9998 SAC 65 | — | |
| | | | | | 24 | 9998 SAC 23 | — | |
| | | | 120 | | 9998 SAC 45 | — | | |
| | | 208 | 9998 SAC 52 | — | | | | |
| | | 240 | 9998 SAC 54 | — | | | | |
| | | 277 | 9998 SAC 55 | — | | | | |
| | | 380 | 9998 SAC 59 | — | | | | |
| | | 480 | 9998 SAC 62 | — | | | | |
| | | 600 | 9998 SAC 65 | — | | | | |

(1) For use on Type S Series B devices only.

Accessories for Heavy Industrial NEMA Style Controls

Magnetic coils

Replacement a.c. magnetic coils for magnetic contactors and starters (continued)

| Equipment to be serviced | | | | Frequency | Voltage | Reference | Weight | |
|--|------------------------------------|------------------------------|-----------------|-----------|---------|--------------|--------------|---|
| Device | Type | NEMA Size or current rating | Number of poles | Hz | V | | kg (lb) | |
| Latch coils for present-design magnetic contactors and starters Classes: 8502, 8536, 8538, 8539, 8702, 8736, 8903 | SA (Series A), SB, SC, SM | 00, 0, 1, 1P, and 30 A | All | 50 | 24 | 31041-400-22 | — | |
| | | | | | 110–115 | 31041-400-42 | — | |
| | | | | | 120 | 31041-400-43 | — | |
| | | | | | 220 | 31041-400-51 | — | |
| | | | | | 240 | 31041-400-53 | — | |
| | | | | | 380 | 31041-400-57 | — | |
| | | | | | 440 | 31041-400-60 | — | |
| | | | | | 480 | 31041-400-61 | — | |
| | | | | | 550 | 31041-400-62 | — | |
| | | | | | 600 | 31041-400-64 | — | |
| | | | | | 60 | 24 | 31041-400-20 | — |
| | | | | | | 120 | 31041-400-42 | — |
| | | | | | | 208 | 31041-400-48 | — |
| | | | | | | 220 | 31041-400-51 | — |
| | | | | | | 240 | 31041-400-51 | — |
| | | | | | | 277 | 31041-400-52 | — |
| | | | | | | 380 | 31041-400-56 | — |
| | | | | | | 440 | 31041-400-58 | — |
| | | | | | | 480 | 31041-400-60 | — |
| | | | | | | 550 | 31041-400-61 | — |
| | SD, SP | 2 and 60 A | 2 and 3 | 50 | | 24 | 31063-409-17 | — |
| 110–115 | | | | | | 31063-409-38 | — | |
| 120 | | | | | | 31063-409-39 | — | |
| 220 | | | | | | 31063-409-47 | — | |
| 240 | | | | | | 31063-409-48 | — | |
| 380 | | | | | | 31063-409-54 | — | |
| 440 | | | | | | 31063-409-57 | — | |
| 550 | | | | | | 31063-409-60 | — | |
| 600 | | | | | | 31063-409-61 | — | |
| | | | | | | | | |
| | 120 | 31063-409-38 | — | | | | | |
| | 208 | 31063-409-44 | — | | | | | |
| | 220 | 31063-409-47 | — | | | | | |
| | 240 | 31063-409-47 | — | | | | | |
| | 277 | 31063-409-49 | — | | | | | |
| | 440 | 31063-409-57 | — | | | | | |
| | 480 | 31063-409-57 | — | | | | | |
| | 550 | 31063-409-60 | — | | | | | |
| | 600 | 31063-409-60 | — | | | | | |
| | | | | 4 and 5 | 50 | 24 | 31063-400-17 | — |
| | | | | | 110–115 | 31063-400-38 | — | |
| | | | | | 120 | 31063-400-39 | — | |
| | | | | | 220 | 31063-400-47 | — | |
| | | | | | 240 | 31063-400-48 | — | |
| | | | | | 380 | 31063-400-54 | — | |
| | | | | | 440 | 31063-400-57 | — | |
| | | | | | 550 | 31063-400-60 | — | |
| | | | | | 600 | 31063-400-61 | — | |
| | | | | | | | | |
| 120 | 31063-400-38 | — | | | | | | |
| 208 | 31063-400-44 | — | | | | | | |
| 220 | 31063-400-47 | — | | | | | | |
| 240 | 31063-400-47 | — | | | | | | |
| 277 | 31063-400-49 | — | | | | | | |
| 380 | 31063-400-53 | — | | | | | | |
| 440 | 31063-400-57 | — | | | | | | |
| 480 | 31063-400-57 | — | | | | | | |
| 550 | 31063-400-60 | — | | | | | | |
| 600 | 31063-400-60 | — | | | | | | |



Accessories for Heavy Industrial NEMA Style Controls

Magnetic coils

Replacement a.c. magnetic coils for magnetic contactors and starters (continued)

| Equipment to be serviced | | | | Frequency | Voltage | Reference | Weight | | | | |
|---|----------------|-----------------------------|-----------------|--|---------|--------------|--------------|----|---------|--------------|---|
| Device | Type | NEMA Size or current rating | Number of poles | Hz | V | | kg (lb) | | | | |
| Latch coils for present-design magnetic contactors and starters Classes: 8502, 8536, 8538, 8539, 8702, 8736, 8903, 8910 | SE, SQ, DPA 12 | 3, 20 A and 100 A | 2 and 3 | 50 | 24 | 31074-400-17 | — | | | | |
| | | | | | 110–115 | 31074-400-38 | — | | | | |
| | | | | | 120 | 31074-400-39 | — | | | | |
| | | | | | 220 | 31074-400-47 | — | | | | |
| | | | | | 240 | 31074-400-48 | — | | | | |
| | | | | | 380 | 31074-400-54 | — | | | | |
| | | | | | 440 | 31074-400-57 | — | | | | |
| | | | | | 550 | 31074-400-60 | — | | | | |
| | | | | | 600 | 31074-400-61 | — | | | | |
| | | | | | 60 | 24 | 31074-400-16 | — | | | |
| | | | | | | 120 | 31074-400-38 | — | | | |
| | | | | | | 208 | 31074-400-44 | — | | | |
| | | | | 220 | | 31074-400-47 | — | | | | |
| | | | | 240 | | 31074-400-47 | — | | | | |
| | | | | 277 | | 31074-400-49 | — | | | | |
| | | | | 380 | | 31074-400-53 | — | | | | |
| | | | | 440 | | 31074-400-57 | — | | | | |
| | | | | 480 | | 31074-400-57 | — | | | | |
| | | | | 500 | | 31074-400-58 | — | | | | |
| | | | | 550 | | 31074-400-60 | — | | | | |
| | | | | 600 | | 31074-400-60 | — | | | | |
| | | | | Latch coils for present-design magnetic contactors and starters Classes: 8502, 8536, 8538, 8539, 8702, 8736, 8903 | SF, SV | 4 and 200 A | All | 50 | 110–115 | 31091-400-38 | — |
| | | | | | | | | | 120 | 31091-400-39 | — |
| | | | | | | | | | 220 | 31091-400-47 | — |
| 240 | 31091-400-48 | — | | | | | | | | | |
| 380 | 31091-400-54 | — | | | | | | | | | |
| 440 | 31091-400-57 | — | | | | | | | | | |
| 480 | 31091-400-58 | — | | | | | | | | | |
| 550 | 31091-400-60 | — | | | | | | | | | |
| 600 | 31091-400-61 | — | | | | | | | | | |
| 60 | 120 | 31091-400-38 | — | | | | | | | | |
| | 208 | 31091-400-44 | — | | | | | | | | |
| | 220 | 31091-400-47 | — | | | | | | | | |
| | 240 | 31091-400-47 | — | | | | | | | | |
| | 277 | 31091-400-49 | — | | | | | | | | |
| | 380 | 31091-400-53 | — | | | | | | | | |
| | 440 | 31091-400-57 | — | | | | | | | | |
| | 480 | 31091-400-57 | — | | | | | | | | |
| | 550 | 31091-400-60 | — | | | | | | | | |
| | 600 | 31091-400-60 | — | | | | | | | | |
| | 60 | 120 | 31091-400-38 | | | | | — | | | |
| | | 208 | 31091-400-44 | | | | | — | | | |
| 240 | | 31091-400-47 | — | | | | | | | | |
| 277 | | 31091-400-49 | — | | | | | | | | |
| 380 | | 31091-400-53 | — | | | | | | | | |
| 480 | | 31091-400-57 | — | | | | | | | | |
| 480 | | 31091-400-57 | — | | | | | | | | |
| 550 | | 31091-400-60 | — | | | | | | | | |
| 600 | | 31091-400-60 | — | | | | | | | | |

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Accessories for Heavy Industrial NEMA Style Controls

Magnetic coils

Replacement a.c. magnetic coils for magnetic contactors and starters (continued)

| Equipment to be serviced | | | | Frequency | Voltage | Reference | Weight | |
|---|--------------------|-----------------------------|---------------------|-----------|--------------|--------------|--------------|---|
| Device | Type | NEMA Size or current rating | Number of poles | Hz | V | | kg (lb) | |
| Latch coils for present-design magnetic contactors and starters Classes: 8502, 8536, 8538, 8539, 8702, 8736, 8903 | SG, SX | 5 and 300 A (Series A) | All | 50 | 110-115 | 31096-400-09 | — | |
| | | | | | 120 | 31096-400-10 | — | |
| | | | | | 220 | 31096-400-18 | — | |
| | | | | | 380 | 31096-400-22 | — | |
| | | | | | 440 | 31096-400-24 | — | |
| | | | | | 550 | 31096-400-29 | — | |
| | | | | | 600 | 31096-400-30 | — | |
| | | | | | 60 | 120 | 31096-400-09 | — |
| | | | | | 208 | 31096-400-15 | — | |
| | | | | | 240 | 31096-400-18 | — | |
| | | 277 | 31096-400-19 | — | | | | |
| | | 380 | 31096-400-21 | — | | | | |
| | | 480 | 31096-400-24 | — | | | | |
| | | 600 | 31096-400-29 | — | | | | |
| | | 5 and 300 A (Series B) | All | 50 | 110-115 | 31096-320-50 | — | |
| | | | | | 120 | 31096-320-50 | — | |
| | | | | | 220 | 31096-320-52 | — | |
| | | | | | 240 | 31096-320-52 | — | |
| | | | | | 380 | 31096-320-54 | — | |
| | | | | | 440 | 31096-320-55 | — | |
| 480 | 31096-320-55 | | | | — | | | |
| 60 | 110-115 | | | | 31096-320-50 | — | | |
| 120 | 31096-320-50 | | | | — | | | |
| 208 | 31096-320-51 | | | | — | | | |
| 220 | 31096-320-52 | — | | | | | | |
| 240 | 31096-320-52 | — | | | | | | |
| 277 | 31096-320-53 | — | | | | | | |
| 380 | 31096-320-54 | — | | | | | | |
| 440 | 31096-320-55 | — | | | | | | |
| 480 | 31096-320-55 | — | | | | | | |
| SH, SJ | 6 and 7 | 2 and 3 | All system voltages | | 31104-400-50 | — | | |
| SY, SZ, SJ (1) | 400, 600 and 800 A | 2 and 3 | All system voltages | | 31104-400-50 | — | | |
| SY, SZ, SJ (2) | 400, 600 and 800 A | 2 and 3 | 50 | 110-115 | 31104-418-09 | — | | |
| | | | | 220 | 31104-418-18 | — | | |
| | | | | 440 | 31104-418-24 | — | | |
| | | | | 550 | 31104-418-29 | — | | |
| | | | | 60 | 110-115 | 31104-418-09 | — | |
| | | | | 120 | 31104-418-09 | — | | |
| | | | | 208 | 31104-418-15 | — | | |
| | | | | 220 | 31104-418-18 | — | | |
| | | | | 240 | 31104-418-18 | — | | |
| | | | | 277 | 31104-418-19 | — | | |
| 440 | 31104-418-24 | — | | | | | | |
| 480 | 31104-418-24 | — | | | | | | |
| 550 | 31104-418-29 | — | | | | | | |
| 600 | 31104-418-29 | — | | | | | | |

(1) Electrically held.

(2) Mechanically held.

Accessories for Heavy Industrial NEMA Style Controls

Replacement parts kits

Magnetic contactor and starter contact kits for present designs

Class 9998 replacement parts kits are available for servicing Square D relays, contactors and starters. Each kit contains the necessary movable and stationary contacts, contact springs (when required; NEMA Size 3 and above do not include contact springs, and springs are not available), and additional hardware required to service the devices listed below. When servicing devices having more poles than contained in the corresponding kit, it may be necessary to order an additional kit.

| Equipment to be serviced | | | | Reference | Weight |
|--|--------------------------------|-----------------------------|------------------------|------------|---------|
| Class | Type | NEMA Size or current rating | Number of poles in kit | | kg (lb) |
| 8502, 8536, 8538, 8539, 8702, 8736, 8903 | SA (Series B) | 00 | 3 | 9998 SJ 1 | — |
| | SB | 0 | 3 | 9998 SL 2 | — |
| | | | 4 | 9998 SL 12 | — |
| | SB, SC (power-pole adder) | 0 and 1 | 1 | 9998 SL 22 | — |
| | | | 3 | 9998 SL 3 | — |
| | SC | 1 and 1P | 1 | 9998 SL 13 | — |
| | | | 4 | 9998 SL 4 | — |
| | SD | 2 | 3 | 9998 SL 14 | — |
| | | | 4 | 9998 SL 24 | — |
| | SD (power-pole adder) | 2 | 1 | 9998 SL 6 | — |
| | | | 2 | 9998 SL 7 | — |
| | SE | 3 | 2 | 9998 SL 8 | — |
| | | | 3 | 9998 SL 9 | — |
| | SF | 4 | 2 | 9998 SL 10 | — |
| | | | 3 | 9998 SL 11 | — |
| | SG | 5 | 2 | 9998 SL 25 | — |
| | | | 3 | 9998 SL 26 | — |
| | SH | 6 | 2 | 9998 SL 30 | — |
| | | | 3 | 9998 SL 31 | — |
| SJ | 7 | 2 | 9998 RA 5B | — | |
| | | 3 | | — | |
| 8903 | L (Series C) and LX (Series B) | 30 A | 4 | | — |
| | | | 3 | 9998 SL 3 | — |
| | SM | 30 A | 3 | 9998 SL 13 | — |
| | | | 4 | 9998 SL 4 | — |
| | SP | 60 A | 3 | 9998 SL 14 | — |
| | | | 4 | 9998 SL 6 | — |
| | SQ | 100 A | 2 | 9998 SL 7 | — |
| | | | 3 | 9998 SL 8 | — |
| | SV | 200 A | 2 | 9998 SL 9 | — |
| | | | 3 | 9998 SL 10 | — |
| | SX | 300 A | 2 | 9998 SL 11 | — |
| | | | 3 | 9998 SL 25 | — |
| | SY | 400 A | 2 | 9998 SL 26 | — |
| 3 | | | 9998 SL 32 | — | |
| SZ | 600 A | 2 | 9998 SL 33 | — | |
| | | 3 | 9998 SL 30 | — | |
| SJ | 800 A | 2 | 9998 SL 31 | — | |
| | | 3 | | — | |

Manual starter contact kits

| Equipment to be serviced | | | | Reference | Weight |
|--------------------------|------|-----------|------------------------|-----------|---------|
| Class | Type | NEMA Size | Number of poles in kit | | kg (lb) |
| 2510 | M, T | M-0 | 3 | 9998 ML 1 | — |
| | | | 3 | 9998 ML 2 | — |

Replacement control transformers (150 VA)

| Equipment to be serviced | | | Voltage | | Reference | Weight |
|--------------------------|------|-----------|-------------|-------------|--------------|---------|
| Class | Type | NEMA Size | 50 Hz | 60 Hz | | kg (lb) |
| | | | V | | | |
| 8502, 8536 | S | 6 | 220/440-110 | 240/480-120 | 31104-512-50 | — |
| | | | — | 208-120 | 31104-512-52 | — |
| | | | — | 277-120 | 31104-512-53 | — |
| | | | 380-110 | — | 31104-512-54 | — |
| | | | 550-110 | 600-120 | 31104-512-51 | — |
| | | | 110-110 | 120-120 | 31104-512-55 | — |
| | | | 220-110 | 240-120 | 31104-512-56 | — |

Accessories for Heavy Industrial NEMA Style Controls

Replacement parts kits
Universal baseplates

Replacement control transformers (200 VA)

| Equipment to be serviced | | | Voltage | | Reference | Weight |
|--------------------------|------|-----------|-------------|-------------|--------------|---------|
| Class | Type | NEMA Size | 50 Hz | 60 Hz | | |
| | | | V | V | | kg (lb) |
| 8502, 8536 | S | 7 | 220/440-110 | 240/480-120 | 31123-501-50 | — |
| | | | — | 208-120 | 31123-501-52 | — |
| | | | — | 277-120 | 31123-501-53 | — |
| | | | 380-110 | — | 31123-501-54 | — |
| | | | 550-110 | 600-120 | 31123-501-51 | — |
| | | | 110-110 | 120-120 | 31123-501-55 | — |
| | | | 220-110 | 240-120 | 31123-501-56 | — |

Replacement contact kits

| Equipment to be serviced | | | | Reference | Weight |
|--------------------------|---------|----------------|-----------------|-------------|--------|
| Class | Type | Current rating | Number of poles | | |
| 8910 | DPA 5 | 50 A | 1 | 9998 DRC 5 | — |
| | DPA 6 | 60 A | 1 | 9998 DRC 6 | — |
| | DPA 7 | 75 A | 1 | 9998 DRC 7 | — |
| | DPA 9 | 90 A | 1 | 9998 DRC 9 | — |
| | DPA 123 | 120 A | 1 | 9998 DRC 12 | — |

Universal baseplates

A universal baseplate may be used to retrofit a Square D Type S NEMA starter into an application which is currently using a competitive NEMA starter. The universal baseplate is a metal plate which attaches to the panel in the location of the starter to be replaced. The Type S starter then mounts to the baseplate. It is available for NEMA Sizes 00 to 4, and mounting screws are provided with each plate.

The universal baseplate adapter allows the Type S starter to replace the following competitive starters:

| Type | Competitive starter | NEMA Size | Reference | Weight |
|------------------------|------------------------------|------------|------------|---------|
| | | | | kg (lb) |
| Universal baseplates | Allen Bradley 509 | 0 and 1 | 9998 UB 01 | — |
| | | 2 | 9998 UB 02 | — |
| | | 3 | 9998 UB 03 | — |
| | | 4 | 9998 UB 04 | — |
| | Allen Bradley 709 | 1 | 9998 UB 01 | — |
| | | 2 | 9998 UB 02 | — |
| | | 3 | 9998 UB 03 | — |
| | | 4 | 9998 UB 04 | — |
| | Cutler Hammer Freedom Series | 00, 0, 1 | 9998 UB 01 | — |
| | | 2 | 9998 UB 02 | — |
| | | 3 | 9998 UB 03 | — |
| | | 4 | 9998 UB 04 | — |
| | Furnas ESP100 | 0 and 1 | 9998 UB 01 | — |
| | | 2 | 9998 UB 02 | — |
| | | 3 | 9998 UB 03 | — |
| | | 4 | 9998 UB 04 | — |
| | Furnas INNOVA | 0 and 1 | 9998 UB 01 | — |
| | | 2 | 9998 UB 02 | — |
| | | 3 | 9998 UB 03 | — |
| | | 4 | 9998 UB 04 | — |
| General Electric CR306 | 00, 0, 1 | 9998 UB 01 | — | |
| | 2 | 9998 UB 02 | — | |
| | 3 | 9998 UB 03 | — | |
| | 4 | 9998 UB 04 | — | |

Accessories for Heavy Industrial NEMA Style Controls

Cover-mounted control unit kits

DF 531971



9999 SA2

DF 531972



9999 SA3

DF 531973



9999 SC2

Class 9999 cover-mounted push button, selector switch and pilot light control unit kits can be easily field installed in a NEMA 1 or 12, Type S contactor or starter enclosure cover. Knockouts or removable closing plates are provided with many enclosure covers for convenient field installation of control units. Kits are supplied with leads and clearly illustrated instructions.

The Class 9999 cover-mounted control unit kits are identical to the factory-installed units.

Push button kits for NEMA 1 enclosures

| For use with | Description | | Reference | Weight | | |
|--------------------------|-----------------------|-----------------------------|-----------------|------------|---------------|---|
| Class | Type | NEMA Size or current rating | Number of poles | kg (lb) | | |
| 8502 and 8536 | SA, SB, SC | 00, 0, 1 and 1P | All | Start-Stop | 9999 SA2 | — |
| | SD | 2 | All | On-Off | 9999 SA10 | — |
| | SE | 3 | All | On-Off | 9999 SA10 | — |
| | SF to SJ | 4 to 7 | All | Start-Stop | 9999 SA3 | — |
| 8538, 8539, 8702, 8736 | SB and SC | 0 and 1 | All | Start-Stop | 9999 SA2 | — |
| | SD | 2 | All | On-Off | 9999 SA10 | — |
| | SE | 3 | All | On-Off | 9999 SA10 | — |
| | SF | 4 | All | On-Off | 9999 SA10 | — |
| 8903 (electrically held) | SG to SJ | 5 to 7 | All | Start-Stop | 9999 SA3 | — |
| | | | | On-Off | 9999 SA3 | — |
| | LX (1) | 30 A | All | On-Off | 9999 LXPB (2) | — |
| | SM | 30 A | All | Start-Stop | 9999 SA2 (3) | — |
| 8903 (electrically held) | SP | 60 A | All | On-Off | 9999 SA10 (3) | — |
| | SQ | 100 A | All | On-Off | 9999 SA10 (3) | — |
| | SJ, SV, SX, SY and SZ | 200 to 800 A | All | Start-Stop | 9999 SA3 (3) | — |
| | | | | On-Off | 9999 SA3 (3) | — |

Selector switch kits for NEMA 1 enclosures

| For use with | Description | | Reference | Weight | | |
|--------------------------|-----------------------|-----------------------------|-----------------|---------------|--------------|---|
| Class | Type | NEMA Size or current rating | Number of poles | kg (lb) | | |
| 8502 and 8536 | SA, SB, SC | 00, 0, 1 and 1P | All | Hand-Off-Auto | 9999 SC2 | — |
| | SD | 2 | All | On-Off | 9999 SC22 | — |
| | SE | 3 | All | On-Off | 9999 SC22 | — |
| 8502 and 8536 | SF to SJ | 4 to 7 | All | Hand-Off-Auto | 9999 SC8 | — |
| 8538, 8539, 8702, 8736 | SB and SC | 0 and 1 | All | Hand-Off-Auto | 9999 SC2 | — |
| | SD | 2 | All | On-Off | 9999 SC22 | — |
| | SE | 3 | All | On-Off | 9999 SC22 | — |
| | SF | 4 | All | On-Off | 9999 SC22 | — |
| 8903 (electrically held) | SG to SJ | 5 to 7 | All | Hand-Off-Auto | 9999 SC8 | — |
| | | | | Hand-Off-Auto | 9999 SC8 | — |
| | LX (1) | 30 A | All | On-Off | 9999 LXS (2) | — |
| | SM | 30 A | All | Hand-Off-Auto | 9999 SC2 | — |
| 8903 (electrically held) | SP | 60 A | All | On-Off | 9999 SC22 | — |
| | SQ | 100 A | All | On-Off | 9999 SC22 | — |
| | SJ, SV, SX, SY and SZ | 200 to 800 A | All | Hand-Off-Auto | 9999 SC8 | — |
| | | | | Hand-Off-Auto | 9999 SC8 | — |

(1) For Class 8903 Type LX, NEMA 12 control unit kits, refer to the Class 8903 section.

(2) To mount a control unit in a NEMA 1 enclosure, a Class 9999 Type BLX bracket is also required.

(3) Also requires N/O auxiliary contact for holding circuit contact when used on Class 8903 electrically held lighting contactors.

Accessories for Heavy Industrial NEMA Style Controls

Cover-mounted control unit kits

DF 531374



9999 SP 2R

| Red pilot light ⁽¹⁾ kits for NEMA 1 enclosures | | | | | | | |
|---|--------------------------|-----------------------------|-----------------|--------------------------|----------------------------|----------------------------|---|
| For use with | | | | Description | Reference | Weight | |
| Class | Type | NEMA Size or current rating | Number of poles | | | kg (lb) | |
| 8502 and 8536 | SA, SB and SC | 00, 0, 1 and 1P | All | With control transformer | 9999 SP 28R | — | |
| | | | | Standard | 9999 SP 2R | — | |
| | SD | 2 | All | With control transformer | 9999 SP 28R | — | |
| | | | | Standard | 9999 SP 3R | — | |
| | SE | 3 | 2 and 3 | With control transformer | 9999 SP 28R | — | |
| | | | | Standard | 9999 SP 4R | — | |
| | SE | 3 | 4 and 5 | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 5R | — | |
| | SF | 4 | All | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R | — | |
| | SG to SJ | 5 to 7 | All | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R ⁽³⁾ | — | |
| 8538, 8539, 8702, 8736 | SB and SC | 0 and 1 | All | With control transformer | 9999 SP 12R | — | |
| | | | | Standard | 9999 SP 12R | — | |
| | SD | 2 | All | With control transformer | 9999 SP 13R | — | |
| | | | | Standard | 9999 SP 13R | — | |
| | SE | 3 | All | With control transformer | 9999 SP 14R | — | |
| | | | | Standard | 9999 SP 14R | — | |
| | SF | 4 | All | With control transformer | 9999 SP 15R | — | |
| | | | | Standard | 9999 SP 15R | — | |
| | SG to SJ | 5 to 7 | All | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R ⁽³⁾ | — | |
| | 8903 (electrically held) | LX ⁽²⁾ | 30 A | All | With control transformer | 9999 SP 28R ⁽³⁾ | — |
| | | | | | Standard | 9999 SP 2R | — |
| SP | | 60 A | All | With control transformer | 9999 SP 28R | — | |
| | | | | Standard | 9999 SP 3R | — | |
| SQ | | 100 A | 2 and 3 | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R | — | |
| | | | 4 and 5 | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R | — | |
| SJ, SV, SX, SY and SZ | | 200 to 800 A | All | With control transformer | 9999 SP 28R ⁽³⁾ | — | |
| | | | | Standard | 9999 SP 28R ⁽³⁾ | — | |

⁽¹⁾ A green lens is included in the red pilot light kits. If you order a 9999 SP 28R kit, you will receive both a red and a green lens with the pilot light.

⁽²⁾ For Class 8903 Type LX NEMA 12 rated control unit kits, refer to the Class 8903 section.

⁽³⁾ The coil voltage must be the same as the pilot light rating. The kit contains one Class 9001 Type KP1R31120V, 60 Hz red pilot light control unit. For other voltages, refer to the Class 9001 Type KP section of the Digest.

Accessories for Heavy Industrial NEMA Style Controls

Cover-mounted control unit kits

Push button kits for NEMA 12 enclosures

| For use with | | | | Description (1) | Reference | Weight |
|---|-----------------------|-----------------------------|-----------------|----------------------|-----------------|---------|
| Class | Type | NEMA Size or current rating | Number of poles | | | kg (lb) |
| 8502, 8536 8538, 8539, 8702, 8736 8903 (electrically held) | SA, SB, SC | 00, 0, 1 and 1P | All | Start-Stop or On-Off | 9999 SA3 | - |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | SB and SC | 0 and 1 | All | | | |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | LX (2) | 30 A | All | | | |
| | SM | 30 A | All | | | |
| | SP | 60 A | All | | | |
| | SQ | 100 A | All | | | |
| | SJ, SV, SX, SY and SZ | 200 to 800 A | All | | | |

Selector switch kits for NEMA 12 enclosures

| For use with | | | | Description (1) | Reference | Weight |
|---|-----------------------|-----------------------------|-----------------|-----------------|-----------------|---------|
| Class | Type | NEMA Size or current rating | Number of poles | | | kg (lb) |
| 8502, 8536 8538, 8539, 8702, 8736 8903 (electrically held) | SA, SB, SC | 00, 0, 1 and 1P | All | Hand-Off-Auto | 9999 SC8 | - |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | SB and SC | 0 and 1 | All | | | |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | LX (2) | 30 A | All | | | |
| | SM | 30 A | All | | | |
| | SP | 60 A | All | | | |
| | SQ | 100 A | All | | | |
| | SJ, SV, SX, SY and SZ | 200 to 800 A | All | | | |

(1) User-made openings are required in order to field install these modification kits on standard 8502, 8536 Type S Sizes 0 to 2, and 8903 Sizes 30 to 60 A NEMA 12 enclosures

(2) For Class 8903 Type LX NEMA 12 control unit kits, refer to the Class 8903 section.

Accessories for Heavy Industrial NEMA Style Controls

Cover-mounted control unit kits

Red pilot light ⁽¹⁾ kits for NEMA 12 enclosures

| For use with | | Description ⁽²⁾ | | Reference | Weight | |
|--|-----------------------------|-----------------------------|-----------------|--------------|----------------------------|---|
| Class | Type | NEMA Size or current rating | Number of poles | | kg (lb) | |
| 8502, 8536 8538, 8539, 8702, 8736 8903 (electrically held) | SA, SB, SC | 00, 0, 1 and 1P | All | 120 V, 60 Hz | 9999 SP 28R ⁽³⁾ | - |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | SB and SC | 0 and 1 | All | | | |
| | SD | 2 | All | | | |
| | SE | 3 | All | | | |
| | SF | 4 | All | | | |
| | SG to SJ | 5 to 7 | All | | | |
| | LX ⁽⁴⁾ | 30 A | All | | | |
| | SM | 30 A | All | | | |
| | SP | 60 A | All | | | |
| | SQ | 100 A | All | | | |
| | SJ, SV, SX, SY and SZ | 200 to 800 A | All | | | |

Closing plates for NEMA 1 enclosures

| For use with | | Description | | Reference | Weight |
|------------------|-------------------------|-----------------------------|---|-----------|---------|
| Class | Type | NEMA Size or current rating | | | kg (lb) |
| 8502, 8536, 8903 | SA to SE or SM to SP | 00 to 3 or 30 to 60 A | For pilot light or reset Slip-on cover, NEMA 1 enclosure | 9999 SG2 | - |
| | | | For push button or selector switch Slip-on cover, NEMA 1 enclosure | 9999 SG3 | - |
| 8538 and 8539 | SB to SF | 0 to 4 | For push button or selector switch Hinged cover, NEMA 1 enclosure | 9999 SG1 | - |
| | | | For pilot light Hinged cover, NEMA 1 enclosure | 9999 SG2 | - |

⁽¹⁾ A green lens is included in the red pilot light kits. If you order a 9999 SP 28R kit, you will receive both a red and a green lens with the pilot light.

⁽²⁾ User-made openings are required in order to field install these modification kits on standard 8502, 8536 Type S Sizes 0 to 2, and 8903 Sizes 30 to 60 A NEMA 12 enclosures.

⁽³⁾ The coil voltage must be the same as the pilot light rating. Kit contains one Class 9001 Type KP1R31 120V, 60 Hz red pilot light control unit. For other voltages, refer to the Class 9001 Type KP section of the Digest.

⁽⁴⁾ For Class 8903 Type LX NEMA 12 control unit kits, refer to the Class 8903 section.

Accessories for Heavy Industrial NEMA Style Controls

Auxiliary contacts

| Characteristics | | | | |
|-----------------------------------|----------|------------------------------|--------------------|---------------------------|
| Class | | 9999 | | |
| Type | | SX 11/SX 12 | | |
| Contact ratings | | Make | Break | Continuous current |
| Maximum current (50/60 Hz) | | (35% power factor) | (35% power factor) | |
| ~ 120 V or less | A | 30 | 3 | 3 |
| ~ 120...600 V | | 3600 VA | 360 VA | 3 A |
| Class | | 9999 | | |
| Type | | SX 6 to SX 10/SX 13 to SX 17 | | |
| Contact ratings | | Make | Break | Continuous current |
| Maximum current (50/60 Hz) | | (35% power factor) | (35% power factor) | |
| ~ 120 V or less | A | 60 | 6 | 10 |
| ~ 120...600 V | | 7200 VA | 720 VA | 10 A |

References

Internal contact kits

Class 9999 Type SX 11 internal contact kit is a replacement unit for the N/O holding circuit contact supplied as standard on Type S, Sizes 00–2, three-phase starters and contactors. The Class 9999 Type SX 12 is a replacement unit for the N/C electrical contact supplied as standard on Type S, Sizes 00–2, mechanically interlocked devices. Internal contacts are also used on Class 2510 Types M and T manual starters. The internal contacts can be used for other applications as long as the electrical rating is not exceeded.

| For use with | | | Internal non-convertible contacts | Reference | Weight |
|------------------------|----------|-----------|-----------------------------------|----------------|---------|
| Class | Type | NEMA Size | | | kg (lb) |
| 8502, 8702, 8536, 8736 | SA to SD | 00 to 2 | 1 N/O contact | 9999 SX 11 (1) | – |
| | | | 1 N/C contact | 9999 SX 12 (1) | – |

External contact kits

Class 9999 Type SX 6 external auxiliary contact is supplied as standard for the N/O holding circuit contact on Type S Sizes 3 to 7 contactors and starters. Additional auxiliary contacts can be added to Type S contactors, starters and lighting contactors. These contacts mount on either side of the basic contactor and are available with convertible or non-convertible contacts. The contacts of the convertible version can be changed from N/O to N/C or vice versa in the field. The non-convertible version has fixed contacts, either N/O or N/C.

To determine the number of auxiliary contacts that can be added to each Type S contactor or starter, refer to the contactor and starter section.

| For use with | | | External field convertible contacts | Reference | Weight |
|------------------------|----------|-----------|-------------------------------------|----------------|---------|
| Class | Type | NEMA Size | | | kg (lb) |
| 8502, 8702, 8536, 8736 | SA to SJ | 00 to 7 | 1 N/O contact | 9999 SX 6 | – |
| | | | 1 N/C contact | 9999 SX 7 | – |
| | | | 1 N/O and 1 N/C isolated contacts | 9999 SX 8 | – |
| | | | 1 N/O overlapping contact | 9999 SX 9 (2) | – |
| | | | 1 N/C overlapping contact | 9999 SX 10 (2) | – |
| For use with | | | External non-convertible contacts | Reference | Weight |
| Class | Type | NEMA Size | | | kg (lb) |
| 8502, 8702, 8536, 8736 | SA to SJ | 00 to 7 | 1 N/O contact | 9999 SX 13 | – |
| | | | 1 N/C contact | 9999 SX 14 | – |
| | | | 1 N/O and 1 N/C isolated contacts | 9999 SX 15 | – |
| | | | 1 N/O overlapping contact | 9999 SX 16 (2) | – |
| | | | 1 N/C overlapping contact | 9999 SX 17 (2) | – |

(1) Types SX 11 and SX 12 are not applicable on NEMA Sizes 3 or larger. Internal contacts can also be used on Class 2510 Types M and T manual starters.

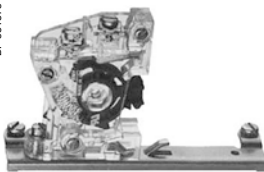
(2) Types SX 9 and SX 10 or Types SX 16 and SX 17 must be used together and mounted on the same side of the contactor. They are suitable for applications where it is necessary for a normally open contact to overlap a normally closed contact.

DF 531376



9999 SX 11

DF 531375



9999 SX 6

Accessories for Heavy Industrial NEMA Style Controls

Auxiliary contacts,
Adapter, Remote reset module

Isolated auxiliary contacts for Motor Logic solid-state overload relays

Overload relay auxiliary contacts are available factory installed or in kit form for field installation on Motor Logic solid-state overload relays.

These contacts may be used for isolated alarm contact applications.

| For use with | | | External field convertible contact | Reference | Weight kg (lb) |
|--------------|----------------|-----------|------------------------------------|------------|----------------|
| Class | Type | NEMA Size | | | |
| 9065 | SS, SR, SF, ST | 00B to 7 | N/O or N/C auxiliary contact | 9999 AC 04 | – |

Adapter

The adapter enables the Motor Logic solid-state overload relay to be mounted on a 35 mm mounting rail.

| For use with | | | Reference | Weight kg (lb) |
|--------------|----------|-------------------|------------|----------------|
| Class | Type | NEMA Size | | |
| 9065 | SS or SF | 00B, 00C, 0 and 1 | 9999 DA 01 | – |

Remote reset module

The remote reset module can be easily field installed on solid-state overload relays. This module will allow the overload relay to be reset from a remote location.

| For use with | | | Description | Reference | Weight kg (lb) |
|--------------|----------------|-----------|----------------------|--------------------|----------------|
| Class | Type | NEMA Size | | | |
| 9065 | SS, SR, SF, ST | 00B to 7 | Remote reset module | 9999 RR 04 (1) | – |
| | SS, SR, SF, ST | 3 and 4 | Top mounting bracket | 9999 RB 34 (1) (2) | – |

(1) ~ 120 V power required.

(2) To be used for mounting the remote reset module on the top of the solid-state overload relay.

Accessories for Heavy Industrial NEMA Style Controls

Power-pole adder kits, Timer attachments, Control circuit fuse holders, Transient suppression modules



9999 SB 6

Power-pole adder kits

One single- or double-circuit power pole kit may be field added to a basic 2- or 3-pole Type S contactor or starter, Size 0–2, or a 30–60 A lighting contactor. The ratings for these power-pole adders correspond to the NEMA contact ratings found in the contactor and starter section or lighting contactor section. A 2- or 3-pole contactor or starter will accept only one single- or double-circuit unit. A power pole cannot be used on 4- or 5-pole devices or devices which are mechanically interlocked.

For adding a power pole to a Size 2 or 60 A device, a coil change is required. When adding Sizes 0 to 2 power pole kits to a Size 3 to 7 or 100 to 800 A device, an adapter bracket (9999 SBT 1) is required.

The Class 9999 Types SB 6 to SB 15 power pole kits are suitable for copper wire only. Types SB 21 to SB 25 are supplied with lugs suitable for copper and aluminum wire.

| Description | For use with | | Reference | Weight kg (lb) | |
|----------------------------------|------------------------------|------------|---------------|----------------|-----------------------------|
| | Class | Type | | | NEMA Size or current rating |
| 1 N/O power-pole adder | 8502, 8702, 8536, 8736, 8903 | SB, SC, SM | 0, 1 and 30 A | 9999 SB 6 | – |
| | | SD | 2 | 9999 SB 11 (1) | – |
| | | SP | 60 A | 9999 SB 21 (1) | – |
| 1 N/C power pole adder | 8502, 8702, 8536, 8736, 8903 | SB, SC, SM | 0, 1 and 30 A | 9999 SB 7 | – |
| | | SD | 2 | 9999 SB 12 (1) | – |
| | | SP | 60 A | 9999 SB 22 (1) | – |
| 1 N/O and 1 N/C power-pole adder | 8502, 8702, 8536, 8736, 8903 | SB, SC, SM | 0, 1 and 30 A | 9999 SB 8 | – |
| | | SD | 2 | 9999 SB 13 (1) | – |
| | | SP | 60 A | 9999 SB 23 (1) | – |
| 2 N/O power-pole adders | 8502, 8702, 8536, 8736, 8903 | SB, SC, SM | 0, 1 and 30 A | 9999 SB 9 | – |
| | | SD | 2 | 9999 SB 14 (1) | – |
| | | SP | 60 A | 9999 SB 24 (1) | – |
| 2 N/C power pole adders | 8502, 8702, 8536, 8736, 8903 | SB, SC, SM | 0, 1 and 30 A | 9999 SB 10 | – |
| | | SD | 2 | 9999 SB 15 (1) | – |
| | | SP | 60 A | 9999 SB 25 (1) | – |

Adapter bracket

| Description | For use with | | Reference | Weight kg (lb) | |
|-----------------|------------------------------|-----------------------|-------------------------|----------------|-----------------------------|
| | Class | Type | | | NEMA Size or current rating |
| Adapter bracket | 8502, 8702, 8536, 8736, 8903 | SE to SJ and SQ to SZ | 3 to 7 and 100 to 800 A | 9999 SBT 1 | – |

Control circuit fuse holders

The control circuit fuse holder is designed to be used on Type S contactors and starters, Sizes 00 to 7, when either one or two control circuit fuses, 600 V maximum, are required. The Type SF 3 and SF 4 fuse holders accept standard 600 V Bussmann Type KTK or equivalent fuses (10 mm x 38 mm), 6 A maximum. Type SFR 3 and SFR 4 fuse holders accept Class CC 600 V Bussmann Type KTK-R or equivalent fuses only.

| Type | For use with | | Description (2) | Reference | Weight kg (lb) |
|------------------------------|------------------------|-----------|------------------------------------|------------|----------------|
| | Class | NEMA Size | | | |
| Control circuit fuse holders | 8502, 8702, 8536, 8736 | 00 to 7 | Single-fuse unit | 9999 SF 3 | – |
| | | | Single-fuse unit for Class CC fuse | 9999 SFR 3 | – |
| | | | Two-fuse unit | 9999 SF 4 | – |
| | | | Two-fuse unit for Class CC fuses | 9999 SFR 4 | – |

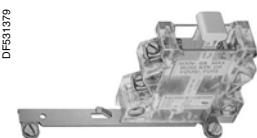
Transient suppression modules

The transient suppression module is designed to be used where the transient voltage, generated when opening the coil circuit, interferes with the proper operation of nearby integrated or solid-state control circuits. The module consists of a RC circuit and is designed to suppress the coil voltage transients to approximately 200% of peak coil supply voltage. The module is wired across the coil for Type S, Sizes 00 to 5 and is designed for coil voltages of 120 V only.

| Type | For use with | | Reference | Weight kg (lb) |
|-------------------------------|------------------------|-----------|-----------|----------------|
| | Class | NEMA Size | | |
| Transient suppression modules | 8502, 8702, 8536, 8736 | 00 to 2 | 9999 ST 1 | – |
| | | 3 to 5 | 9999 ST 2 | – |

(1) To order a Size 2 or 60 A power pole kit complete with a new starter coil, specify suffix Y118, plus the voltage and frequency. Example: **Class 9999 Type SB11 Form Y118, 120 volts, 60 Hz.**

(2) Fuses not included.



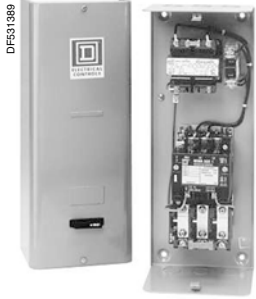
9999 SF 4



9999 ST 1

Accessories for Heavy Industrial NEMA Style Controls

Compression lugs Terminal block



DF531389

Class 8903 with compression lugs installed



DF531390

9999 T7

Compression lugs

A Class 9999 Type AL hardware kit is required to install Versa-Crimp® compression lugs on Class 8903 Type S, 100 to 800 A lighting contactors. The lugs are suitable for both copper and aluminum wire.

One VCEL lug is required for each line or load terminal. Each Class 9999 Type AL hardware kit includes mounting hardware for 3 terminals, line or load side.

Example: to install compression lugs on a 300 A 3-pole device, line and load sides, order 6 x VCEL-060-12H1 lugs and 2 x Class 9999 Type AL 11 hardware kits.

| For use with | | | Versa-Crimp catalogue number | Material | Wire range (min.-max.) | Number of poles | Reference | Weight kg (lb) |
|-------------------|--------|----------------|------------------------------|------------|------------------------|-----------------|------------|----------------|
| Class | Type | Current rating | | | | | | |
| 8903 | SQ | 100 A | VCEL-021-14S1 | Al/Cu | 8-1/0 | - | (1) | - |
| | | 200 A | VCEL-022-516H1 | Al/Cu | 1-2/0 | 2 poles | 9999 AL 13 | - |
| | SX | 300 A | VCEL-024-516H1 | Al/Cu | 2/0-4/0 | 4 poles | 9999 AL 15 | - |
| | | | | | | 2 poles | 9999 AL 13 | - |
| | | | VCEL-030-516H1 | MCM Al/Cu | 4-300 | 3 poles | 9999 AL 14 | - |
| | | | | | | 4 poles | 9999 AL 15 | - |
| | | | VCEL-050-12H1 | MCM Al/Cu | 2/0-500 | 2 poles | 9999 AL 13 | - |
| | | | | | | 4 poles | 9999 AL 15 | - |
| | SY, SZ | 400, 600 A | VCEL-060-12H1 | MCM Al | 400-600 | - | 9999 AL 11 | - |
| | | | | | | MCM Cu | 400-500 | - |
| | | | VCEL-075-12H1 | MCM Al | 500-750 | - | 9999 AL 11 | - |
| | | | | | | MCM Cu | 500 | - |
| VCEL-060-12H2 (2) | | | MCM Al | 400-600 | - | 9999 AL 12 | - | |
| | | | | | MCM Cu | 400-500 | - | 9999 AL 12 |
| VCEL-075-12H2 (2) | MCM Al | 500-750 | - | 9999 AL 12 | - | | | |
| | | | MCM Cu | 500 | - | 9999 AL 12 | - | |
| SJ | 800 A | - | - | - | - | (3) | - | |

Terminal block

The terminal block provides easy wiring of a "Hand-Off-Auto" selector switch or "Start-Stop" push buttons with separate control. The terminal block requires no panel space. It simply snaps onto Type S, Sizes 00-4 contactors and starters by two tabs and is secured to the left-hand coil terminal.

| For use with | | | Reference | Weight kg (lb) |
|------------------------|----------|-----------|-----------|----------------|
| Class | Type | NEMA Size | | |
| 8502, 8702, 8536, 8736 | SA to SF | 00 to 4 | 9999 T7 | - |

(1) Not required.

(2) One or two lugs may be mounted on each terminal.

(3) Compression lugs for these devices are available only as a factory modification. Order: suffix Y1574. Specify the wire size, up to 750 MCM Al or 500 MCM Cu, and the number of terminals.

Schneider Electric worldwide

■ Addresses page 8/2



Schneider Electric worldwide

Up-dated: 30-07-2003

| | | | | |
|---------------------------------|---|---|---|--|
| Afghanistan | Contacts are assured by | Schneider Electric India | | |
| Albania | Contacts are assured by | Schneider Electric Austria | | |
| Algeria | ■ Schneider Electric | voie A Lot C22 Zone industrielle Rouiba - Alger | Tel. : +213 21 92 97 02 à 09 Fax : +213 21 92 97 00 à 01 | |
| Andorra | Contacts are assured by | Schneider Electric France | | |
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| Anguilla | Contacts are assured by | Schneider Electric Dominican Rep. | | |
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