

# NEMA Contactor, Starter, and Pump Panel Specifications

Bulletin Numbers 500 and 1200 Product Lines

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## Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

| Resource                                                                                    | Description                                                                         |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Industrial Automation Wiring and Grounding Guidelines, publication <a href="#">1770-4.1</a> | Provides general guidelines for installing a Rockwell Automation industrial system. |
| Product Certifications website, <a href="http://www.ab.com">http://www.ab.com</a>           | Provides declarations of conformity, certificates, and other certification details. |

You can view or download publications at <http://www.rockwellautomation.com/literature/>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

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## Electrical Ratings

| NEMA Size | Load Voltage [V] | Continuous Current Rating [A] | Service Limit Current Rating [A]★ | Maximum Hp Rating (Non-plugging and non-jogging duty) |       | Maximum Hp Rating (Plugging and jogging duty)‡ |       | Transformer Primary Switching kVa Rating (Inrush Current ≤ 20 times Continuous Current) |     | Transformer Primary Switching kVa Rating (Inrush Current = 20 to 40 times Continuous Current) |     | Capacitor Switching kVAR§ | Maximum Circuit Closing Inrush Current [A] Peak Including Offset |
|-----------|------------------|-------------------------------|-----------------------------------|-------------------------------------------------------|-------|------------------------------------------------|-------|-----------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------------|-----|---------------------------|------------------------------------------------------------------|
|           |                  |                               |                                   | 1Ø                                                    | 3Ø    | 1Ø                                             | 3Ø    | 1Ø                                                                                      | 3Ø  | 1Ø                                                                                            | 3Ø  | 3Ø                        | 3Ø                                                               |
| 00        | 115              | 9                             | 11                                | 1/3                                                   | —     | 1/4                                            | —     | —                                                                                       | —   | —                                                                                             | —   | —                         | 87                                                               |
|           | 200              |                               |                                   | —                                                     | 1-1/2 | —                                              | 1     | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 230              |                               |                                   | 1                                                     | 1-1/2 | 1/2                                            | 1     | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 380              |                               |                                   | —                                                     | 1-1/2 | —                                              | 1     | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 2     | —                                              | 1-1/2 | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 575              |                               |                                   | —                                                     | 2     | —                                              | 1-1/2 | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
| 0         | 115              | 18                            | 21                                | 1                                                     | —     | 1/2                                            | —     | 0.6                                                                                     | —   | 0.3                                                                                           | —   | —                         | 140                                                              |
|           | 200              |                               |                                   | —                                                     | 3     | —                                              | 1-1/2 | —                                                                                       | 1.8 | —                                                                                             | 0.9 | —                         |                                                                  |
|           | 230              |                               |                                   | 2                                                     | 3     | 1                                              | 1-1/2 | 1.2                                                                                     | 2.1 | 0.6                                                                                           | 1   | —                         |                                                                  |
|           | 380              |                               |                                   | —                                                     | 5     | —                                              | 1-1/2 | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 5     | —                                              | 2     | 2.4                                                                                     | 4.2 | 1.2                                                                                           | 2.1 | —                         |                                                                  |
|           | 575              |                               |                                   | —                                                     | 5     | —                                              | 2     | 3                                                                                       | 5.2 | 1.5                                                                                           | 2.6 | —                         |                                                                  |
| 1         | 115              | 27                            | 32                                | 2                                                     | —     | 1                                              | —     | 1.2                                                                                     | —   | 0.6                                                                                           | —   | —                         | 288                                                              |
|           | 200              |                               |                                   | —                                                     | 7-1/2 | —                                              | 3     | —                                                                                       | 3.6 | —                                                                                             | 1.8 | —                         |                                                                  |
|           | 230              |                               |                                   | 3                                                     | 7-1/2 | 2                                              | 3     | 2.4                                                                                     | 4.3 | 1.2                                                                                           | 2.1 | 6                         |                                                                  |
|           | 380              |                               |                                   | —                                                     | 10    | —                                              | 5     | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 10    | —                                              | 5     | 4.9                                                                                     | 8.5 | 2.5                                                                                           | 4.3 | 13.5                      |                                                                  |
|           | 575              |                               |                                   | —                                                     | 10    | —                                              | 5     | 6.2                                                                                     | 11  | 3.1                                                                                           | 5.3 | 17                        |                                                                  |
| 1P        | 115              | 36                            | 42                                | 3                                                     | —     | 1-1/2                                          | —     | —                                                                                       | —   | —                                                                                             | —   | —                         | —                                                                |
|           | 230              |                               |                                   | 5                                                     | —     | 3                                              | —     | —                                                                                       | —   | —                                                                                             | —   | —                         | —                                                                |
| 2         | 115              | 45                            | 52                                | 3                                                     | —     | 2                                              | —     | 2.1                                                                                     | —   | 1                                                                                             | —   | —                         | 483                                                              |
|           | 200              |                               |                                   | —                                                     | 10    | —                                              | 7-1/2 | —                                                                                       | 6.3 | —                                                                                             | 3.1 | —                         |                                                                  |
|           | 230              |                               |                                   | 7-1/2                                                 | 15    | 5                                              | 10    | 4.1                                                                                     | 7.2 | 2.1                                                                                           | 3.6 | 12                        |                                                                  |
|           | 380              |                               |                                   | —                                                     | 25    | —                                              | 15    | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 25    | —                                              | 15    | 8.3                                                                                     | 14  | 4.2                                                                                           | 7.2 | 25                        |                                                                  |
|           | 575              |                               |                                   | —                                                     | 25    | —                                              | 15    | 10                                                                                      | 18  | 5.2                                                                                           | 8.9 | 31                        |                                                                  |
| 3         | 115              | 90                            | 104                               | 7-1/2                                                 | —     | 7-1/2                                          | —     | 4.1                                                                                     | —   | 2                                                                                             | —   | —                         | 947                                                              |
|           | 200              |                               |                                   | —                                                     | 25    | —                                              | 15    | —                                                                                       | 12  | —                                                                                             | 6.1 | —                         |                                                                  |
|           | 230              |                               |                                   | 15                                                    | 30    | 15                                             | 20    | 8.1                                                                                     | 14  | 4.1                                                                                           | 7.0 | 27                        |                                                                  |
|           | 380              |                               |                                   | —                                                     | 50    | —                                              | 30    | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 50    | —                                              | 30    | 16                                                                                      | 28  | 8.1                                                                                           | 14  | 53                        |                                                                  |
|           | 575              |                               |                                   | —                                                     | 50    | —                                              | 30    | 20                                                                                      | 35  | 10                                                                                            | 18  | 67                        |                                                                  |
| 4         | 115              | 135                           | 156                               | —                                                     | —     | —                                              | —     | 6.8                                                                                     | —   | 3.4                                                                                           | —   | —                         | 1581                                                             |
|           | 200              |                               |                                   | —                                                     | 40    | —                                              | 25    | —                                                                                       | 20  | —                                                                                             | 10  | —                         |                                                                  |
|           | 230              |                               |                                   | —                                                     | 50    | —                                              | 30    | 14                                                                                      | 23  | 6.8                                                                                           | 12  | 40                        |                                                                  |
|           | 380              |                               |                                   | —                                                     | 75    | —                                              | 50    | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 100   | —                                              | 60    | 27                                                                                      | 47  | 14                                                                                            | 23  | 80                        |                                                                  |
|           | 575              |                               |                                   | —                                                     | 100   | —                                              | 60    | 34                                                                                      | 59  | 17                                                                                            | 29  | 100                       |                                                                  |
| 5         | 115              | 270                           | 311                               | —                                                     | —     | —                                              | —     | 14                                                                                      | —   | 6.8                                                                                           | —   | —                         | 3163                                                             |
|           | 200              |                               |                                   | —                                                     | 75    | —                                              | 60    | —                                                                                       | 41  | —                                                                                             | 20  | —                         |                                                                  |
|           | 230              |                               |                                   | —                                                     | 100   | —                                              | 75    | 27                                                                                      | 47  | 14                                                                                            | 24  | 80                        |                                                                  |
|           | 380              |                               |                                   | —                                                     | 150   | —                                              | 125   | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 200   | —                                              | 150   | 54                                                                                      | 94  | 27                                                                                            | 47  | 160                       |                                                                  |
|           | 575              |                               |                                   | —                                                     | 200   | —                                              | 150   | 68                                                                                      | 117 | 34                                                                                            | 59  | 200                       |                                                                  |
| 6         | 115              | 540                           | 621                               | —                                                     | —     | —                                              | —     | 27                                                                                      | —   | 14                                                                                            | —   | —                         | 6326                                                             |
|           | 200              |                               |                                   | —                                                     | 150   | —                                              | 125   | —                                                                                       | 81  | —                                                                                             | 41  | —                         |                                                                  |
|           | 230              |                               |                                   | —                                                     | 200   | —                                              | 150   | 54                                                                                      | 94  | 27                                                                                            | 47  | 160                       |                                                                  |
|           | 380              |                               |                                   | —                                                     | 300   | —                                              | 250   | —                                                                                       | —   | —                                                                                             | —   | —                         |                                                                  |
|           | 460              |                               |                                   | —                                                     | 400   | —                                              | 300   | 108                                                                                     | 188 | 54                                                                                            | 94  | 320                       |                                                                  |
|           | 575              |                               |                                   | —                                                     | 400   | —                                              | 300   | 135                                                                                     | 234 | 68                                                                                            | 117 | 400                       |                                                                  |
| 7         | 230              | 810                           | 932                               | —                                                     | 300   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 240                       | 9470                                                             |
|           | 460              |                               |                                   | —                                                     | 600   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 480                       |                                                                  |
|           | 575              |                               |                                   | —                                                     | 600   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 600                       |                                                                  |
| 8         | 230              | 1215                          | 1400                              | —                                                     | 450   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 360                       | 14205                                                            |
|           | 460              |                               |                                   | —                                                     | 900   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 720                       |                                                                  |
|           | 575              |                               |                                   | —                                                     | 900   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 900                       |                                                                  |
| 9         | 230              | 2250                          | 2590                              | —                                                     | 800   | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 665                       | 25380                                                            |
|           | 460              |                               |                                   | —                                                     | 1600  | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 1325                      |                                                                  |
|           | 575              |                               |                                   | —                                                     | 1600  | —                                              | —     | —                                                                                       | —   | —                                                                                             | —   | 1670                      |                                                                  |

★ **Service-Limit Current Ratings** — The service-limit current ratings shown represent the maximum rms current, in amperes, which the controller shall be permitted to carry for protracted periods in normal service. At service-limit current ratings, temperature rises shall be permitted to exceed those obtained by testing the controller at its continuous current rating. The current rating of overload relays or the trip current of other motor protective devices used shall not exceed the service-limit current rating of the controller.

‡ **Plugging or Jogging Service** — The listed horsepower ratings are recommended for those applications requiring repeated interruption of stalled motor current encountered in rapid motor reversal in excess of five openings or closings per minute and shall not be more than ten in a ten minute period.

§ If maximum available current (at capacitor terminals) is greater than 3000 A, please contact your local Rockwell Automation sales office, Allen-Bradley distributor, or NEMA ICS-2 Standard.

## Mechanical Ratings

| NEMA Size | Mechanical Life<br>(Millions of Operations) | Maximum Number of<br>Auxiliary Contacts | Operating Time [ms] |                    |
|-----------|---------------------------------------------|-----------------------------------------|---------------------|--------------------|
|           |                                             |                                         | Pick-up (Average)   | Drop-out (Average) |
| 00        | 10                                          | 5                                       | 20                  | 16                 |
| 0         | 10                                          | 8                                       | 21                  | 16                 |
| 1         | 10                                          | 8                                       | 22                  | 14                 |
| 2         | 10                                          | 8                                       | 27                  | 13                 |
| 3         | 5                                           | 8                                       | 37                  | 20                 |
| 4         | 5                                           | 8                                       | 27                  | 20                 |
| 5         | 5                                           | 8                                       | 25                  | 18                 |
| 6         | 5                                           | 4                                       | 25...79             | 10...22            |
| 7         | —                                           | 8                                       | 88                  | 40                 |
| 8         | —                                           | 8                                       | 88                  | 45                 |
| 9         | —                                           | 8                                       | 118                 | 84                 |

## Construction

| NEMA<br>Size | Wire Size for<br>Power Terminals         | Required Torque on<br>Power Terminal Wire<br>Clamps and Pressure<br>Connectors or Lugs | Type of Power<br>Terminal | Contact Material  |                       | Requirements<br>for Sizing of Wire                                                                                      |
|--------------|------------------------------------------|----------------------------------------------------------------------------------------|---------------------------|-------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|
|              |                                          |                                                                                        |                           | Power<br>Contacts | Auxiliary<br>Contacts |                                                                                                                         |
| 00           | #16...10 AWG                             | 9 lb•in                                                                                | Pressure terminals        | Silver alloy      | Silver                | All wire rated 167 °F<br>(75 °C) or higher must<br>be sized per the local<br>Electrical Code for<br>167°F (75 °C) wire. |
| 0            | #14...10 AWG                             | 20 lb•in                                                                               | Saddle or wire clamps     |                   |                       |                                                                                                                         |
| 1            | #14...8 AWG                              | 20 lb•in                                                                               |                           |                   |                       |                                                                                                                         |
| 2            | #14...4 AWG                              | 45 lb•in                                                                               | Pressure terminals        |                   |                       |                                                                                                                         |
| 3            | #8...1/0 AWG                             | 150 lb•in                                                                              |                           |                   |                       |                                                                                                                         |
| 4            | #6...4/0 AWG                             | 275 lb•in                                                                              |                           |                   |                       |                                                                                                                         |
| 5            | #4 AWG...500 MCM                         | 375 lb•in                                                                              |                           |                   |                       |                                                                                                                         |
| 6            | Lugs sold separately.<br>See page 1-111. |                                                                                        |                           |                   |                       |                                                                                                                         |
| 7            |                                          |                                                                                        |                           |                   |                       |                                                                                                                         |
| 8            |                                          |                                                                                        |                           |                   |                       |                                                                                                                         |
| 9            | Direct bus connections only.             |                                                                                        |                           |                   |                       |                                                                                                                         |

## Environmental

| NEMA Size | Operating Position | Operating Temperature Range                                                                                                                                                                                    | Altitude                    | Corrosion-Resistance                                    |
|-----------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------|
| 00        | Horizontal         | Starters with eutectic alloy<br>Overload relay<br>-13...+149 °F<br>(-25...+65 °C)<br><br>Starters with SMP<br>Overload relay<br>-13...+131 °F<br>(-25...+55 °C)<br><br>(provided condensation<br>is prevented) | 10 000 feet before derating | All metal parts are treated for<br>corrosion-resistance |
| 0         | Vertical           |                                                                                                                                                                                                                |                             |                                                         |
| 1         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 2         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 3         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 4         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 5         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 6         | Horizontal         |                                                                                                                                                                                                                |                             |                                                         |
| 7         | Vertical           |                                                                                                                                                                                                                |                             |                                                         |
| 8         |                    |                                                                                                                                                                                                                |                             |                                                         |
| 9         |                    |                                                                                                                                                                                                                |                             |                                                         |

## Short Circuit Rating

Combination contactors and starters with disconnect switch: Bulletin 502, 506, 512, 522E, 522F, 522G, and 1232X

| Combination Contactors and Starters with Disconnect Switch: Bulletin 502, 506, 512, 522E, 522F, 522G, and 1232X |           |                                                     |                     |
|-----------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------|---------------------|
| NEMA Size                                                                                                       | Fuse Type | Available Short Circuit Amperes RMS Symmetrical [A] | Maximum Voltage [V] |
| 0...3                                                                                                           | H, K      | 5000                                                | 600                 |
| 4...5                                                                                                           | H, K      | 10 000                                              |                     |
| 0...5                                                                                                           | J, R      | 100 000                                             |                     |
| 6                                                                                                               | L         | 18 000                                              |                     |
| 7                                                                                                               | L         | 30 000                                              |                     |

| Combination Lighting Contactors with Disconnect Switch: Bulletin 502L |           |                                                     |                     |
|-----------------------------------------------------------------------|-----------|-----------------------------------------------------|---------------------|
| Lighting Contactor Rating [A]                                         | Fuse Type | Available Short Circuit Amperes RMS Symmetrical [A] | Maximum Voltage [V] |
| 20...100                                                              | H, K      | 5000                                                | 600                 |
| 200...300                                                             | H, K      | 10 000                                              |                     |
| 20...300                                                              | J, R      | 100 000                                             |                     |

| Combination Contactors and Starters with Circuit Breaker: Bulletin 503, 507, 513, 523E, 523F, 523G, and 1233X★ |           |                                                     |                     |
|----------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------|---------------------|
| Enclosure Type                                                                                                 | NEMA Size | Available Short Circuit Amperes RMS Symmetrical [A] | Maximum Voltage [V] |
| 1, 3R, 3R/4/12, 4/4X (stainless)                                                                               | 0...2     | 65 000                                              | 480                 |
|                                                                                                                | 3...5     | 65 000                                              |                     |
| Unilock 3R, 7, & 9                                                                                             | 0...2     | 10 000                                              |                     |
|                                                                                                                | 3...5     | 10 000                                              |                     |
| Bolted 3R, 7, & 9                                                                                              | 0...5     | 10 000                                              |                     |
| 3R, 3R/4/12, 4/4X (stainless)                                                                                  | 6         | 18 000                                              | 600                 |
|                                                                                                                | 7         | 30 000                                              |                     |
| 1, 3R, 3R/4/12, 4/4X (stainless)                                                                               | 0...4     | 25 000                                              |                     |
|                                                                                                                | 5         | 25 000                                              |                     |
| Unilock 3R, 7, & 9                                                                                             | 0...3     | 10 000                                              |                     |
|                                                                                                                | 4...5     | 10 000                                              |                     |
| Bolted 3R, 7, & 9                                                                                              | 0...5     | 10 000                                              |                     |
| 3R, 3R/4/12, 4/4X (stainless)                                                                                  | 6         | 18 000                                              |                     |
|                                                                                                                | 7         | 30 000                                              |                     |

| Combination Lighting Contactors with Circuit Breaker: Bulletin 503L★ |                               |                                                     |                     |
|----------------------------------------------------------------------|-------------------------------|-----------------------------------------------------|---------------------|
| Enclosure Type                                                       | Lighting Contactor Rating [A] | Available Short Circuit Amperes RMS Symmetrical [A] | Maximum Voltage [V] |
| 1, 3R, 3R/4/12, 4/4X (stainless)                                     | 20...300                      | 65 000                                              | 480                 |
| Unilock 3R, 7, & 9                                                   | 20...300                      | 10 000                                              |                     |
| Bolted 3R, 7, & 9                                                    | 20...300                      | 10 000                                              |                     |
| 1, 3R, 3R/4/12, 4/4X (stainless)                                     | 20...300                      | 25 000                                              | 600                 |
| Unilock 3R, 7, & 9                                                   | 20...100                      | 10 000                                              |                     |
| Unilock 3R, 7, & 9                                                   | 20...300                      | 10 000                                              |                     |
| Bolted 3R, 7, & 9                                                    | 20...300                      | 10 000                                              |                     |

★ For the most up-to-date SCCRs, please see the on-line Industrial Controls catalog at [www.ab.com/catalogs](http://www.ab.com/catalogs).

## AC Coil Data

| NEMA Size             | Operating Volt Amperes Burden [VA] |        | Heat Dissipation [W] | Coil Operating Limits |
|-----------------------|------------------------------------|--------|----------------------|-----------------------|
|                       | 60 Hz Coils                        |        |                      |                       |
|                       | Inrush                             | Sealed |                      |                       |
| 00                    | 70                                 | 8      | 2.7                  | 85...110%             |
| 0                     | 192                                | 29     | 5.9                  |                       |
| 1 & 1P                | 192                                | 29     | 5.9                  |                       |
| 2 (2...3 poles)       | 240                                | 29     | 5.9                  |                       |
| 2 (4...5 poles)       | 315                                | 38     | 5.9                  |                       |
| 3 (2...3 poles)       | 660                                | 45     | 10                   |                       |
| 3 (4...5 poles)       | 840                                | 58     | 10                   |                       |
| 4 (2...3 poles)       | 1225                               | 69     | 14.8                 |                       |
| 4 (4...5 poles)       | 1490                               | 96     | 14.8                 |                       |
| 5 (Series L)          | 1490                               | 96     | 19.8                 |                       |
| 6★                    | 4860                               | 254    | 65.7                 |                       |
| 6 (Interposing relay) | 52.44                              | 3.96   | —                    |                       |
| 7‡                    | Economized DC Coil                 |        | —                    |                       |
| 7 (Interposing relay) | 74.40                              | 9.84   | —                    |                       |
| 8§                    | Economized DC Coil                 |        | —                    |                       |
| 8 (Interposing relay) | 74.40                              | 9.84   | —                    |                       |
| 9♣                    | Economized DC Coil                 |        | —                    |                       |
| 9 (Interposing relay) | 144                                | 19.20  | —                    |                       |

★ This rating is for the size 6 contactor coil only. All starters are shipped with an interposing relay as standard.

‡ Size 7 starters are shipped with a 250 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

§ Size 8 starters are shipped with a 350 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

♣ Size 9 starters are shipped with a 750 VA control circuit transformer and an interposing relay with a 120V coil. Voltage is then rectified to DC for the contactor coil.

## Auxiliary Contacts (NEMA A600 and P300) — Bulletin 595, 596

| Maximum AC Contact Rating Per Pole                                                                              |                                          |      |                                           |                                       |         |       |
|-----------------------------------------------------------------------------------------------------------------|------------------------------------------|------|-------------------------------------------|---------------------------------------|---------|-------|
| AC Rating Designation                                                                                           | Maximum Voltage<br>60 or 50 Hz           | [A]  |                                           | Continuous<br>Carrying Current<br>[A] | [VA]    |       |
|                                                                                                                 |                                          | Make | Break                                     |                                       | Make    | Break |
| A600                                                                                                            | 120                                      | 60   | 6                                         | 10                                    | 7200    | 720   |
|                                                                                                                 | 240                                      | 30   | 3                                         | 10                                    | 7200    | 720   |
|                                                                                                                 | 480                                      | 15   | 1.5                                       | 10                                    | 7200    | 720   |
|                                                                                                                 | 600                                      | 12   | 1.2                                       | 10                                    | 7200    | 720   |
| Maximum DC Contact Rating Per Pole for 595, 596 Auxiliary Contacts (Maximum Continuous Carrying Current is 5 A) |                                          |      |                                           |                                       |         |       |
| DC Rating Designation                                                                                           | 125V DC                                  |      | 250V DC                                   |                                       | 600V DC |       |
| P300                                                                                                            | 0.55 A                                   |      | 0.55 A<br>(Requires 2 Contacts in Series) |                                       | —       |       |
|                                                                                                                 | 1.1 A<br>(Requires 2 Contacts in Series) |      |                                           |                                       |         |       |

### Load-Life Curves

Bulletin 500 Line contactors and starters are designed to provide superior performance in a variety of applications. These load-life curves are based on Rockwell Automation tests according to the requirements defined in IEC 947-4. Actual contact life may vary based on the application, duty cycle, and environmental conditions from that indicated by the curves.

To find the contactor's estimated electrical life, follow these guidelines:

- Choose the appropriate graph that most closely approximates the utilization category of the application.
- Locate the intersection of the life-load curve of the appropriate contactor with the application's operational current ( $I^B$ ) found on the horizontal axis.
- Read the estimated contact life in millions of operations along the vertical axis.

### Contact Life for Mixed Utilization Categories AC3 and AC4

In many applications, the utilization category cannot be defined as either purely AC3 or AC4. In those applications, the electrical life of the contactor can be estimated from the following equation:

$$L_{mixed} = \frac{L_{AC3}}{1 + P_{AC4} \left( \frac{L_{AC3}}{L_{AC4}} - 1 \right)}$$

Where:

$L_{mixed}$  = Approximate contact life for a mixed AC3/AC4 utilization category application

$L_{AC3}$  = Approximate contact life in operations for AC3 utilization category (from AC3 life-load curves below)

$L_{AC4}$  = Approximate contact life in operations for AC4 utilization category (from AC4 life-load curves below)

$P_{AC4}$  = Percentage of AC4 operations

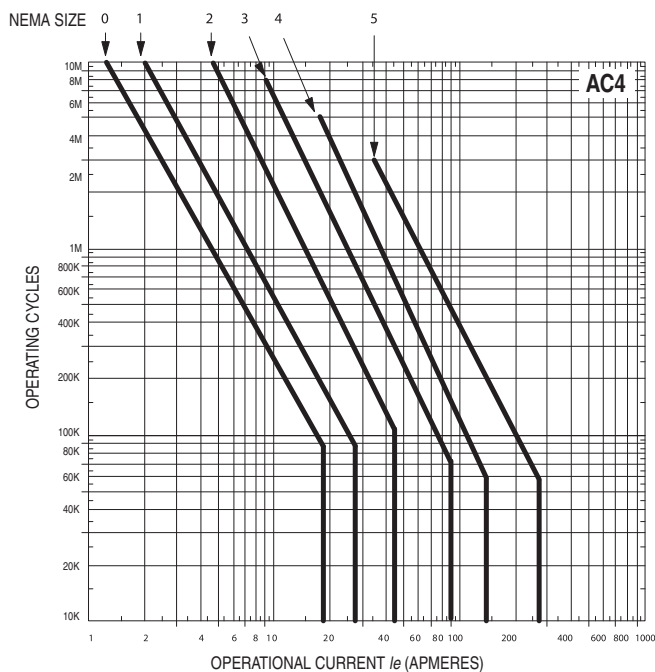
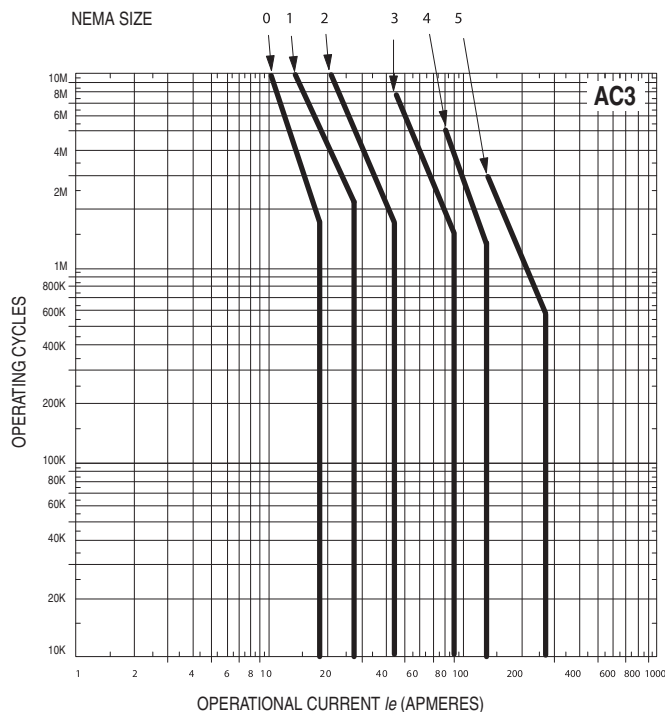
### Utilization Categories

#### Category Typical Duty

AC3 Starting of squirrel cage motors and switching off only after the motor is up to speed.

AC4 Starting of squirrel cage motors with inching and plugging duty.

### Bulletin 500 Load/ Life Curves — AC3 and AC4



## Group Motor Ratings for NEMA Contactors/Starters

| Manual Starters | FLA Range (Amps) | Group Rating (480V) |              | Contactors |         |         |         |         |
|-----------------|------------------|---------------------|--------------|------------|---------|---------|---------|---------|
|                 |                  | w/o Limiter         | with Limiter | Size 00    | Size 0  | Size 1  | Size 2  | Size 3  |
| 140-MN-0016     | 0.10...0.16      | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0025     | 0.16...0.25      | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0040     | 0.25...0.40      | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0063     | 0.40...0.63      | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0100     | 0.63...1.0       | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0160     | 1.0...1.6        | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0250     | 1.6...2.5        | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0400     | 2.5...4.0        | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-0630     | 4.0...6.3        | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-1000     | 6.3...10.0       | 42 kA               | 42 kA        | 500-TO★    | 500-AO★ | 500-BO★ | —       | —       |
| 140-MN-1600     | 10.0...16.0      | 10 kA               | 42 kA        | —          | 500-AO★ | 500-BO★ | 500-CO★ | —       |
| 140-MN-2000     | 16.0...20.0      | 10 kA               | 14 kA        | —          | 500-AO★ | 500-BO★ | 500-CO★ | —       |
| 140-MN-2500     | 20.0...25.0      | 10 kA               | 10 kA        | —          | —       | 500-BO★ | 500-CO★ | —       |
| 190-MN+190-P320 | 24.0...32.0      | —                   | 42 kA        | —          | —       | —       | 500-CO★ | 500-DO★ |
| 190-MN+190-P400 | 32.0...42.0      | —                   | 30 kA        | —          | —       | —       | 500-CO★ | 500-DO★ |

| Manual Starters | FLA Range (Amps) | Group Rating (480V) |              | Starters |         |         |         |         |
|-----------------|------------------|---------------------|--------------|----------|---------|---------|---------|---------|
|                 |                  | w/o Limiter         | with Limiter | Size 00  | Size 0  | Size 1  | Size 2  | Size 3  |
| 140-MN-0016     | 0.10...0.16      | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0025     | 0.16...0.25      | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0040     | 0.25...0.40      | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0063     | 0.40...0.63      | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0100     | 0.63...1.0       | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0160     | 1.0...1.6        | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0250     | 1.6...2.5        | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0400     | 2.5...4.0        | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-0630     | 4.0...6.3        | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-1000     | 6.3...10.0       | 42 kA               | 42 kA        | 509-TO★  | 509-AO★ | 509-BO★ | —       | —       |
| 140-MN-1600     | 10.0...16.0      | 10 kA               | 42 kA        | —        | 509-AO★ | 509-BO★ | 509-CO★ | —       |
| 140-MN-2000     | 16.0...20.0      | 10 kA               | 14 kA        | —        | 509-AO★ | 509-BO★ | 509-CO★ | —       |
| 140-MN-2500     | 20.0...25.0      | 10 kA               | 10 kA        | —        | —       | 509-BO★ | 509-CO★ | —       |
| 190-MN+190-P320 | 24.0...32.0      | —                   | 42 kA        | —        | —       | —       | 509-CO★ | 509-DO★ |
| 190-MN+190-P400 | 32.0...42.0      | —                   | 30 kA        | —        | —       | —       | 509-CO★ | 509-DO★ |

★ Cat. No. is incomplete. Refer to the appropriate product selection application to complete.

## Full Load Currents of 3-Phase, 60 Hertz AC Induction Motors

The full load currents listed below are “average values” for horsepower rated motors of several manufacturers at the more common rated voltages and speeds. These “average values”, along with the similar values listed in the U. S. National Electrical Code (NEC), should be used only as a guide for selecting suitable components for the Motor Branch Circuit. The rated full load current, shown on the motor nameplate, may vary considerably from the listed value depending on the specific motor design.

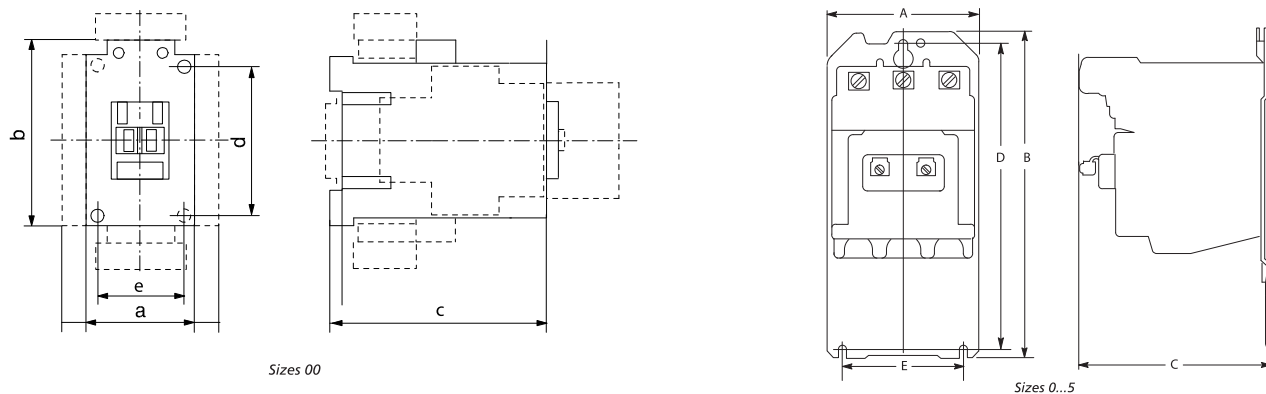
**ATTENTION:** The motor nameplate full load current should always be used in determining the rating of the devices used for Motor Running Overcurrent Protection.

| HP    | RPM★ | Full Load Current [A] |      |      |      |       |       |
|-------|------|-----------------------|------|------|------|-------|-------|
|       |      | 208V                  | 240V | 480V | 600V | 2200V | 4000V |
| 1/4   | 3600 | 1.20                  | 1.04 | 0.52 | 0.42 | —     | —     |
|       | 1800 | 1.39                  | 1.20 | 0.60 | 0.48 | —     | —     |
|       | 1200 | 1.62                  | 1.40 | 0.70 | 0.56 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 1/3   | 3600 | 1.48                  | 1.28 | 0.64 | 0.51 | —     | —     |
|       | 1800 | 1.69                  | 1.46 | 0.73 | 0.58 | —     | —     |
|       | 1200 | 1.89                  | 1.64 | 0.82 | 0.66 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 1/2   | 3600 | 2.08                  | 1.80 | 0.90 | 0.72 | —     | —     |
|       | 1800 | 2.54                  | 2.20 | 1.10 | 0.88 | —     | —     |
|       | 1200 | 2.89                  | 2.50 | 1.25 | 1.00 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 3/4   | 3600 | 2.89                  | 2.50 | 1.25 | 1.00 | —     | —     |
|       | 1800 | 3.47                  | 3.00 | 1.50 | 1.20 | —     | —     |
|       | 1200 | 3.81                  | 3.30 | 1.65 | 1.32 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 1     | 3600 | 3.51                  | 3.04 | 1.52 | 1.22 | —     | —     |
|       | 1800 | 4.25                  | 3.68 | 1.84 | 1.47 | —     | —     |
|       | 1200 | 4.60                  | 3.98 | 1.99 | 1.59 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 1-1/2 | 3600 | 5.04                  | 4.36 | 2.18 | 1.74 | —     | —     |
|       | 1800 | 5.80                  | 5.02 | 2.51 | 2.01 | —     | —     |
|       | 1200 | 6.49                  | 5.62 | 2.81 | 2.25 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 2     | 3600 | 6.51                  | 5.64 | 2.82 | 2.26 | —     | —     |
|       | 1800 | 7.18                  | 6.22 | 3.11 | 2.49 | —     | —     |
|       | 1200 | 8.20                  | 7.10 | 3.55 | 2.84 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 3     | 3600 | 9.24                  | 8.00 | 4.00 | 3.20 | —     | —     |
|       | 1800 | 10.4                  | 9.04 | 4.52 | 3.62 | —     | —     |
|       | 1200 | 11.6                  | 10.1 | 5.04 | 4.03 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 5     | 3600 | 15.7                  | 13.6 | 6.80 | 5.44 | —     | —     |
|       | 1800 | 15.9                  | 13.8 | 6.88 | 5.50 | —     | —     |
|       | 1200 | 18.6                  | 16.1 | 8.07 | 6.46 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 7-1/2 | 3600 | 22.1                  | 19.1 | 9.57 | 7.66 | —     | —     |
|       | 1800 | 25.0                  | 21.7 | 10.8 | 8.66 | —     | —     |
|       | 1200 | 26.6                  | 23.1 | 11.5 | 9.22 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 10    | 3600 | 29.7                  | 25.7 | 12.9 | 10.3 | —     | —     |
|       | 1800 | 31.5                  | 27.3 | 13.7 | 10.9 | —     | —     |
|       | 1200 | 32.9                  | 28.4 | 14.2 | 11.4 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 15    | 3600 | 43.0                  | 37.2 | 18.6 | 14.9 | —     | —     |
|       | 1800 | 46.7                  | 40.4 | 20.2 | 16.2 | —     | —     |
|       | 1200 | 49.1                  | 42.5 | 21.3 | 17.0 | —     | —     |
|       | 900  | —                     | —    | —    | —    | —     | —     |
| 20    | 3600 | 59.2                  | 51.3 | 25.6 | 20.5 | 5.2   | 2.9   |
|       | 1800 | 59.6                  | 51.6 | 25.8 | 20.6 | 5.3   | 3.0   |
|       | 1200 | 61.7                  | 53.4 | 26.7 | 21.4 | 5.4   | 3.1   |
|       | 900  | —                     | —    | —    | —    | 5.8   | 3.2   |
| 25    | 3600 | 70.9                  | 61.4 | 30.7 | 24.6 | 6.3   | 3.4   |
|       | 1800 | 74.7                  | 64.7 | 32.3 | 25.9 | 6.5   | 3.6   |
|       | 1200 | 76.0                  | 65.8 | 32.9 | 26.3 | 6.7   | 3.7   |
|       | 900  | —                     | —    | —    | —    | 6.9   | 3.8   |
| 30    | 3600 | 85.7                  | 74.2 | 37.1 | 29.7 | —     | —     |
|       | 1800 | 88.2                  | 76.4 | 38.2 | 30.5 | 7.8   | 4.3   |
|       | 1200 | 91.6                  | 79.3 | 39.7 | 31.7 | 8.0   | 4.4   |
|       | 900  | —                     | —    | —    | —    | 8.2   | 4.5   |
| 40    | 3600 | 111                   | 96.0 | 48.0 | 38.4 | —     | —     |
|       | 1800 | 117                   | 102  | 50.8 | 40.6 | 10.0  | 5.5   |
|       | 1200 | 119                   | 103  | 51.7 | 41.4 | 10.3  | 5.7   |
|       | 900  | —                     | —    | —    | —    | 10.6  | 5.8   |
| 600   | 3600 | —                     | —    | —    | —    | 11.5  | 6.3   |
|       | 600  | —                     | —    | —    | —    | —     | —     |

★ Synchronous speed nameplate is usually less due to slip.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 500 and 500F Contactors — NEMA sizes 0...4

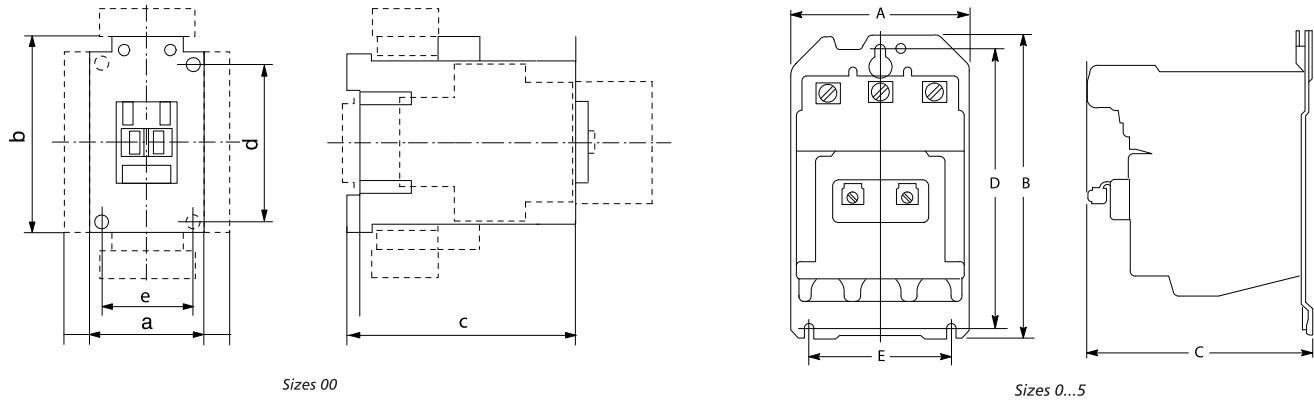


| NEMA Size | Number of Switching Poles | Dimensions in Inches (Millimeters) |                 |                 |               |               | Approximate Shipping Weight [lb (kg)] |
|-----------|---------------------------|------------------------------------|-----------------|-----------------|---------------|---------------|---------------------------------------|
|           |                           | A Width                            | B Height        | C Depth         | D             | E             |                                       |
| 0...1     | 2...3                     | 3-9/16 (90.5)                      | 7-5/8 (193)     | 4-15/32 (113)   | 7-1/16 (180)  | 2-3/4 (70)    | 3 (1.4)                               |
|           | 4                         | 4-3/8 (111)                        |                 |                 |               |               | 3-1/2 (1.6)                           |
|           | 5                         | 4-15/16 (125)                      |                 |                 |               |               | 4-3/4 (2.2)                           |
| 2         | 2...3                     | 3-15/16 (100)                      | 9-25/32 (248)   | 4-23/32 (120)   | 9-1/4 (235)   | 3-5/32 (80)   | 4 (1.8)                               |
|           | 4                         | 4-31/32 (126)                      |                 |                 |               |               | 4-3/4 (2.2)                           |
|           | 5                         | 5-1/2 (140)                        |                 |                 |               |               | 6-1/4 (2.8)                           |
| 3         | 2...3                     | 6-1/8 (155.5)                      | 10-3/64 (255)   | 6-19/32 (167.4) | 8-21/32 (220) | 5-33/64 (140) | 14.5 (6.5)                            |
|           | 4                         | 7-15/16 (201.6)                    |                 |                 |               |               | 16 (7.25)                             |
|           | 5                         | 8-13/16 (223.8)                    |                 |                 |               |               | 18 (8)                                |
| 4         | 2...3                     | 7 (178)                            | 12-11/64 (309)‡ | 7-13/16 (198.4) | 9-27/32 (250) | 6-5/16 (160)  | 22 (10)                               |
|           | 4                         | 9-1/16 (230.2)                     |                 |                 |               |               | 25.5 (11.5)                           |
|           | 5                         | 10-7/16 (265.1)                    |                 |                 |               |               | 28.5 (13)                             |

‡ For Feed-Through Wiring this dimension is 11-11/16 in. (297 mm).

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for NEMA sizes 00, 5...9 for Bulletin 500 and 500F Contactors



**Note:** Top mounting hole on Size 00 is 1/4 in. (6.35 mm) to the left of centerline on Open Type. Mounting screws: 3...#10 for sizes 0...2, 1/4...#20, or 5/16...#18 for sizes 3...5.

| NEMA Size              | Number of Switching Poles | Dimensions in Inches (Millimeters) |                    |                    |                  |                  | Approximate Shipping Weight [lb (kg)] |
|------------------------|---------------------------|------------------------------------|--------------------|--------------------|------------------|------------------|---------------------------------------|
|                        |                           | A Width                            | B Height           | C Depth            | D                | E                |                                       |
| 00<br>5/10A            | 1-2-3                     | 1-25/32<br>(45)                    | 3-3/16<br>(81)     | 3-11/64<br>(80.5)  | 2-23/64<br>(60)  | 1-25/64<br>(35)  | 1<br>(0.45)                           |
| 0...1<br>15/20A<br>30A | 2...3                     | 3-9/16<br>(90.5)                   | 6<br>(152)★        | 4-15/32<br>(113)   | 5-1/2<br>(140)   | 2-3/4<br>(70)    | 3<br>(1.4)                            |
|                        | 4                         | 4-3/8<br>(111)                     |                    |                    |                  |                  | 3-1/2<br>(1.6)                        |
|                        | 5                         | 4-15/16<br>(125)                   |                    |                    |                  |                  | 4-3/4<br>(2.2)                        |
| 2<br>60A               | 2...3                     | 3-15/16<br>(100)                   | 6-27/32<br>(173)★  | 4-23/32<br>(120)   | 6-5/16<br>(160)  | 3-5/32<br>(80)   | 4<br>(1.8)                            |
|                        | 4                         | 4-31/32<br>(126)                   |                    |                    |                  |                  | 4-3/4<br>(2.2)                        |
|                        | 5                         | 5-1/2<br>(140)                     |                    |                    |                  |                  | 6-1/4<br>(2.8)                        |
| 3<br>100A              | 2...3                     | 6-1/8<br>(155.5)                   | 10-3/64<br>(255)   | 6-19/32<br>(167.4) | 8-21/32<br>(220) | 5-33/64<br>(140) | 14.5<br>(6.5)                         |
|                        | 4                         | 7-15/16<br>(201.6)                 |                    |                    |                  |                  | 16<br>(7.25)                          |
|                        | 5                         | 8-13/16<br>(223.8)                 |                    |                    |                  |                  | 18<br>(8)                             |
| 4<br>200A              | 2...3                     | 7<br>(178)                         | 12-11/64<br>(309)‡ | 7-13/16<br>(198.4) | 9-27/32<br>(250) | 6-5/16<br>(160)  | 22<br>(10)                            |
|                        | 4                         | 9-1/16<br>(230.2)                  |                    |                    |                  |                  | 25.5<br>(11.5)                        |
|                        | 5                         | 10-7/16<br>(265.1)                 |                    |                    |                  |                  | 28.5<br>(13)                          |
| 5<br>300A              | 2...3                     | 7<br>(178)                         | 13-25/64<br>(340)§ | 8-17/32<br>(217)   | 9-27/32<br>(250) | 6-5/16<br>(160)  | 24<br>(10.9)                          |

★ For Feed-Through Wiring this dimension is 6-15/16 in. (176 mm).

‡ For Feed-Through Wiring this dimension is 11-11/16 in. (297 mm).

§ For Feed-Through Wiring this dimension is 12-37/64 in. (320 mm).

## Approximate Dimensions

## 505 NEMA Full Voltage Reversing Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 505 Full Voltage Reversing Starters with Eutectic Alloy Overload Relay



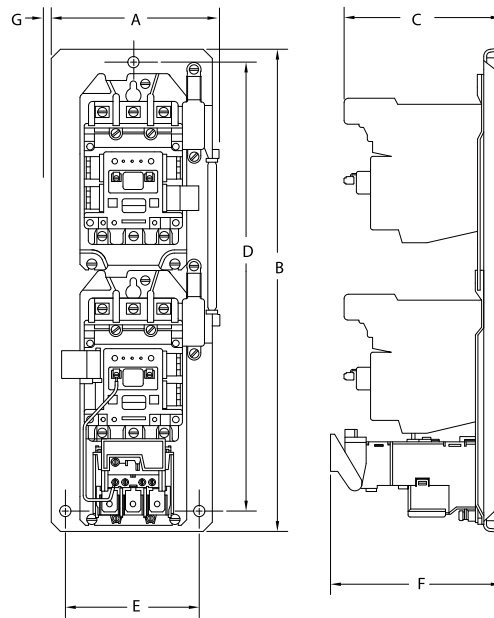
| NEMA Size | Style                                   | Dimensions in Inches (Millimeters)                                                                       |                  |                     |                |                |                |                  | Approx. Shipping Weight [lb (kg)] |
|-----------|-----------------------------------------|----------------------------------------------------------------------------------------------------------|------------------|---------------------|----------------|----------------|----------------|------------------|-----------------------------------|
|           |                                         | A Width                                                                                                  | B Height         | C Relay Reset Depth | D              | E              | F              | G Depth          |                                   |
| 00        | With Eutectic Alloy Overload Protection | 4-7/8 (124)                                                                                              | 6-9/16 (167)     | 3-27/32 (98)        | 6-1/64 (153)   | 4-3/8 (111)    | —              | —                | 4 (1.8)                           |
| 0...1     |                                         | 8 (203)                                                                                                  | 9-5/32 (233)     | 4-11/16 (119)       | 8-21/32 (220)  | 7-3/32 (180)   | —              | 4-5/8 (117)      | 10 (4.5)                          |
| 2         |                                         | 9-1/16 (230)                                                                                             | 10-11/32 (263)   | 4-11/16 (119)       | 9-27/32 (250)  | 7-7/8 (200)    | —              | 4-29/32 (125)    | 12-3/4 (5.8)                      |
| 3         |                                         | 12-7/8 (327)                                                                                             | 12-29/64 (316)   | 6-21/64 (161)       | 9-27/32 (250)  | 11-13/16 (300) | 11-13/16 (300) | 6-55/64 (174)    | 34 (15.5)                         |
| 4         |                                         | 14-27/32 (377)                                                                                           | 14-5/8 (371)     | 6-23/32 (171)       | 11-13/16 (300) | 13-25/32 (350) | 13-25/32 (350) | 8-5/64 (205)     | 52 (24)                           |
| 5         |                                         | 14-27/32 (377)                                                                                           | 17-55/64 (453)   | 8-35/64 (217)       | 16-15/16 (430) | 13-25/32 (350) | 13-25/32 (350) | 8-13/16 (224)    | 65 (29.5)                         |
| 6         |                                         | 23-13/32 (594.5)                                                                                         | 25-5/64 (637)    | 10-9/16 (268.5)     | —              | —              | —              | 11-27/64 (290)   | —                                 |
| 7         |                                         | 31-1/2 (800)                                                                                             | 32-13/16 (833.4) | 12-9/32 (311.9)     | —              | —              | —              | —                | —                                 |
| 8         |                                         | 35-1/4 (896)                                                                                             | 36-7/8 (937)     | 12-9/32 (311.9)     | —              | —              | —              | —                | —                                 |
| 9         |                                         | For dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor. |                  |                     |                |                |                |                  |                                   |
| 00        | Without Overload Protection             | 4-7/8 (124)                                                                                              | 4-5/16 (110)     | 2-3/16 (55.6)       | 3-3/4 (95.3)   | 4-3/8 (111)    | —              | —                | 2-3/4 (1.2)                       |
| 0...1     |                                         | 8 (203)                                                                                                  | 7-19/32 (193)    | —                   | 7-3/32 (180)   | 7-3/32 (180)   | —              | 4-5/8 (117)      | 8-3/4 (4)                         |
| 2         |                                         | 9-1/16 (230)                                                                                             | 8-3/8 (213)      | —                   | 7-7/8 (200)    | 7-7/8 (200)    | —              | 4-29/32 (125)    | 11 (5)                            |
| 3         |                                         | 12-7/8 (327)                                                                                             | 10-21/32 (271)   | —                   | 9-27/32 (250)  | 11-13/16 (300) | 11-13/16 (300) | 6-55/64 (174)    | 30 (13.5)                         |
| 4         |                                         | 14-27/32 (377)                                                                                           | 12-23/32 (323)   | —                   | 11-13/16 (300) | 13-25/32 (350) | 13-25/32 (350) | 8-5/64 (205)     | 47 (21.3)                         |
| 5         |                                         | 14-27/32 (377)                                                                                           | 12-23/32 (323)   | —                   | 11-13/16 (300) | 13-25/32 (350) | 13-25/32 (350) | 8-13/16 (224)    | 47 (21.3)                         |
| 6         |                                         | 23-13/32 (594.5)                                                                                         | 17-1/16 (433)    | —                   | —              | —              | —              | 11-27/64 (290)   | —                                 |
| 7         |                                         | 31-1/2 (800)                                                                                             | 32-13/16 (833.4) | —                   | —              | —              | —              | 11-11/32 (288.1) | —                                 |
| 8         |                                         | 35-1/4 (896)                                                                                             | 36-7/8 (937)     | —                   | —              | —              | —              | 11-13/16 (300)   | —                                 |
| 9         |                                         | For dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor. |                  |                     |                |                |                |                  |                                   |

★ Sizes 00...2 only.

‡ Sizes 3...5 only.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 505V Full Voltage Reversing Starters with Solid State Overload Relay

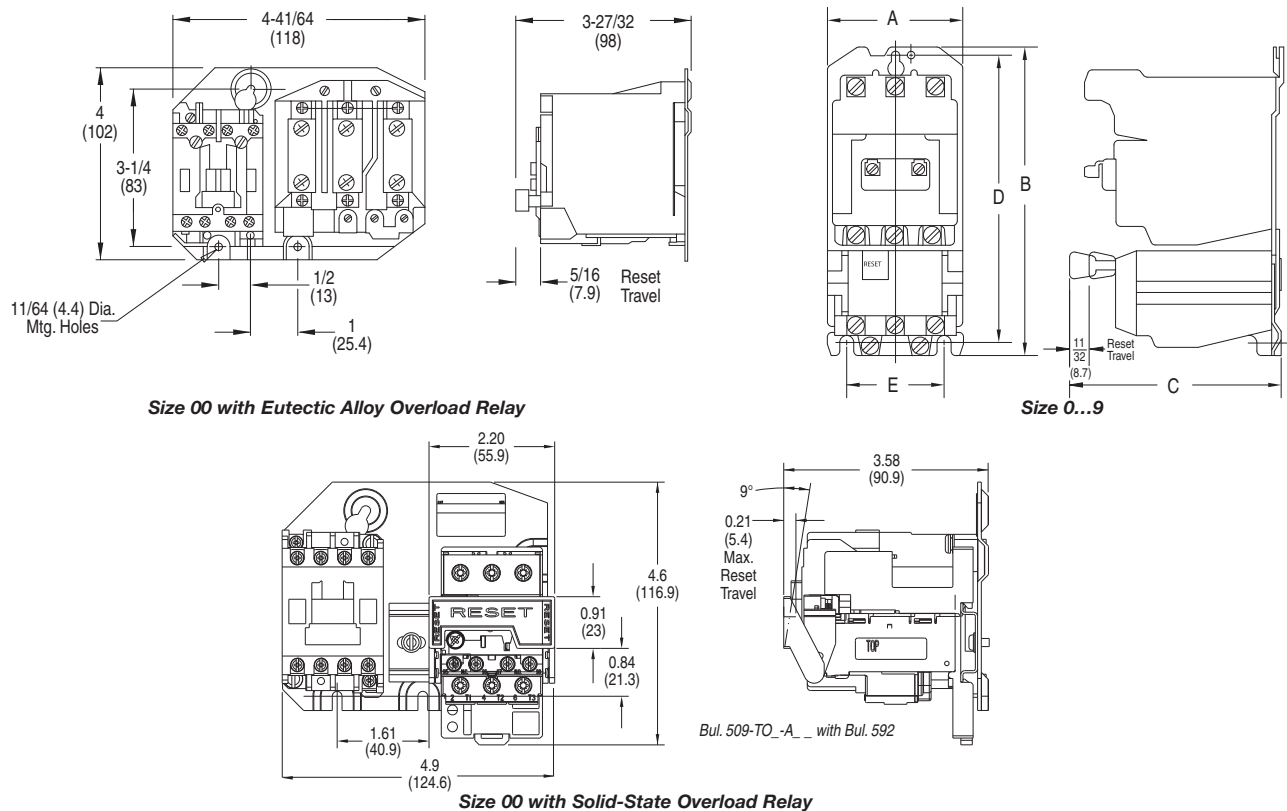


| NEMA Size | Overload Relay      | Dimensions in Inches (Millimeters) |                |               |                |               |                     |             | Approx. Shipping Weight [lb (kg)]        |
|-----------|---------------------|------------------------------------|----------------|---------------|----------------|---------------|---------------------|-------------|------------------------------------------|
|           |                     | A Width                            | B Height       | C Depth       | D              | E             | F Relay Reset Depth | G★          |                                          |
| 0...1     | E1 Plus Solid-State | 5-11/16 (144)                      | 14-11/16 (373) | 4-31/32 (126) | 13-25/32 (350) | 4-5/16 (109)  | 5 (127)             | 1/16 (1.6)  | Size 0: 11.5 (5.2)<br>Size 1: 12.2 (5.5) |
|           |                     | 5-11/16 (144)                      | 16-27/32 (428) | 4-31/32 (126) | 13-25/32 (350) | 4-11/32 (110) | 5-9/32 (134)        | 1/16 (1.6)  |                                          |
| 2         | E1 Plus Solid-State | 6-1/8 (156)                        | 17-1/16 (434)  | 5-7/32 (133)  | 15-3/4 (400)   | 4-23/32 (120) | 5 (127)             | 1/4 (6.4)   | 14.5 (6.6)                               |
|           |                     | 6-1/8 (156)                        | 18-7/8 (479)   | 5-7/32 (133)  | 15-3/4 (400)   | 4-23/32 (120) | 5-9/32 (134)        | 1/4 (6.4)   |                                          |
| 3         | E1 Plus Solid-State | 7-17/32 (192)                      | 25-1/8 (639)   | 7-19/32 (193) | 21-21/32 (550) | 5-29/32 (150) | 7-1/16 (179)        | 1-3/32 (28) | 57.4 (26.0)                              |
|           |                     | 7-17/32 (192)                      | 27-13/32 (696) | 7-19/32 (193) | 21-21/32 (550) | 5-29/32 (150) | 7-5/32 (182)        | 1-3/32 (28) |                                          |
| 4         | E1 Plus Solid-State | 8-5/32 (208)                       | 29-3/32 (739)  | 8-13/16 (224) | 25-19/32 (650) | 6-23/32 (171) | 7-15/32 (190)       | 2 (51)      | 86.0 (39.0)                              |
|           |                     | 8-5/32 (208)                       | 29-3/32 (739)  | 8-13/16 (224) | 25-19/32 (650) | 6-23/32 (171) | 8-11/16 (221)       | 2-5/32 (55) |                                          |
| 5         | E1 Plus Solid-State | 8-7/16 (215)                       | 37-7/8 (962)   | 9-17/32 (242) | 36-31/32 (939) | 6-11/16 (170) | 9-9/32 (236)        | 2 (51)      | 112 (50.8)                               |
|           |                     | 8-7/16 (215)                       | 37-7/8 (962)   | 9-17/32 (242) | 36-31/32 (939) | 6-11/16 (170) | 9-29/32 (252)       | 2 (51)      |                                          |

★ Allow additional space for internal wiring.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 509 Full Voltage Starters with Eutectic Alloy and Solid-State Overload Relay

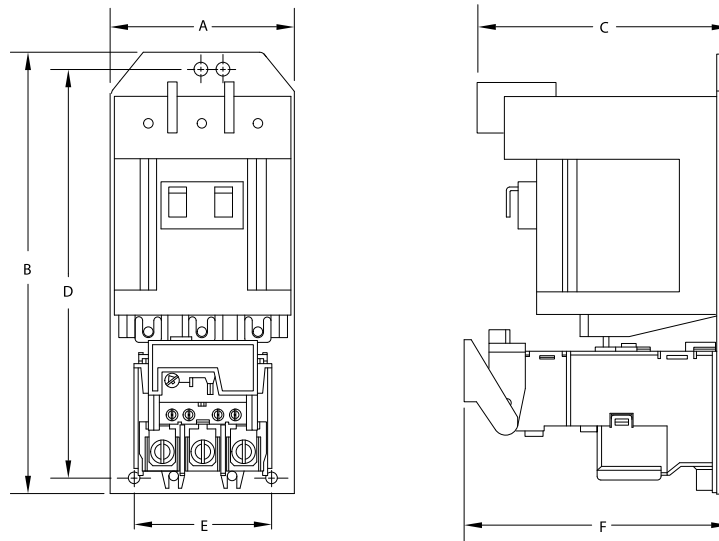


| NEMA Size | Dimensions in Inches (Millimeters) |                 |                     |                |                | Approx. Shipping Weight [lb (kg)] |
|-----------|------------------------------------|-----------------|---------------------|----------------|----------------|-----------------------------------|
|           | A Width                            | B Height        | C Relay Reset Depth | D              | E              |                                   |
| 00        | ★                                  | ★               | ★                   | ★              | ★              | 0.9 (0.4)                         |
| 0...1     | 3-9/16 (90.5)                      | 7-5/8 (194)     | 4-1/2 (114)         | 7-3/32 (180)   | 2-3/4 (70)     | 4-1/4 (1.9)                       |
| 2         | 3-15/16 (100)                      | 9-5/32 (233)    | 4-1/2 (114)         | 8-21/32 (220)  | 3-5/32 (80)    | 5-3/4 (2.6)                       |
| 3         | 6-11/64 (157)                      | 12-29/64 (316)  | 6-1/16 (154)        | 8-21/32 (220)  | 5-33/64 (140)  | 15 (6.8)                          |
| 4         | 7 (178)                            | 14-21/32 (372)  | 7-13/16 (198)       | 9-27/32 (250)  | 6-5/16 (160)   | 23-1/5 (10.6)                     |
| 5         | 7-3/8 (187)                        | 16-7/6 (429)    | 8-17/32 (217)       | 14-32/32 (380) | 6-5/16 (160)   | 35 (15.9)                         |
| 6         | 13-1/4 (337)                       | 25-3/32 (637)   | 11-7/16 (291)       | 17-23/32 (450) | 11-13/16 (300) | 160 (72)                          |
| 7         | 16-1/2 (419)                       | 30-27/32 (783)  | 12-9/32 (312)       | 18-5/16 (465)  | 15 (381)       | 247 (112)                         |
| 8         | 21-1/2 (546)                       | 39-1/2 (1003)   | 15-19/32 (396)      | 22-5/8 (575)   | 20 (508)       | 370 (168)                         |
| 9         | 34 (864)                           | 53-11/16 (1364) | 28 (711)            | —              | —              | —                                 |

★ See drawing for dimensions.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 509 Full Voltage Starters with Solid-State Overload Relay



| NEMA Size | Overload Relay      | Dimensions in Inches (Millimeters) |                |                |                |                |                     | Approx. Shipping Weight [lb (kg)] |
|-----------|---------------------|------------------------------------|----------------|----------------|----------------|----------------|---------------------|-----------------------------------|
|           |                     | A Width                            | B Height       | C Depth        | D              | E              | F Relay Reset Depth |                                   |
| 0...1     | Solid-State E1 Plus | 3-9/16 (91)                        | 7-5/8 (193)    | 4-15/32 (113)  | 7-1/16 (180)   | 2-3/4 (70)     | 4-1/2 (114)         | 4.3 (1.9)                         |
|           | Solid-State E3 Plus | 3-9/16 (91)                        | 9-25/32 (248)  | 4-15/32 (113)  | 9-1/4 (235)    | 2-3/4 (70)     | 4-5/8 (118)         |                                   |
| 2         | Solid-State E1 Plus | 3-15/16 (100)                      | 9-5/32 (233)   | 4-11/16 (119)  | 8-5/8 (219)    | 3-5/32 (80)    | 4-1/2 (114)         | 6.0 (2.7)                         |
|           | Solid-State E3 Plus | 3-15/16 (100)                      | 10-25/32 (274) | 4-23/32 (120)  | 10-1/4 (260)   | 3-5/32 (80)    | 4-5/8 (118)         |                                   |
| 3         | Solid-State E1 Plus | 6-1/8 (156)                        | 12-7/16 (316)  | 6-19/32 (168)  | 8-21/32 (220)  | 5-1/2 (140)    | 6-1/16 (154)        | 16.0 (7.3)                        |
|           | Solid-State E3 Plus | 6-1/8 (156)                        | 14-9/16 (370)  | 6-19/32 (168)  | 8-21/32 (220)  | 5-1/2 (140)    | 5-61/64 (151)       |                                   |
| 4         | Solid-State E1 Plus | 6-1/2 (165)                        | 16-1/2 (419)   | 7-13/16 (198)  | 14-31/32 (380) | 6-5/16 (160)   | 7-27/32 (199)       | 24.6 (11.2)                       |
|           | Solid-State E3 Plus | 6-1/2 (165)                        | 16-1/2 (419)   | 7-13/16 (198)  | 14-31/32 (380) | 6-5/16 (160)   | 8-29/64 (215)       |                                   |
| 5         | Solid-State E1 Plus | 6-1/2 (165)                        | 16-29/32 (429) | 8-11/32 (212)  | 14-31/32 (380) | 6-5/16 (160)   | 7-5/8 (194)         | 33.9 (15.4)                       |
|           | Solid-State E3 Plus | 6-1/2 (165)                        | 16-29/32 (429) | 8-11/32 (212)  | 14-31/32 (380) | 6-5/16 (160)   | 8-11/64 (208)       |                                   |
| 6         | Solid-State E1 Plus | 13-1/4 (337)                       | 25-3/32 (637)  | 11-13/32 (289) | 17-23/32 (450) | 11-13/16 (300) | 9-25/32 (248)       | 116 (52.6)                        |
|           | Solid-State E3 Plus | 13-1/4 (337)                       | 25-3/32 (637)  | 11-13/32 (289) | 17-23/32 (450) | 11-13/16 (300) | 9-5/8 (244)         |                                   |

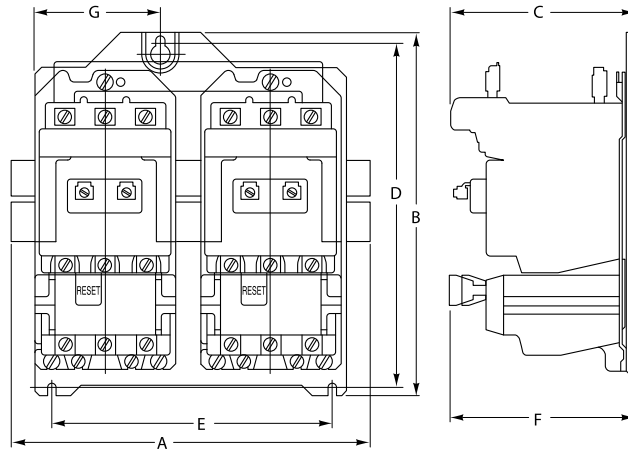
**Note:** For Bulletin 509 Size 00, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

## Approximate Dimensions

## 520E, 520F, and 520G NEMA Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

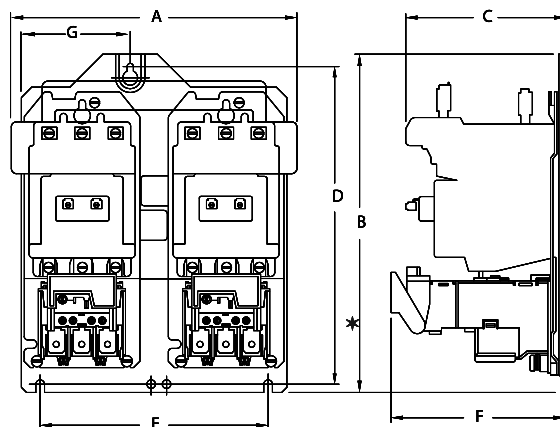
### Open Type without Enclosure for Bulletin 520E, 520F, and 520G Multi-Speed Starters with Eutectic Alloy Overload Relay



| NEMA<br>Size                                   | Dimensions in Inches (Millimeters) |                     |                  |                   |                   |                           |                  | Approx.<br>Shipping<br>Weight<br>[lb (kg)] |
|------------------------------------------------|------------------------------------|---------------------|------------------|-------------------|-------------------|---------------------------|------------------|--------------------------------------------|
|                                                | A<br>Width                         | B<br>Height         | C<br>Depth       | D                 | E                 | F<br>Relay<br>Reset Depth | G                |                                            |
| 2-Speed Separate Winding Bulletin 520E         |                                    |                     |                  |                   |                   |                           |                  |                                            |
| 0...1                                          | 8<br>(203)                         | 9-5/32<br>(233)     | 4-11/16<br>(119) | 8-21/32<br>(220)  | 7-3/32<br>(180)   | —                         | 4-5/8<br>(117)   | 11-1/4<br>(5.1)                            |
| 2                                              | 9-1/16<br>(230)                    | 10-11/32<br>(263)   | 4-11/16<br>(119) | 9-27/32<br>(250)  | 7-7/8<br>(200)    | —                         | 4-29/32<br>(125) | 13-3/4<br>(6.2)                            |
| 3                                              | 12-7/8<br>(327)                    | 12-29/64<br>(316)   | 6-21/64<br>(161) | 9-27/32<br>(250)  | 11-13/16<br>(300) | 6-1/16<br>(154)           | 6-55/64<br>(174) | 34<br>(15.3)                               |
| 4                                              | 14-27/32<br>(377)                  | 15-1/64<br>(381)    | 6-23/32<br>(171) | 11-13/16<br>(300) | 13-25/32<br>(350) | 7-13/16<br>(198)          | 8-5/64<br>(205)  | 54<br>(24.3)                               |
| 5                                              | 16-13/16<br>(427)                  | 17-55/64<br>(453)   | 8-35/64<br>(217) | 16-15/16<br>(430) | 15-3/4<br>(400)   | 8-17/32<br>(217)          | 8-13/16<br>(224) | 82<br>(36.9)                               |
| 2-Speed Consequent Pole Bulletin 520F and 520G |                                    |                     |                  |                   |                   |                           |                  |                                            |
| 0...1                                          | 9-5/16<br>(236.5)                  | 9-5/32<br>(233)     | 4-11/16<br>(119) | 8-21/32<br>(220)  | 7-3/32<br>(180)   | —                         | 4-5/8<br>(117)   | 12<br>(5.4)                                |
| 2                                              | 10-1/4<br>(260.4)                  | 10-11/32<br>(263)   | 4-11/16<br>(119) | 9-27/32<br>(250)  | 7-7/8<br>(200)    | —                         | 4-29/32<br>(125) | 15-1/4<br>(7)                              |
| 3                                              | 16-1/4<br>(413)                    | 12-29/64<br>(316.3) | 6-21/64<br>(161) | 9-27/32<br>(250)  | 13-25/32<br>(350) | 6-1/16<br>(154)           | 6-55/64<br>(174) | 44<br>(19.8)                               |
| 4                                              | 18-7/32<br>(463)                   | 14-39/64<br>(371)   | 6-23/32<br>(171) | 11-13/16<br>(300) | 15-3/4<br>(400)   | 7-13/16<br>(198)          | 8-5/64<br>(205)  | 63<br>(28.4)                               |
| 5                                              | 18-11/32<br>(466)                  | 17-55/64<br>(453)   | 8-35/64<br>(217) | 16-15/16<br>(430) | 15-3/4<br>(400)   | 8-17/32<br>(217)          | 8-13/16<br>(224) | 85<br>(38.6)                               |

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type Enclosure for Bulletin 520E, 520F, and 520G Multi-Speed Starters with Solid State Overload Relay



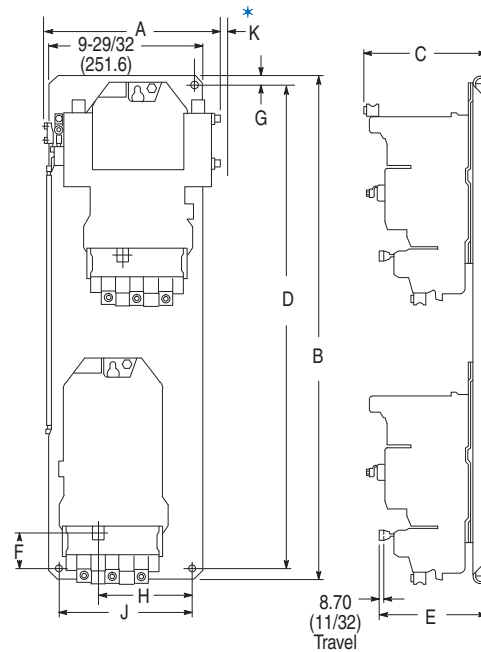
| NEMA<br>Size                                   | Overload<br>Relay      | Dimensions in Inches (Millimeters) |                   |                   |                   |                   |                        |                  | Approx.<br>Shipping<br>Weight<br>[lb (kg)] |
|------------------------------------------------|------------------------|------------------------------------|-------------------|-------------------|-------------------|-------------------|------------------------|------------------|--------------------------------------------|
|                                                |                        | A Width                            | B Height          | C Depth           | D                 | E                 | F Relay<br>Reset Depth | G                |                                            |
| 2-Speed Separate Winding Bulletin 520E         |                        |                                    |                   |                   |                   |                   |                        |                  |                                            |
| 0...1                                          | E1 Plus<br>Solid-State | 8<br>(203)                         | 9-5/32<br>(233)   | 4-5/8<br>(118)    | 8-21/32<br>(220)  | 7-3/32<br>(180)   | 4-11/16<br>(118)       | 3-3/16<br>(81)   | 11.3 (5.1)                                 |
|                                                |                        | 8<br>(203)                         | 11-11/32<br>(288) | 4-5/8<br>(118)    | 10-27/32<br>(276) | 7-3/32<br>(180)   | 4-31/32<br>(126)       | 3-3/16<br>(81)   |                                            |
| 2                                              | E1 Plus<br>Solid-State | 9-1/16<br>(230)                    | 10-11/32<br>(263) | 4-29/32<br>(125)  | 9-27/32<br>(250)  | 7-7/8<br>(200)    | 4-11/16<br>(118)       | 4-11/32<br>(110) | 14.9 (6.8)                                 |
|                                                |                        | 9-1/16<br>(230)                    | 12-5/32<br>(309)  | 4-29/32<br>(125)  | 11-21/32<br>(296) | 7-7/8<br>(200)    | 4-31/32<br>(126)       | 4-11/32<br>(110) |                                            |
| 3                                              | E1 Plus<br>Solid-State | 12-7/8<br>(327)                    | 12-13/32<br>(315) | 6-7/8<br>(175)    | 9-27/32<br>(250)  | 11-13/16<br>(300) | 6-11/32<br>(161)       | —                | 35.6 (16.1)                                |
|                                                |                        | 12-7/8<br>(327)                    | 14-9/16<br>(370)  | 6-55/64<br>(174)  | 9-27/32<br>(250)  | 11-13/16<br>(300) | 6-17/64<br>(158)       |                  |                                            |
| 4                                              | E1 Plus<br>Solid-State | 16-13/16<br>(427)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 8-9/16<br>(217)        | —                | 61.0 (27.7)                                |
|                                                |                        | 16-13/16<br>(427)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 9-3/16<br>(233)        |                  |                                            |
| 5                                              | E1 Plus<br>Solid-State | 16-13/16<br>(427)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 8-9/16<br>(217)        | —                | 93.5 (42.4)                                |
|                                                |                        | 16-13/16<br>(427)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 9-3/16<br>(233)        |                  |                                            |
| 6                                              | E1 Plus<br>Solid-State | 23-13/32<br>(595)                  | 25-3/32<br>(637)  | 11-27/64<br>(290) | 17-23/32<br>(450) | 21-31/32<br>(558) | 10-37/64<br>(269)      | —                | 254 (115)                                  |
|                                                |                        | 23-13/32<br>(595)                  | 25-3/32<br>(637)  | 11-27/64<br>(290) | 17-23/32<br>(450) | 21-31/32<br>(558) | 11-9/16<br>(294)       |                  |                                            |
| 2-Speed Consequent Pole Bulletin 520F and 520G |                        |                                    |                   |                   |                   |                   |                        |                  |                                            |
| 0...1                                          | E1 Plus<br>Solid-State | 9-5/16<br>(237)                    | 9-5/32<br>(233)   | 4-5/8<br>(117)    | 8-21/32<br>(220)  | 7-3/32<br>(180)   | 4-11/16<br>(118)       | 3-9/16<br>(91)   | 12.0 (5.4)                                 |
|                                                |                        | 9-5/16<br>(237)                    | 11-11/32<br>(288) | 4-5/8<br>(117)    | 10-27/32<br>(275) | 7-3/32<br>(180)   | 4-31/32<br>(126)       | 3-9/16<br>(91)   |                                            |
| 2                                              | E1 Plus<br>Solid-State | 10-1/4<br>(260)                    | 10-11/32<br>(263) | 4-29/32<br>(125)  | 9-27/32<br>(250)  | 7-7/8<br>(200)    | 4-11/16<br>(118)       | 4-3/4<br>(121)   | 15.6 (7.1)                                 |
|                                                |                        | 10-1/4<br>(260)                    | 12<br>(305)       | 4-29/32<br>(125)  | 11-1/2<br>(292)   | 7-7/8<br>(200)    | 4-31/32<br>(126)       | 4-3/4<br>(121)   |                                            |
| 3                                              | E1 Plus<br>Solid-State | 16-1/4<br>(413)                    | 12-3/4<br>(324)   | 6-7/8<br>(175)    | 9-27/32<br>(250)  | 13-25/32<br>(350) | 6-11/32<br>(161)       | —                | 45.0 (20.4)                                |
|                                                |                        | 16-1/4<br>(413)                    | 14-7/8<br>(378)   | 6-7/8<br>(175)    | 9-27/32<br>(250)  | 13-25/32<br>(350) | 6-15/32<br>(164)       | —                |                                            |
| 4                                              | E1 Plus<br>Solid-State | 18-7/32<br>(463)                   | 14-27/32<br>(377) | 8-3/32<br>(205)   | 11-13/16<br>(300) | 15-3/4<br>(400)   | 6-3/4<br>(172)         | —                | 73.0 (33.1)                                |
|                                                |                        | 18-3/4<br>(476)                    | 16-1/16<br>(408)  | 8-3/32<br>(205)   | 11-13/16<br>(300) | 15-3/4<br>(400)   | 7-15/16<br>(202)       | —                |                                            |
| 5                                              | E1 Plus<br>Solid-State | 18-11/32<br>(466)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 8-9/16<br>(217)        | —                | 131 (59.4)                                 |
|                                                |                        | 18-11/32<br>(466)                  | 17-7/8<br>(454)   | 8-13/16<br>(224)  | 16-15/16<br>(430) | 15-3/4<br>(400)   | 9-3/16<br>(233)        | —                |                                            |

## Approximate Dimensions

## 520VE, 520VF, and 520VG NEMA Vertically-Arranged Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Open Type without Enclosure for Bulletin 520VE, 520VF, and 520VG Multi-Speed Starters with Eutectic Alloy Overload Relay

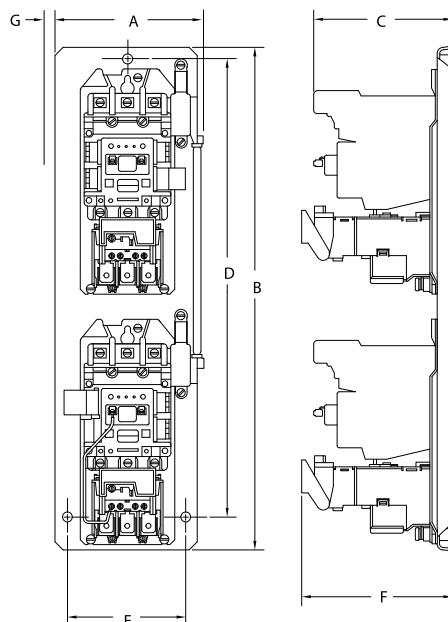


| NEMA Size                                    | Dimensions in Inches (Millimeters) |                      |                    |                      |                     |                    |                 |                    |                    |                  | Approx. Shipping Weight [lb (kg)] |
|----------------------------------------------|------------------------------------|----------------------|--------------------|----------------------|---------------------|--------------------|-----------------|--------------------|--------------------|------------------|-----------------------------------|
|                                              | A Width                            | B Height             | C Depth            | D                    | E Relay Reset Depth | F                  | G               | H                  | J                  | K                |                                   |
| 2-Speed Separate Winding Bulletin 520VE      |                                    |                      |                    |                      |                     |                    |                 |                    |                    |                  |                                   |
| 0...1                                        | 5-11/16<br>(144.5)                 | 17-9/64<br>(435.4)   | 4-15/16<br>(125.4) | 15-3/4<br>(400)      | 5<br>(127)          | 1-11/32<br>(34.1)  | 29/64<br>(11.5) | 1-13/16<br>(46)    | 4-21/64<br>(109.9) | 1/16<br>(1.6)    | 5.4<br>(12)                       |
| 2                                            | 6-1/8<br>(155.6)                   | 20-37/64<br>(522.7)  | 4-5/8<br>(117.5)   | 19-11/16<br>(500)    | 4-5/16<br>(109.5)   | 1-21/32<br>(42.1)  | 29/64<br>(11.5) | 2-27/32<br>(72.2)  | 4-23/32<br>(119.8) | 1/4<br>(6.4)     | 6.8<br>(15)                       |
| 3                                            | 7-17/32<br>(191.3)                 | 30-5/16<br>(769.9)   | 7-1/4<br>(184.1)   | 27-9/16<br>(700.1)   | 6-45/64<br>(170.3)  | 2-55/64<br>(72.6)  | 5/8<br>(15.9)   | 3-41/64<br>(92.5)  | 5-29/32<br>(150)   | 1-3/32<br>(27.8) | 18.1<br>(40)                      |
| 4                                            | 8-5/16<br>(211.2)                  | 35-1/4<br>(895.4)    | 8-23/64<br>(212.3) | 31-1/2<br>(800.1)    | 7<br>(177.8)        | 2-63/64<br>(75.8)  | 5/8<br>(15.9)   | 3-63/64<br>(101.2) | 6-11/16<br>(169.9) | 1-1/2<br>(38.1)  | 60-1/2<br>(27.4)                  |
| 5                                            | 8-7/16<br>(214.4)                  | 42-11/64<br>(1071.1) | 9-17/32<br>(242.1) | 41-17/64<br>(1048.1) | 9-17/64<br>(235.4)  | 5-45/64<br>(144.8) | 29/64<br>(11.5) | 3-23/32<br>(94.4)  | 6-11/16<br>(170)   | 3<br>(76.2)      | —                                 |
| 2-Speed Consequent Pole Bulletin 520VF/520VG |                                    |                      |                    |                      |                     |                    |                 |                    |                    |                  |                                   |
| 0...1                                        | 6-3/64<br>(164.7)                  | 17-1/2<br>(444.5)    | 4-15/16<br>(125.4) | 15-3/4<br>(400)      | 5<br>(127)          | 1-11/32<br>(34.1)  | 29/64<br>(11.5) | 2-63/64<br>(75.8)  | 5-1/8<br>(130.2)   | 33/64<br>(13.1)  | 13<br>(5.9)                       |
| 2                                            | 6-29/32<br>(175.4)                 | 20-37/64<br>(522.7)  | 4-5/8<br>(117.5)   | 19-11/16<br>(500)    | 4-5/16<br>(109.5)   | 1-21/32<br>(42.1)  | 29/64<br>(11.5) | 31-19/64<br>(83.7) | 5-33/64<br>(140.1) | 23/32<br>(18.1)  | 16<br>(7.3)                       |
| 3                                            | 9-1/8<br>(231.8)                   | 30-5/16<br>(777.9)   | 7-1/4<br>(184.1)   | 27-9/16<br>(700.1)   | 6-45/64<br>(170.3)  | 2-55/64<br>(72.6)  | 5/8<br>(15.9)   | 5-23/64<br>(136.2) | 7-31/64<br>(190.1) | 2-1/8<br>(54)    | 45-1/2<br>(20.7)                  |
| 4                                            | 10-9/32<br>(261.1)                 | 35-1/4<br>(895.4)    | 8-23/64<br>(212.3) | 31-1/2<br>(800.1)    | 7<br>(177.8)        | 2-63/64<br>(75.8)  | 5/8<br>(15.9)   | 5-61/64<br>(151.2) | 8-21/32<br>(219.9) | 3-7/32<br>(81.8) | 72-1/2<br>(32.9)                  |
| 5                                            | 11-29/32<br>(302.4)                | 42-11/64<br>(1071.1) | 9-17/32<br>(242.1) | 41-17/64<br>(1048.1) | 9-17/64<br>(235.4)  | 5-45/64<br>(144.8) | 13/32<br>(10.3) | 5-11/16<br>(144.4) | 8-21/32<br>(220)   | 4<br>(101.6)     | —                                 |

★ Allow additional space for internal wiring.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 520VE, 520VF, and 520VG Multi-Speed Starters with Solid State Overload Relay



**Note:** The typical drawing above shows 3-point mounting. Sizes 3...5 have 4-point mounting holes at each corner of the mounting plate.

| 2-Speed Separate Winding Bulletin 520VE |                                    |                  |                   |                  |                   |                  |                           |                | Approx.<br>Shipping<br>Weight<br>[lb (kg)] |
|-----------------------------------------|------------------------------------|------------------|-------------------|------------------|-------------------|------------------|---------------------------|----------------|--------------------------------------------|
| NEMA<br>Size                            | Dimensions in Inches (Millimeters) |                  |                   |                  |                   |                  |                           |                |                                            |
|                                         | Overload<br>Relay                  | A<br>Width       | B<br>Height       | C<br>Depth       | D                 | E                | F<br>Relay Reset<br>Depth | G★             |                                            |
| 0...1                                   | E1 Plus<br>Solid-State             | 5-11/16<br>(145) | 17-1/4<br>(438)   | 4-15/16<br>(126) | 15-3/4<br>(400)   | 4-5/16<br>(109)  | 5<br>(127)                | 1/16<br>(1.6)  | 12.7 (5.3)                                 |
|                                         |                                    | 5-11/16<br>(145) | 21-1/2<br>(546)   | 4-15/16<br>(126) | 15-3/4<br>(400)   | 4-11/32<br>(110) | 5-9/32<br>(134)           | 1/16<br>(1.6)  |                                            |
| 2                                       | E1 Plus<br>Solid-State             | 6-1/8<br>(156)   | 20-9/16<br>(522)  | 4-5/8<br>(118)   | 19-11/16<br>(500) | 4-23/32<br>(120) | 4-15/16<br>(125.5)        | 1/4<br>(6.4)   | 16.0 (7.3)                                 |
|                                         |                                    | 6-1/8<br>(156)   | 23-13/16<br>(605) | 4-5/8<br>(118)   | 19-11/16<br>(500) | 4-23/32<br>(120) | 5-9/32<br>(134)           | 1/4<br>(6.4)   |                                            |
| 3                                       | E1 Plus<br>Solid-State             | 7-17/32<br>(192) | 31-1/16<br>(789)  | 7-19/32<br>(193) | 27-9/16<br>(700)  | 5-29/32<br>(150) | 7-1/16<br>(179.4)         | 1-3/32<br>(28) | 74.8 (33.9)                                |
|                                         |                                    | 7-17/32<br>(192) | 35-9/16<br>(903)  | 7-19/32<br>(193) | 34-23/32<br>(882) | 5-29/32<br>(150) | 7-5/32<br>(182)           | 1-3/32<br>(28) |                                            |
| 4                                       | E1 Plus<br>Solid-State             | 8-5/16<br>(208)  | 35<br>(889)       | 8-13/16<br>(224) | 31-1/2<br>(800)   | 6-11/16<br>(170) | 7-15/32<br>(190)          | 1-1/2<br>(38)  | 98.0 (44.4)                                |
|                                         |                                    | 8-5/16<br>(208)  | 37-23/32<br>(958) | 8-13/16<br>(224) | 36-13/16<br>(935) | 6-11/16<br>(170) | 8-23/32<br>(222)          | 1-1/8<br>(29)  |                                            |
| 5                                       | E1 Plus<br>Solid-State             | 8-7/16<br>(215)  | 42-3/16<br>(1072) | 9-17/32<br>(242) | 41-9/32<br>(1049) | 6-11/16<br>(170) | 9-9/32<br>(236)           | 3<br>(76)      | 113 (51.2)                                 |
|                                         |                                    | 8-7/16<br>(215)  | 42-3/16<br>(1072) | 9-17/32<br>(242) | 41-9/32<br>(1049) | 6-11/16<br>(170) | 9-9/32<br>(236)           | 3<br>(76)      |                                            |

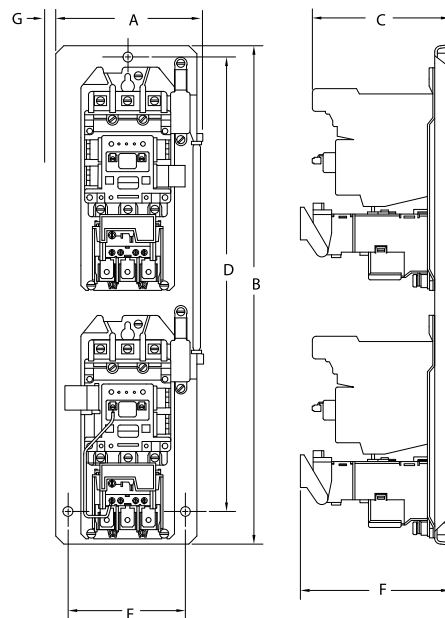
★ Allow additional space for internal wiring.

## Approximate Dimensions

## 520VE, 520VF, and 520VG NEMA Vertically-Arranged Multi-Speed Starters

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Open Type without Enclosure for Bulletin 520VE, 520VF, and 520VG Multi-Speed Starters with Solid State Overload Relay (Continued)

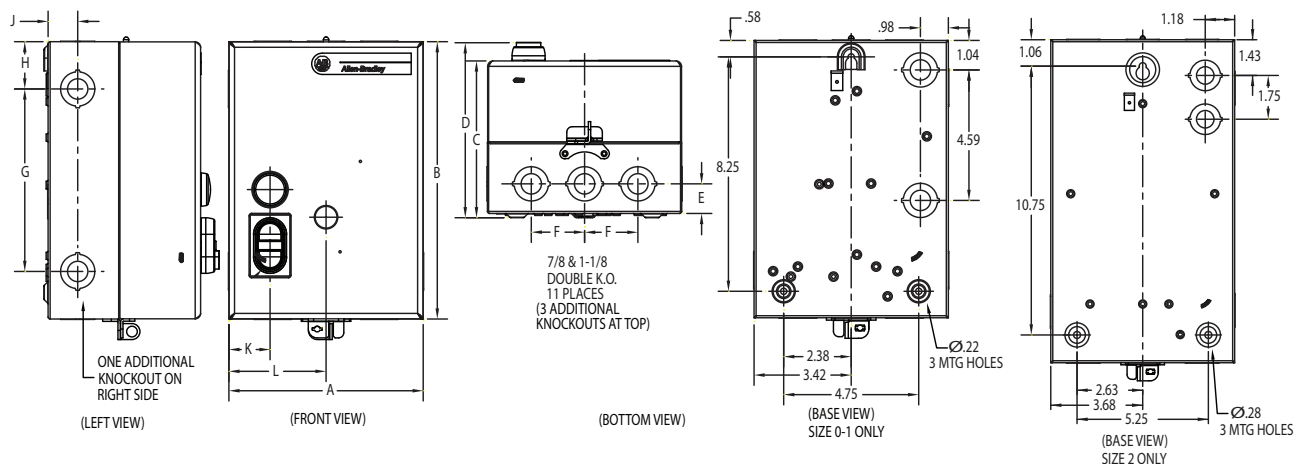


| 2-Speed Consequent Pole Bulletin 520VF and 520VG |                        |                                    |                   |                  |                   |                  |                           |                 | Approx.<br>Shipping<br>Weight<br>[lb (kg)] |
|--------------------------------------------------|------------------------|------------------------------------|-------------------|------------------|-------------------|------------------|---------------------------|-----------------|--------------------------------------------|
| NEMA<br>Size                                     | Overload<br>Relay      | Dimensions in Inches (Millimeters) |                   |                  |                   |                  |                           |                 |                                            |
|                                                  |                        | A<br>Width                         | B<br>Height       | C<br>Depth       | D                 | E                | F<br>Relay Reset<br>Depth | G★              |                                            |
| 0...1                                            | E1 Plus<br>Solid-State | 6-5/8<br>(168)                     | 17-1/2<br>(444.5) | 4-15/16<br>(126) | 15-3/4<br>(146)   | 5-1/8<br>(130)   | 5<br>(127)                | 1/2<br>(13)     | 12.7 (5.8)                                 |
|                                                  |                        | 7<br>(177)                         | 22-11/16<br>(576) | 4-15/16<br>(126) | 15-3/4<br>(146)   | 5-1/8<br>(130)   | 5-9/32<br>(134)           | 17/32<br>(13)   |                                            |
| 2                                                | E1 Plus<br>Solid-State | 6-29/32<br>(176)                   | 20-19/32<br>(523) | 4-5/8<br>(118)   | 19-11/16<br>(500) | 5-17/32<br>(141) | 4-5/16<br>(110)           | 3/4<br>(19)     | 16.0 (7.3)                                 |
|                                                  |                        | 6-29/32<br>(176)                   | 23-13/16<br>(605) | 4-5/8<br>(118)   | 19-11/16<br>(500) | 5-17/32<br>(141) | 5-9/32<br>(134)           | 3/4<br>(19)     |                                            |
| 3                                                | E1 Plus<br>Solid-State | 9-1/8<br>(232)                     | 31-1/16<br>(789)  | 7-19/32<br>(193) | 27-9/16<br>(700)  | 7-1/2<br>(191)   | 7-1/16<br>(179)           | 2-1/8<br>(54)   | 74.8 (33.9)                                |
|                                                  |                        | 10-3/32<br>(256)                   | 35-9/16<br>(903)  | 7-19/32<br>(193) | 34-23/32<br>(882) | 7-1/2<br>(191)   | 7-5/32<br>(182)           | 1-25/32<br>(29) |                                            |
| 4                                                | E1 Plus<br>Solid-State | 11-23/32<br>(298)                  | 35<br>(889)       | 8-13/16<br>(224) | 31-1/2<br>(800)   | 8-21/32<br>(220) | 7-15/32<br>(190)          | 3-7/32<br>(82)  | 98.0 (44.4)                                |
|                                                  |                        | 11-23/32<br>(298)                  | 37-23/32<br>(958) | 8-13/16<br>(224) | 36-13/16<br>(935) | 8-21/32<br>(220) | 8-23/32<br>(222)          | 1-25/32<br>(29) |                                            |
| 5                                                | E1 Plus<br>Solid-State | 11-29/32<br>(303)                  | 42-3/16<br>(1072) | 9-17/32<br>(242) | 41-9/32<br>(1049) | 8-21/32<br>(220) | 9-9/32<br>(236)           | 4<br>(102)      | 113 (51.2)                                 |
|                                                  |                        | 11-29/32<br>(303)                  | 42-3/16<br>(1072) | 9-17/32<br>(242) | 41-9/32<br>(1049) | 8-21/32<br>(220) | 9-9/32<br>(236)           | 4<br>(102)      |                                            |

★ Allow additional space for internal wiring.

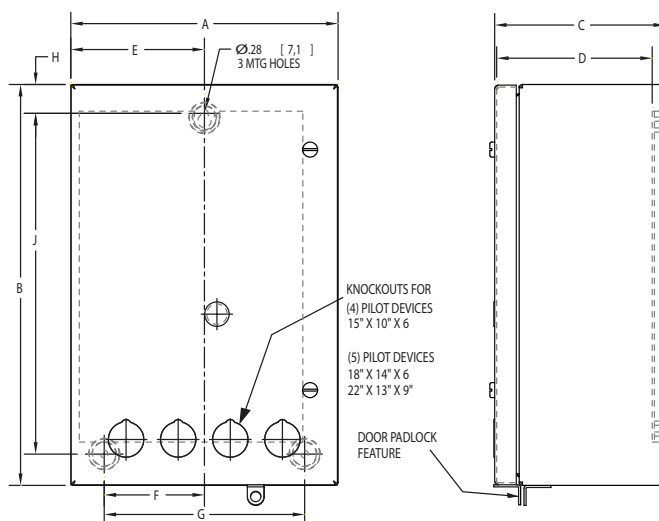
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Type 1 General Purpose Lift-Off Enclosure for Bulletins 500 & 509 Contactors & Starters 3-Pole



| NEMA Size/<br>Current Rating | Dimensions in Inches (Millimeters) |                |               |               |              |              |               |              |              |              |              |
|------------------------------|------------------------------------|----------------|---------------|---------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|
|                              | A<br>Width                         | B<br>Height    | C<br>Depth    | D             | E            | F            | G             | H            | J            | K            | L            |
| 00...1                       | 6.84<br>(174)                      | 9.76<br>(248)  | 5.52<br>(140) | 6.16<br>(156) | 1.04<br>(26) | 1.88<br>(48) | 6.42<br>(163) | 1.66<br>(42) | 1.04<br>(26) | 1.45<br>(37) | 3.42<br>(87) |
| 2                            | 7.35<br>(187)                      | 12.91<br>(328) | 5.53<br>(140) | 6.24<br>(158) | 1.27<br>(32) | 2.38<br>(60) | 8.88<br>(226) | 1.94<br>(49) | 1.27<br>(32) | 1.49<br>(38) | 3.68<br>(93) |

### Type 1 Hinged Enclosure — with or without Control Transformer for Bulletins 500, 505, 509, 520E, 520F, & 520G Contactors & Starters 3-...5-Pole

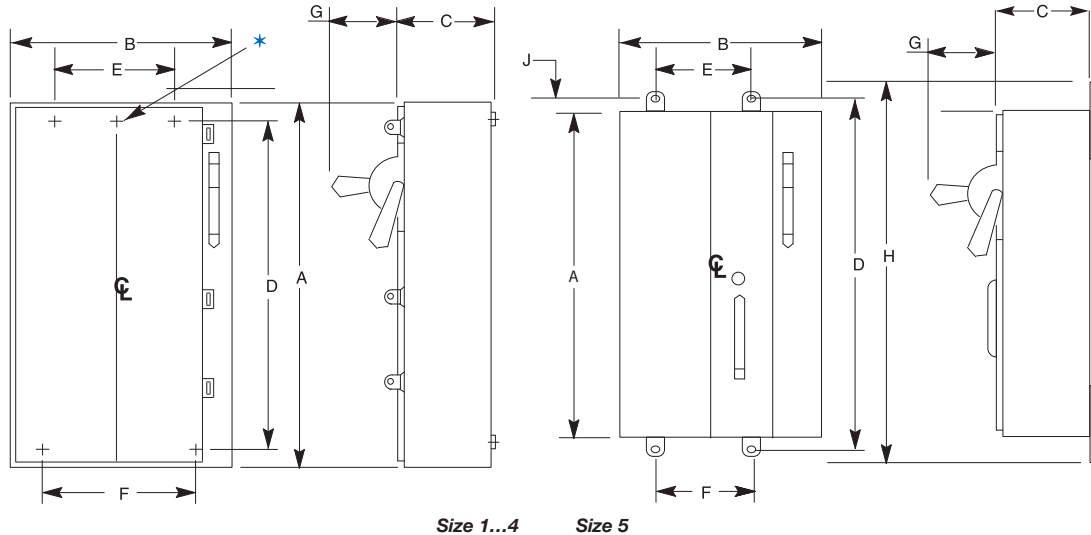


| NEMA Size/<br>Current Rating | Bulletin No.                    | Dimensions in Inches (Millimeters) |                |               |               |               |               |                |              |                 |
|------------------------------|---------------------------------|------------------------------------|----------------|---------------|---------------|---------------|---------------|----------------|--------------|-----------------|
|                              |                                 | A<br>Width                         | B<br>Height    | C<br>Depth    | D             | E<br>Mounting | F<br>Mounting | G<br>Mounting  | H            | J<br>(Mounting) |
| 00...1                       | 500 & 509                       |                                    |                |               |               |               |               |                |              |                 |
| 2                            | 500 & 509<br>w/o<br>transformer | 10.00<br>(254)                     | 15.00<br>(381) | 6.39<br>(162) | 5.82<br>(148) | 5.00<br>(127) | 3.75<br>(95)  | 7.50<br>(191)  | 1.08<br>(27) | 12.75<br>(324)  |
| 2                            | 500 & 509<br>w/ transformer     | 14.00<br>(356)                     | 18.00<br>(457) | 6.39<br>(162) | 5.83<br>(148) | 7.00<br>(178) | 5.75<br>(146) | 11.50<br>(292) | 1.00<br>(25) | 15.75<br>(400)  |
| 0...1                        | 505 & 520                       |                                    |                |               |               |               |               |                |              |                 |
| 3                            | 500 & 509                       | 13.00<br>(330)                     | 22.00<br>(559) | 8.50<br>(216) | 7.89<br>(201) | 6.50<br>(165) | 5.25<br>(133) | 10.50<br>(267) | 1.08<br>(27) | 19.75<br>(502)  |
| 2                            | 505 & 520                       |                                    |                |               |               |               |               |                |              |                 |

**Note:** For Types 3R/12, 4/4X, 4X, and Bolted Type 7 & 9 and 3R, 7 & 9 dimensions, please contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Type 1 (Enclosure Code "A") General Purpose Painted Enclosure for Bulletins 500, 502, 503, 505, 506, 506X, 507, 507X, 509, 512, 512M, 512V, 513, 513M, 513V, 520E, 520F, 520G, 522E, 522F, 522G, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572 and 573**

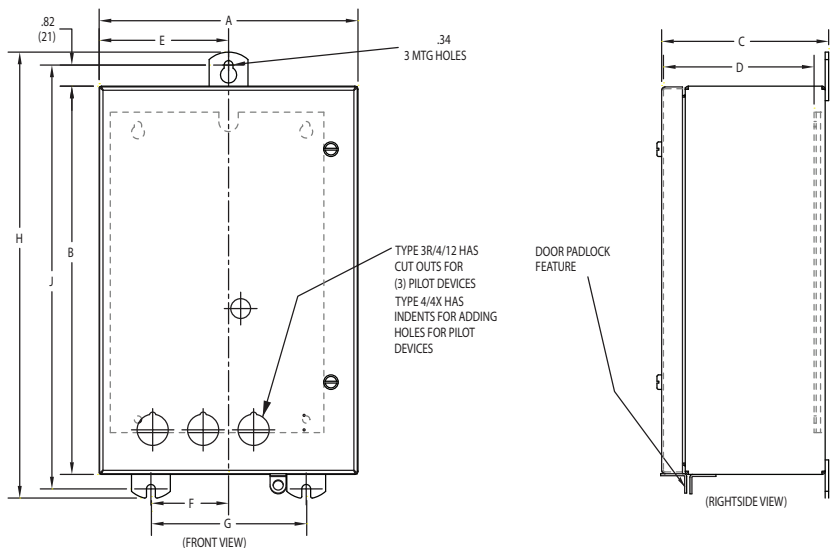


| NEMA Size | Bulletin No.                                                        | Approximate Dimensions in Inches (Millimeters) |             |             |              |             |             |                | Approx. Shipping Weight [lb (kg)] |
|-----------|---------------------------------------------------------------------|------------------------------------------------|-------------|-------------|--------------|-------------|-------------|----------------|-----------------------------------|
|           |                                                                     | A Height                                       | B Width     | C Depth     | D Mounting   | E Mounting  | F Mounting  | G Handle Depth |                                   |
| 0...2     | 506X, 507X                                                          | 27.50 (968)                                    | 10.50 (267) | 8.25 (210)  | 25.13 (639)  | *           | 5.25 (133)  | 5.56 (141)     | 40 (18.14)                        |
| 0...2     | 502, 503, 512, 513                                                  |                                                |             |             |              |             |             |                |                                   |
| 0...2     | 506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G            |                                                |             |             |              |             |             |                |                                   |
| 3         | 502, 503, 505, 512, 513, 520E, 520F, 520G                           | 30 (762)                                       | 20.5 (521)  | 9.88 (251)  | 27.63 (702)  | 15.25 (387) | 15.25 (387) | 5.56 (141)     | 90 (40.82)                        |
| 4         | 500, 503, 509, 513                                                  |                                                |             |             |              |             |             |                |                                   |
| 1PW, 2PW  | 530, 532, 533                                                       |                                                |             |             |              |             |             |                |                                   |
| 1YD       | 540, 542, 543                                                       |                                                |             |             |              |             |             |                |                                   |
| 3         | 506, 507, 522E, 522F, 522G, 523E, 523F, 523G                        |                                                |             |             |              |             |             |                |                                   |
| 4         | 505, 506, 507, 520E, 520F, 520G, 522E, 522F, 522G, 523E, 523F, 523G | 50 (1270)                                      | 22 (559)    | 11.19 (284) | 47.63 (1210) | 15.25 (387) | 15.25 (387) | 5.56 (141)     | 250 (113.4)                       |
| 5         | 500, 505, 509, 520E, 520F, 520G                                     |                                                |             |             |              |             |             |                |                                   |
| 3PW       | 530, 532, 533                                                       |                                                |             |             |              |             |             |                |                                   |
| 2YD, 3YD  | 540, 542, 543                                                       |                                                |             |             |              |             |             |                |                                   |
| 2         | 570, 572, 573                                                       |                                                |             |             |              |             |             |                |                                   |
| 5         | 502, 503, 506, 506X, 507, 507X, 512, 513, 523E, 523F, 523G          |                                                |             |             |              |             |             |                |                                   |
| 6         | 500, 505, 509, 520E                                                 | 56 (1422)                                      | 30.5 (775)  | 13.79 (350) | 57.63 (1463) | 20 (508)    | 25.25 (641) | 7.62 (194)     | 360 (163.3)                       |
| 4PW       | 530, 532, 533                                                       |                                                |             |             |              |             |             |                |                                   |
| 5PW       | 532, 533                                                            |                                                |             |             |              |             |             |                |                                   |
| 4YD       | 540, 542, 543                                                       |                                                |             |             |              |             |             |                |                                   |
| 3, 4      | 570, 572, 573                                                       |                                                |             |             |              |             |             |                |                                   |
| 5YD       | 540, 542, 543                                                       |                                                |             |             |              |             |             |                |                                   |
| 5, 6      | 570, 572, 573                                                       |                                                |             |             |              |             |             |                |                                   |
| 5         | 522E, 522F, 522G                                                    | 60 (1524)                                      | 37.38 (949) | 16.00 (406) | 61.69 (1567) | 33.88 (861) | 33.88 (861) | 7.62 (194)     | 420 (190.5)                       |
| 5PW       | 530                                                                 |                                                |             |             |              |             |             |                |                                   |

\* Sizes 0, 1, and 2 have one top mounting hole located on the center line. Larger size enclosures have two top mounting holes located as shown.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

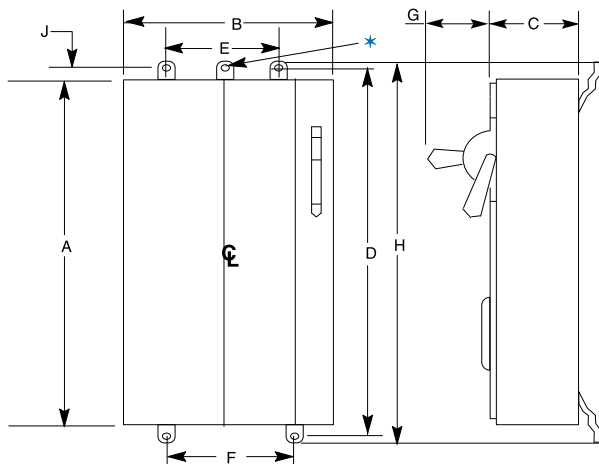
Type 3R/12 Rainproof, Dusttight, 4/4X Watertight, Non-metallic Enclosure — with or without Control Transformer for Bulletins 500, 505, 509, 520E, 520F, & 520G Contactors & Starters 3-...5-Pole



| NEMA Size/<br>Current Rating | Bulletin No.                    | Approximate Dimensions In Inches (Millimeters) |                |               |               |               |               |                |                |                |
|------------------------------|---------------------------------|------------------------------------------------|----------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|
|                              |                                 | A<br>Width                                     | B<br>Height    | C<br>Depth    | D             | E<br>Mounting | F<br>Mounting | G<br>Mounting  | H              | J<br>Mounting  |
| 00...1                       | 500 & 509                       |                                                |                |               |               |               |               |                |                |                |
| 2                            | 500 & 509<br>w/o<br>transformer | 10.00<br>(254)                                 | 15.00<br>(381) | 6.45<br>(164) | 5.82<br>(148) | 5.00<br>(127) | 3.00<br>(76)  | 6.00<br>(152)  | 17.23<br>(438) | 16.38<br>(416) |
| 2                            | 500 & 509<br>w/ transformer     | 14.00<br>(356)                                 | 18.00<br>(457) | 6.45<br>(164) | 5.83<br>(148) | 7.00<br>(178) | 5.00<br>(127) | 10.00<br>(254) | 20.23<br>(514) | 19.38<br>(492) |
| 0...1                        | 505 & 509                       |                                                |                |               |               |               |               |                |                |                |
| 3                            | 500 & 509                       | 13.00<br>(330)                                 | 22.00<br>(559) | 8.57<br>(218) | 7.89<br>(201) | 6.50<br>(165) | 4.43<br>(113) | 9.00<br>(229)  | 24.23<br>(615) | 23.38<br>(594) |
| 2                            | 505 & 520                       |                                                |                |               |               |               |               |                |                |                |

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Type 3R/4/12 (Enclosure Codes "D", "F", and "J") Rainproof, Dusttight — Industrial Use Enclosures for Bulletins 500, 502, 503, 505, 506, 506X, 507, 507X, 509, 512, 512M, 512V, 513, 513M, 513V, 520E, 520F, 520G, 522E, 522F, 522G, 523E, 523F, 523G, 530, 532, 533, 540, 542, 543, 570, 572 and 573**



| NEMA Size | Bulletin No.                                                             | Approximate Dimensions in Inches (Millimeters) |                |                |                   |                |                |                |                 |              | Approx. Shipping Weight [lb (kg)] |
|-----------|--------------------------------------------------------------------------|------------------------------------------------|----------------|----------------|-------------------|----------------|----------------|----------------|-----------------|--------------|-----------------------------------|
|           |                                                                          | A Height                                       | B Width        | C Depth        | D Mounting        | E Mounting     | F Mounting     | G Handle Depth | H               | J            |                                   |
| 0...2     | 506X, 507X                                                               | 27.50<br>(698)                                 | 10.50<br>(267) | 8.25<br>(210)  | 28.88<br>(733)    | ★              | 5.25<br>(133)  | 5.56<br>(141)  | 29.88<br>(759)  | 0.81<br>(21) | 40<br>(18.14)                     |
|           | 502, 507, 503, 512, 513                                                  |                                                |                |                |                   |                |                |                |                 |              |                                   |
|           | 506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G                 |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 3         | 502, 507, 503, 505, 512, 513, 520E, 520F, 520G                           | 30<br>(762)                                    | 20.5<br>(521)  | 10.19<br>(259) | 31.38<br>(797.05) | 15.25<br>(387) | 15.25<br>(387) | 5.56<br>(141)  | 32.38<br>(822)  | 0.81<br>(21) | 90<br>(40.82)                     |
| 4         | 500, 509, 513                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 1PW, 2PW  | 530, 532, 533                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 1YD       | 540, 542, 543                                                            | 50<br>(1270)                                   | 22<br>(559)    | 11.5<br>(292)  | 51.38<br>(1305)   | 15.25<br>(387) | 15.25<br>(387) | 5.56<br>(141)  | 52.38<br>(1330) | 0.71<br>(18) | 250<br>(113.4)                    |
| 3         | 506, 507, 522E, 522F, 522G, 523E, 523F, 523G                             |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 4         | 502, 505, 507, 512, 520E, 520F, 520G, 522E, 522F, 522G, 523E, 523F, 523G |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5         | 500, 509, 520E, 520F, 520G                                               |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 3PW       | 530, 532, 533                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 2YD, 3YD  | 540, 542, 543                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 2         | 570, 572, 573                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 4PW       | 530, 532, 533                                                            | 56<br>(1422)                                   | 30.5<br>(775)  | 13.79<br>(350) | 57.63<br>(313)    | 20<br>(508)    | 25.25<br>(641) | 7.62<br>(194)  | 62.62<br>(1590) | 1<br>(25.4)  | 360<br>(163.3)                    |
| 5PW       | 532, 533                                                                 |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 4YD       | 540, 542, 543                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 3, 4      | 570, 572, 573                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5         | 502, 503, 506, 512, 513, 523E, 523F, 523G                                |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 6         | 500, 505, 509, 512†, 513, 520E                                           | 60<br>(1524)                                   | 37.38<br>(949) | 16<br>(906)    | 61.69<br>(1567)   | 33.88<br>(861) | 33.88<br>(861) | 7.62<br>(194)  | 63.5<br>(1613)  | 1.5<br>(38)  | 420<br>(190.5)                    |
| 6         | 512§                                                                     |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5         | 522E, 522F, 522G                                                         |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5PW       | 530                                                                      |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5YD       | 540, 542, 543                                                            |                                                |                |                |                   |                |                |                |                 |              |                                   |
| 5, 6      | 570, 572, 573                                                            | 84<br>(2134)                                   | 39.5<br>(1003) | 18<br>(457)    | —                 | —              | —              | 7.62<br>(194)  | —               | —            | 650<br>(249.8)                    |
| 7         | 512, 513                                                                 |                                                |                |                |                   |                |                |                |                 |              |                                   |

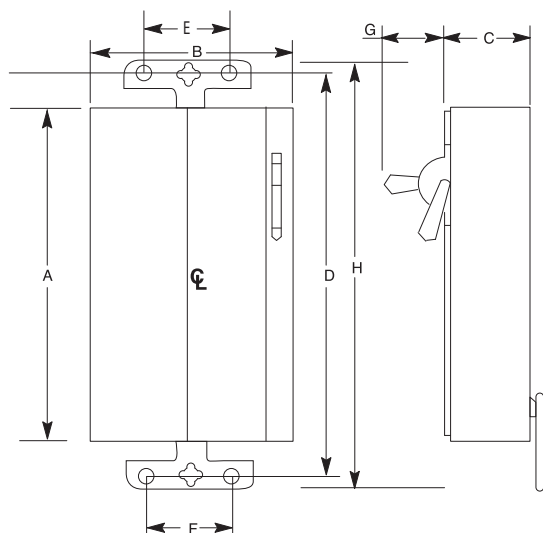
★ Sizes 0, 1, and 2 have one top mounting hole located on the center line. All sizes in large enclosures have two top mounting holes located as shown.

† Fusible disconnect switch with Class J fuses.

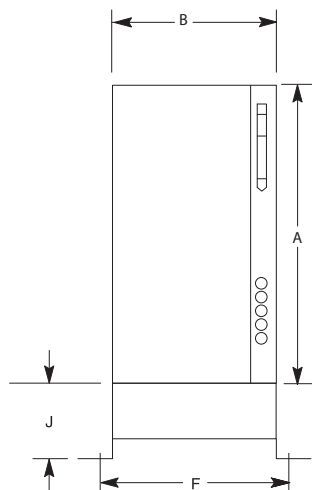
§ Fusible disconnect switch with Class R fuses.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Type 3R (Enclosure Code "N") Rainproof. Enclosures with Extra Panel Space Bulletins 1232X, 1233X, 1242, 1243, 1272, 1273, 1282, 1283**



Size 1, 2, 3, 4



Size 5, 6, 7

| NEMA Size | Bulletin No. | Approximate Dimensions in Inches (Millimeters) |             |             |                |             |              |                |              |            | Approx. Shipping Weight [lb (kg)] |
|-----------|--------------|------------------------------------------------|-------------|-------------|----------------|-------------|--------------|----------------|--------------|------------|-----------------------------------|
|           |              | A Height                                       | B Width     | C Depth     | D Mounting     | E Mounting  | F Mounting   | G Handle Depth | H            | J          |                                   |
| 1...2     | 1232X        | 30 (762)                                       | 20.5 (521)  | 8.72 (221)  | 34.88 (886)    | 10 (254)    | 10 (254)     | 5.56 (141)     | 36.38 (924)  | —          | 90 (40.82)                        |
| 1...2     | 1233X        |                                                |             |             |                |             |              |                |              |            |                                   |
| 3...4     | 1232X, 1233X |                                                |             |             |                |             |              |                |              |            |                                   |
| 1PW, 2PW  | 1282, 1283   | 50 (1270)                                      | 22 (559)    | 9.90 (251)  | 54.88 (1394)   | 15.25 (387) | 15.25 (387)  | 5.56 (141)     | 56.38 (1432) | —          | 250 (113.4)                       |
| 1YD, 2YD  | 1242, 1243   |                                                |             |             |                |             |              |                |              |            |                                   |
| 2         | 1272, 1273   |                                                |             |             |                |             |              |                |              |            |                                   |
| 4         | 1232X        |                                                |             |             |                |             |              |                |              |            |                                   |
| 3PW, 4PW  | 1282         |                                                |             |             |                |             |              |                |              |            |                                   |
| 3PW...5PW | 1283         |                                                |             |             |                |             |              |                |              |            |                                   |
| 3YD, 4YD  | 1242         | 56 (1422)                                      | 30.5 (775)  | 13.78 (350) | —              | 11 (279)    | 40.72 (1034) | 7.62 (194)     | —            | —          | 360 (163.3)                       |
| 3YD...5YD | 1243         |                                                |             |             |                |             |              |                |              |            |                                   |
| 3, 4      | 1272         |                                                |             |             |                |             |              |                |              |            |                                   |
| 3...5     | 1273         |                                                |             |             |                |             |              |                |              |            |                                   |
| 5         | 1232X, 1233X |                                                |             |             |                |             |              |                |              |            |                                   |
| 6         | 1233X        |                                                |             |             |                |             |              |                |              |            |                                   |
| 5PW       | 1282         |                                                |             |             |                |             |              |                |              |            |                                   |
| 5YD       | 1242         | 56 (1422)                                      | 30.5 (775)  | 13.78 (350) | 65.68 (1668)   | 11 (279)    | 33.84 (860)  | 7.62 (194)     | —            | 9.68 (246) | 360 (163.3)                       |
| 5, 6      | 1272         |                                                |             |             |                |             |              |                |              |            |                                   |
| 6         | 1273         |                                                |             |             |                |             |              |                |              |            |                                   |
| 6         | 1232X★       |                                                |             |             |                |             |              |                |              |            |                                   |
| 6         | 1232X‡       | 60 (1524)                                      | 37.38 (949) | 16 (406)    | 69.68 (1769.9) | 11 (279)    | 40.72 (1034) | 7.62 (194)     | —            | 9.68 (246) | 420 (190.5)                       |
| 7         | 1232X, 1233X | 84 (2134)                                      | 39.5 (1003) | 18 (457)    | 93.68 (2379.5) | 11 (279)    | 42.84 (1088) | 7.62 (194)     | —            | 9.68 (246) | 650 (294.8)                       |

★ Fusible disconnect switch with Class J fuses.

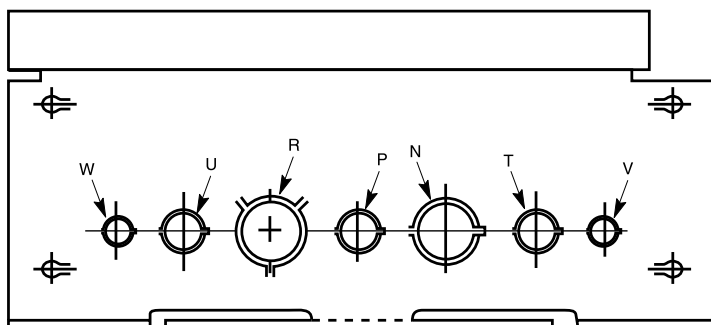
‡ Fusible disconnect switch with Class R fuses.

## Approximate Dimensions

## 1232X and 1233X NEMA Pump Panels

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Type 3R (Enclosure Code "N") Rainproof Enclosures with Extra Panel Space — for Bulletins 1232X and 1233X

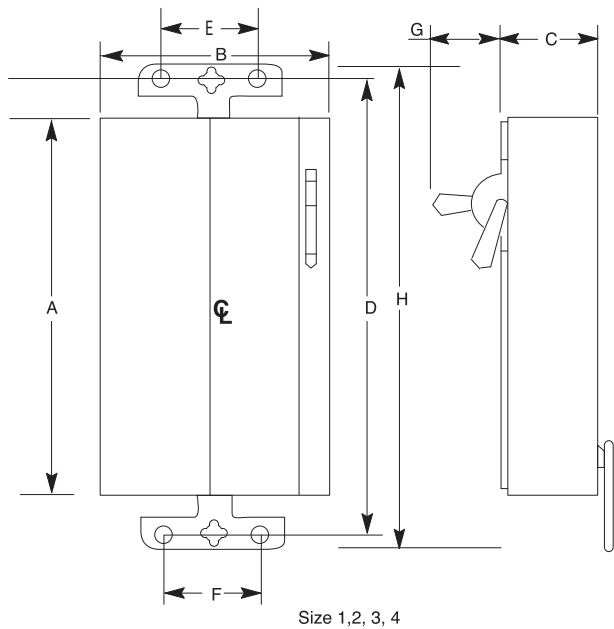


| Bulletin No.   | NEMA Size | Approximate Dimensions in Inches (Millimeters) |               |               |              |               |               |               |               |
|----------------|-----------|------------------------------------------------|---------------|---------------|--------------|---------------|---------------|---------------|---------------|
|                |           | N                                              |               | P             |              | R             |               | T             |               |
|                |           | Inside                                         | Outside       | Inside        | Outside      | Inside        | Outside       | Inside        | Outside       |
| 1232X<br>1233X | 1         | 1-3/8 (35)                                     | 1-23/32 (44)  | 7/8 (22)      | 1-1/8 (29)   | 1-23/32 (44)  | 1-31/32 (50)  | 7/8 (22)      | 1-1/8 (29)    |
|                | 2         | 1 in. Hub                                      | 1-1/4 in. Hub | 1/2 in. Hub   | 3/4 in. Hub  | 1-1/4 in. Hub | 1-1/2 in. Hub | 1/2 in. Hub   | 3/4 in. Hub   |
|                | 3         | 7/8 (22)                                       | 1-1/8 (29)    | 1-31/32 (50)  | 2-15/32 (63) | 1-3/8 (35)    | —             | 1-3/8 (35)    | 1-23/32 (44)  |
|                | 4         | 1/2 in. Hub                                    | 3/4 in. Hub   | 1-1/2 in. Hub | 2 in. Hub    | 1 in. Hub     | —             | 1 in. Hub     | 1-1/4 in. Hub |
|                | 5         | 7/8 (22)                                       | 1-1/8 (29)    | —             | —            | 1-31/32 (50)  | 2-15/32 (63)  | 1-31/32 (50)  | 2-15/32 (63)  |
|                |           | 1/2 in. Hub                                    | 3/4 in. Hub   |               |              | 1-1/2 in. Hub | 2 in. Hub     | 1-1/2 in. Hub | 2 in. Hub     |

| Bulletin No.   | NEMA Size | Approximate Dimensions in Inches (Millimeters) |             |               |              |               |               |
|----------------|-----------|------------------------------------------------|-------------|---------------|--------------|---------------|---------------|
|                |           | U                                              |             | V             |              | W             |               |
|                |           | Inside                                         | Outside     | Inside        | Outside      | Inside        | Outside       |
| 1232X<br>1233X | 1         | 7/8 (22)                                       | 1-1/8 (29)  | —             | —            | 7/8 (22)      | 1-1/8 (29)    |
|                | 2         | 1/2 in. Hub                                    | 3/4 in. Hub | —             | —            | 1/2 in. Hub   | 3/4 in. Hub   |
|                | 3         | 7/8 (22)                                       | 1-1/8 (29)  | 1-31/32 (50)  | 2-15/32 (63) | 3 (76)        | 3 (76)        |
|                | 4         | 1/2 in. Hub                                    | 3/4 in. Hub | 1-1/2 in. Hub | 2 in. Hub    | 2-1/2 in. Hub | 2-1/2 in. Hub |
|                | 5         | 7/8 (22)                                       | 1-1/8 (29)  | 3 (76)        | 3-5/8 (96)   | 3 (76)        | 3-5/8 (96)    |
|                |           | 1/2 in. Hub                                    | 3/4 in. Hub | 2-1/2 in. Hub | 3 in. Hub    | 2-1/2 in. Hub | 3 in. Hub     |

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

Type 3R (Enclosure Code "N") Rainproof - Narrow Enclosure for Bulletins 1232 and 1233

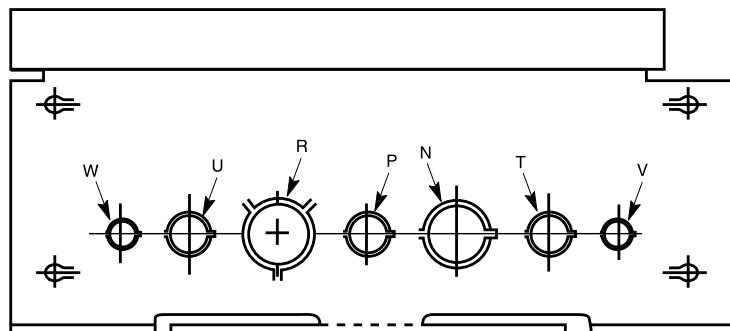


| NEMA<br>Size | Approximate Dimensions in Inches (Millimeters) |               |               |                |               |               |                      |                | Approx.<br>Shipping<br>Weight<br>[lb (kg)] |
|--------------|------------------------------------------------|---------------|---------------|----------------|---------------|---------------|----------------------|----------------|--------------------------------------------|
|              | A<br>Height                                    | B<br>Width    | C<br>Depth    | D<br>Mounting  | E<br>Mounting | F<br>Mounting | G<br>Handle<br>Depth | H              |                                            |
| 1...2        | 27.50<br>(698)                                 | 10.5<br>(267) | 8.26<br>(210) | 28.88<br>(733) | ★             | 7<br>(178)    | 5.56<br>(141)        | 29.75<br>(756) | 40<br>(18.14)                              |
| 3            | 30<br>(762)                                    | 20.5<br>(521) | 8.72<br>(221) | 34.88<br>(886) | 10<br>(254)   | 10<br>(254)   | 5.56<br>(141)        | 36.38<br>(924) | 90<br>(40.82)                              |

★ Sizes 1 and 2 have one top mounting hole located on the center line. All sized in large enclosures have two top mounting holes located as shown.

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

### Type 3R (Enclosure Code "N") Rainproof Narrow Enclosures — for Bulletins 1232 and 1233



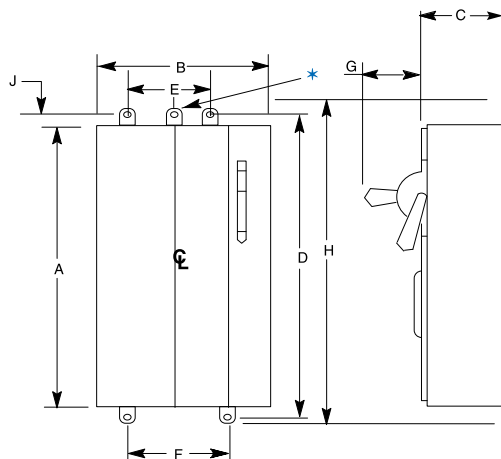
| Bulletin No. | NEMA Size | Approximate Dimensions in Inches (Millimeters) |                           |                               |                           |                         |                               |                         |                               |
|--------------|-----------|------------------------------------------------|---------------------------|-------------------------------|---------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|
|              |           | N                                              |                           | P                             |                           | R                       |                               | T                       |                               |
|              |           | Inside                                         | Outside                   | Inside                        | Outside                   | Inside                  | Outside                       | Inside                  | Outside                       |
| 1232<br>1233 | 1         | 1-3/8 (35)                                     | 1-23/32 (44)              | 7/8 (22)                      | 1-1/8 (29)                | 1-23/32 (44)            | 1-31/32 (50)                  | 7/8 (22)                | 1-1/8 (29)                    |
|              | 2         | 1 in. Hub                                      | 1-1/4 in. Hub             | 1/2 in. Hub                   | 3/4 in. Hub               | 1-1/4 in. Hub           | 1-1/2 in. Hub                 | 1/2 in. Hub             | 3/4 in. Hub                   |
|              | 3         | 7/8 (22)<br>1/2 in. Hub                        | 1-1/8 (29)<br>3/4 in. Hub | 1-31/32 (50)<br>1-1/2 in. Hub | 2-15/32 (63)<br>2 in. Hub | 1-3/8 (35)<br>1 in. Hub | 1-31/32 (50)<br>1-1/2 in. Hub | 1-3/8 (35)<br>1 in. Hub | 1-23/32 (44)<br>1-1/4 in. Hub |

| Bulletin No. | NEMA Size | Approximate Dimensions in Inches (Millimeters) |                           |                               |                           |                         |                         |
|--------------|-----------|------------------------------------------------|---------------------------|-------------------------------|---------------------------|-------------------------|-------------------------|
|              |           | U                                              |                           | V                             |                           | W                       |                         |
|              |           | Inside                                         | Outside                   | Inside                        | Outside                   | Inside                  | Outside                 |
| 1232<br>1233 | 1         | 7/8 (22)                                       | 1-1/8 (29)                | —                             | —                         | 7/8 (22)                | 1-1/8 (29)              |
|              | 2         | 1/2 in. Hub                                    | 3/4 in. Hub               | —                             | —                         | 1/2 in. Hub             | 3/4 in. Hub             |
|              | 3         | 7/8 (22)<br>1/2 in. Hub                        | 1-1/8 (29)<br>3/4 in. Hub | 1-31/32 (50)<br>1-1/2 in. Hub | 2-15/32 (63)<br>2 in. Hub | 3 (76)<br>2-1/2 in. Hub | 3 (76)<br>2-1/2 in. Hub |

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Type 4/4X (Enclosure Codes "C") Stainless Steel — Industrial Use Enclosures for Bulletins 500, 502, 503, 505, 506, 507, 509, 512, 512M, 513, 513M, 520E, 520F, 520G, 522E, 522F, 522G, 523E, 523F, and 523G**



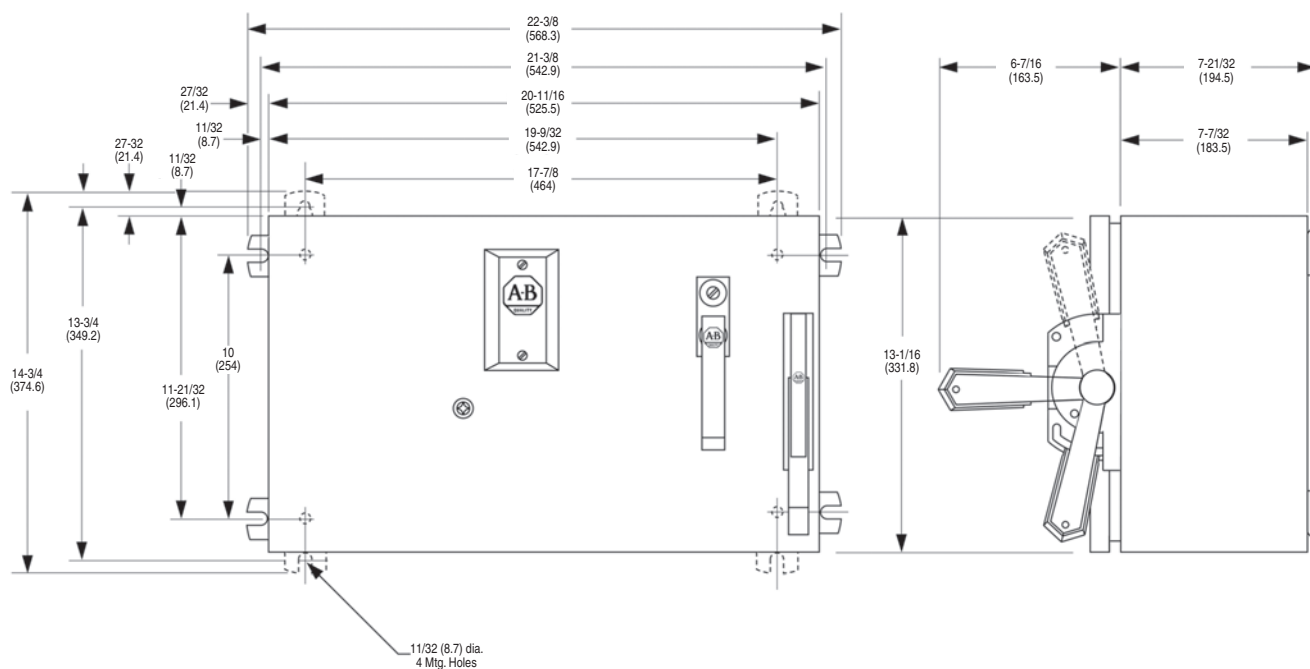
| NEMA Size | Bulletin No.                                                            | A Height    | B Width     | C Depth     | D Mounting   | E Mounting | F Mounting  | G Handle Depth | H            | J         | Approx. Shipping Weight [lb (kg)] |
|-----------|-------------------------------------------------------------------------|-------------|-------------|-------------|--------------|------------|-------------|----------------|--------------|-----------|-----------------------------------|
| 0...2     | 502, 503, 512, 513                                                      | 27.50 (698) | 10.50 (267) | 8.25 (210)  | 28.88 (733)  | ★          | 7 (178)     | 5.56 (141)     | 29.75 (756)  | 0.81 (21) | 40 (18.14)                        |
| 0...2     | 506, 507, 512M, 513M, 522E, 522F, 522G, 523E, 523F, 523G,               | 30 (762)    | 20.5 (521)  | 9.88 (251)  | 31.38 (797)  | 17 (432)   | 17 (432)    | 5.56 (141)     | 32.26 (819)  | 0.81 (21) | 90 (40.82)                        |
| 3         | 502, 503, 505, 512, 513, 520E, 520F, 520G                               |             |             |             |              |            |             |                |              |           |                                   |
| 4         | 500, 503, 509, 513                                                      |             |             |             |              |            |             |                |              |           |                                   |
| 3         | 506, 507, 522E, 522F, 522G, 523E, 523F, 523G                            | 50 (1270)   | 22 (559)    | 11.19 (284) | 51.38 (1305) | 18.5 (470) | 18.5 (470)  | 5.56 (141)     | 52.26 (1327) | 0.81 (21) | 250 (113.4)                       |
| 4         | 502, 505, 506, 507, 512, 520E, 520F, 520G, 522F, 523G, 523E, 523F, 523G |             |             |             |              |            |             |                |              |           |                                   |
| 5         | 500, 505, 509, 520E, 520F, 520G                                         |             |             |             |              |            |             |                |              |           |                                   |
| 5...6     | 503, 507, 513, 523E, 523F, 523G                                         | 56 (1422)   | 30.5 (775)  | 12.34 (313) | 57.63 (1464) | 20 (508)   | 25.25 (641) | 5.56 (141)     | 58.62 (1489) | 1 (25.4)  | 360 (163.3)                       |
| 5         | 512                                                                     |             |             |             |              |            |             |                |              |           |                                   |
| 6         | 500, 505, 509, 512†, 520E                                               |             |             |             |              |            |             | 7.62 (194)     |              |           |                                   |
| 5...6     | 502, 506                                                                |             |             |             |              |            |             |                |              |           |                                   |

★ Sizes 0, 1, and 2 have one top mounting hole located on the center line. All sizes in large enclosures have two top mounting holes located as shown.

† Fusible disconnect switch with Class J fuses.

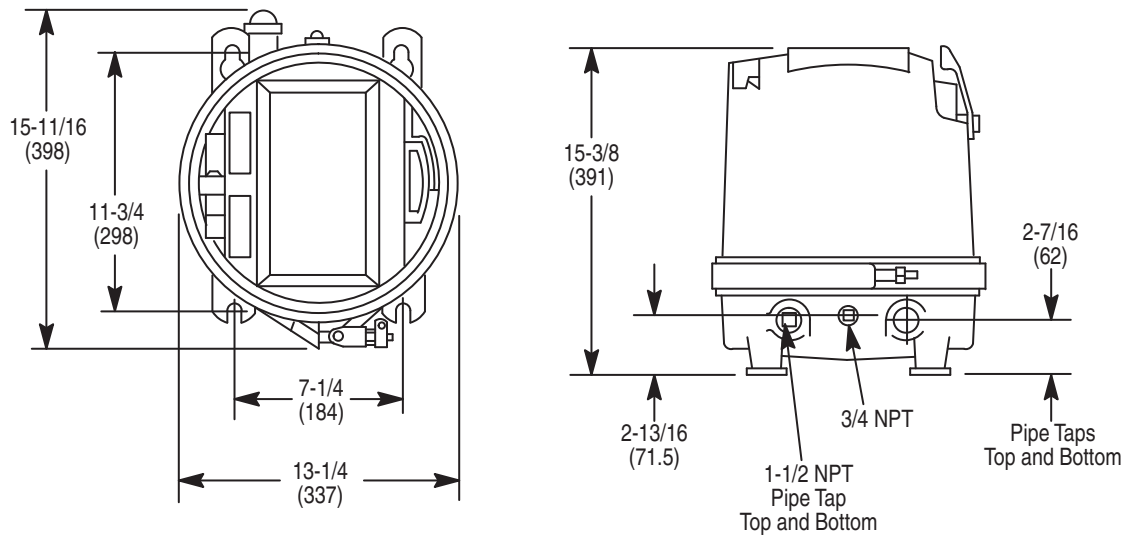
Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Type 12 (Enclosure Codes "J") Stainless Steel — Industrial Use Horizontal Enclosures for Bulletins 512H and 513H**

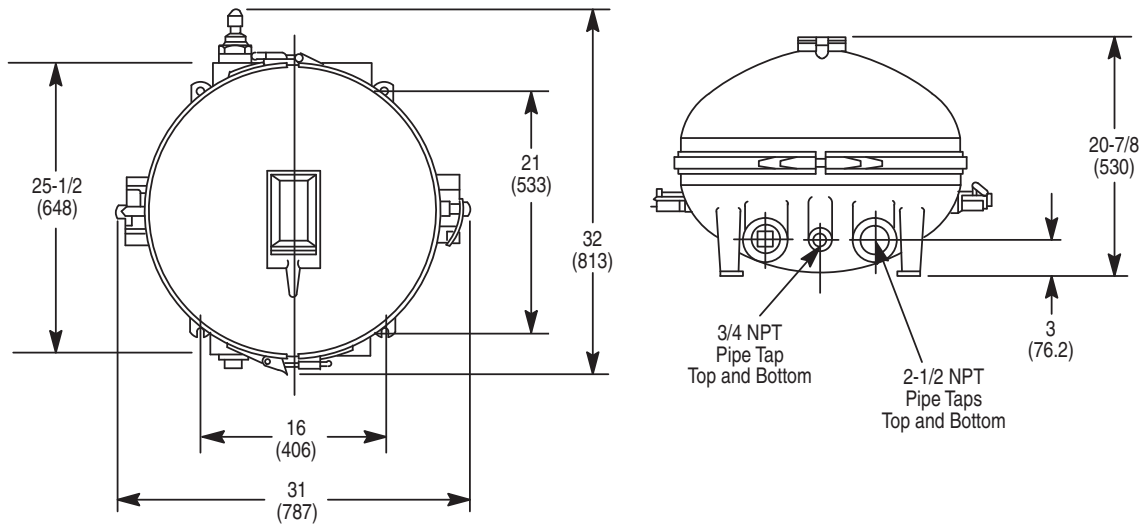


Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Unilock Enclosures — Type 3R, 7 & 9, Class I (Enclosure Code "U") Groups C & D, Class II, Groups E, F & G — Divisions 1 & 2 for Bulletins 505, 509, and 513**



**Sizes 0...2**



**Sizes 3...5**

Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Bolted Enclosures — Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletins 505, 520E, 520F, 520G Starters**

| NEMA Size | Bulletins 505, 520E |              | Bulletins 520F, 520G |              |
|-----------|---------------------|--------------|----------------------|--------------|
|           | with CCT★           | without CCT★ | with CCT★            | without CCT★ |
| 0         | Figure 1A           | Figure 1A    | Figure 1B            | Figure 1B    |
| 1         | Figure 1A           | Figure 1A    | Figure 1B            | Figure 1B    |
| 2         | Figure 1B           | Figure 1B    | Figure 1B            | Figure 1B    |
| 3         | Figure 1C           | Figure 1B    | Figure 1C            | Figure 1C    |
| 4         | Figure 1C           | Figure 1C    | Figure 1C            | Figure 1C    |

★ CCT=Control circuit transformer

Figure 1A

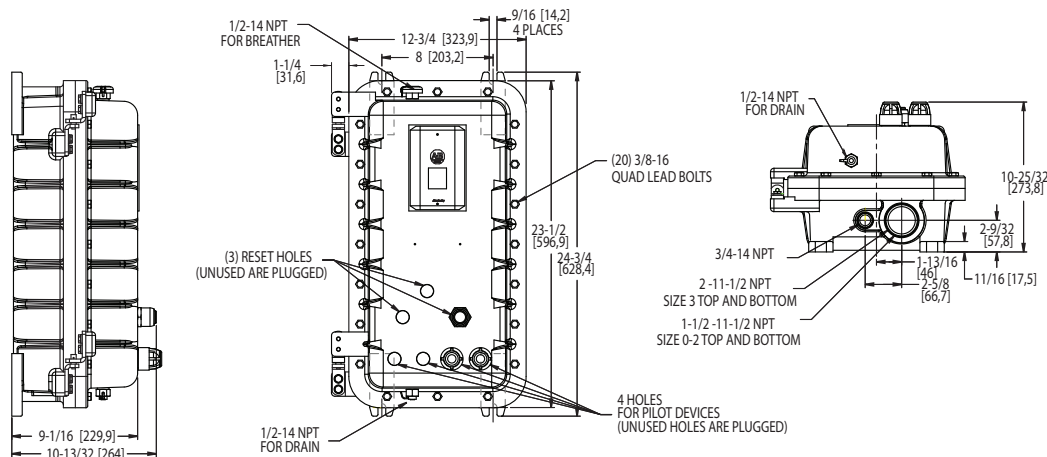


Figure 1B

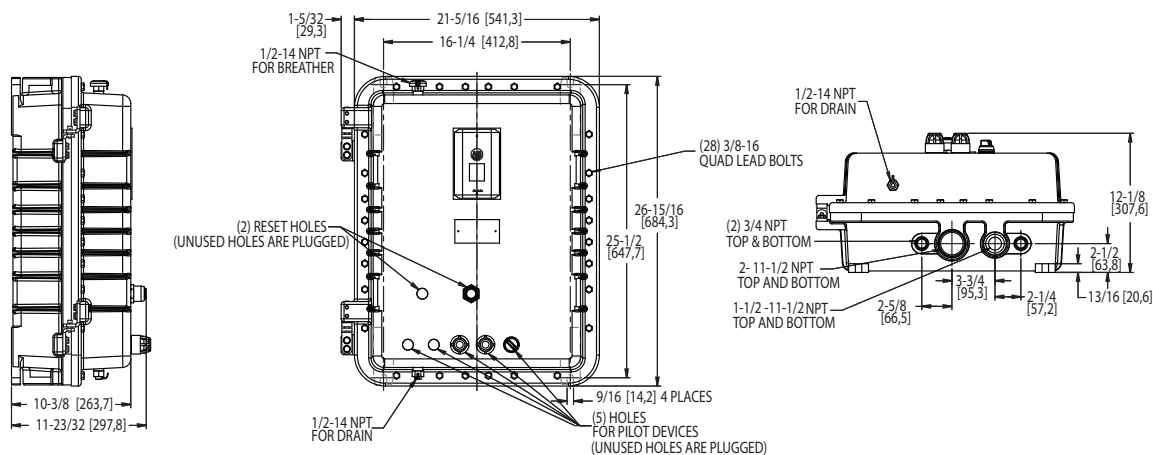
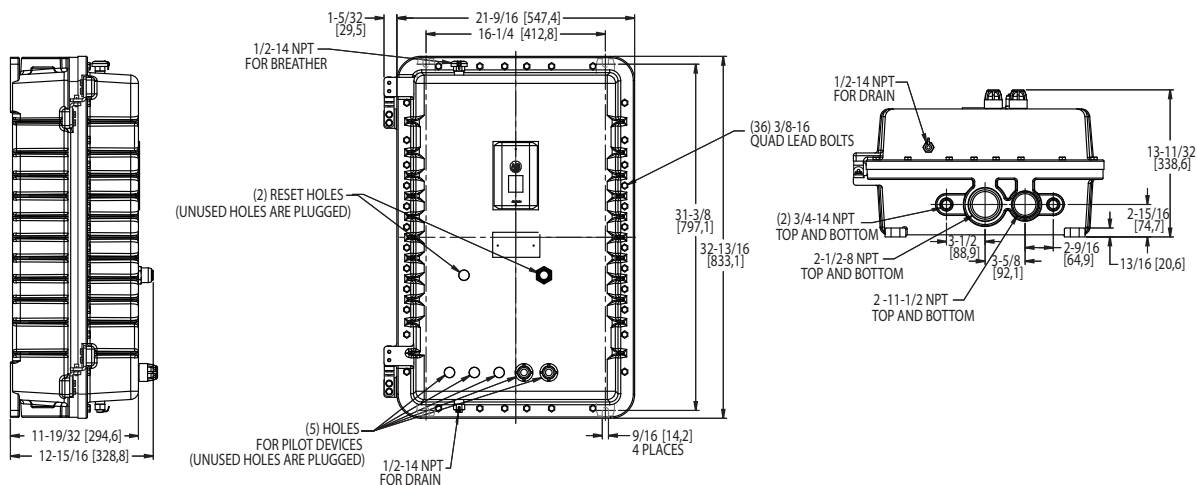


Figure 1C



Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Bolted Enclosures — Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletins 500 and 509 Contactors**

| NEMA Size | Bulletins 500 and 509 |               |
|-----------|-----------------------|---------------|
|           | with CCT ★            | without CCT ★ |
| 0         | Figure 2C             | Figure 2A     |
| 1         | Figure 2C             | Figure 2A     |
| 2         | Figure 2C             | Figure 2B     |
| 3         | Figure 2D             | Figure 2C     |
| 4         | Figure 2E             | Figure 2E     |
| 5         | Figure 2F             | Figure 2F     |

★ CCT=Control circuit transformer

Figure 2A

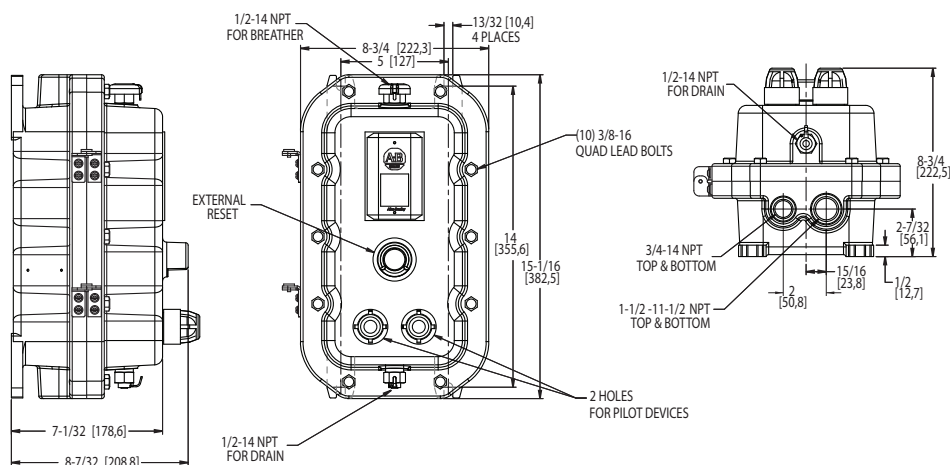


Figure 2B

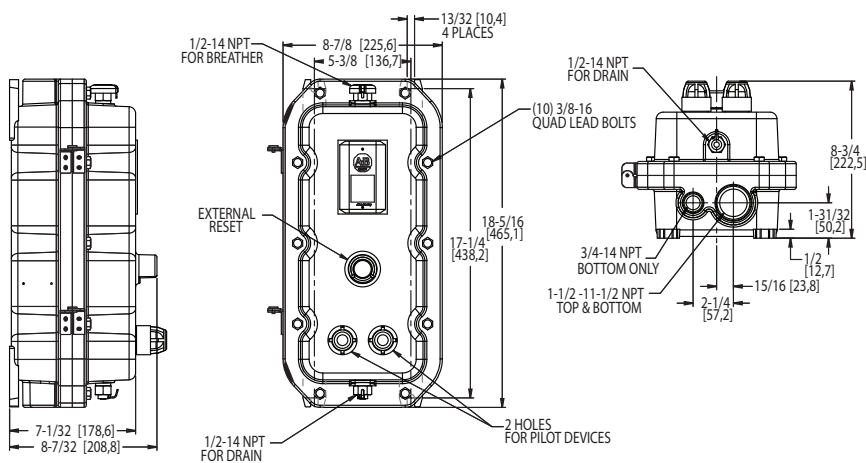
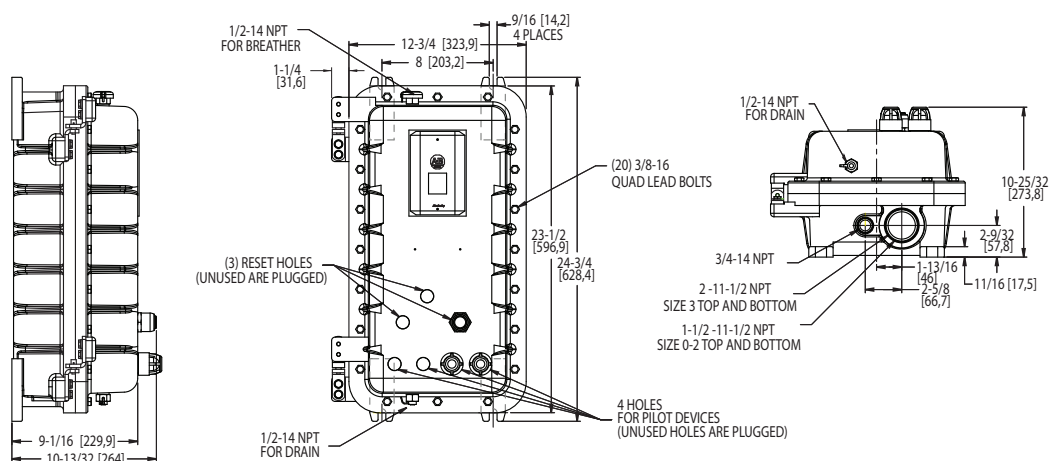


Figure 2C



Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Bolted Enclosures — Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletins 500 and 509 Contactors (Continued)**

| NEMA Size | Bulletins 500 and 509 |              |
|-----------|-----------------------|--------------|
|           | with CCT★             | without CCT★ |
| 0         | Figure 2C             | Figure 2A    |
| 1         | Figure 2C             | Figure 2A    |
| 2         | Figure 2C             | Figure 2B    |
| 3         | Figure 2D             | Figure 2C    |
| 4         | Figure 2E             | Figure 2E    |
| 5         | Figure 2F             | Figure 2F    |

★ CCT=Control circuit transformer

Figure 2D

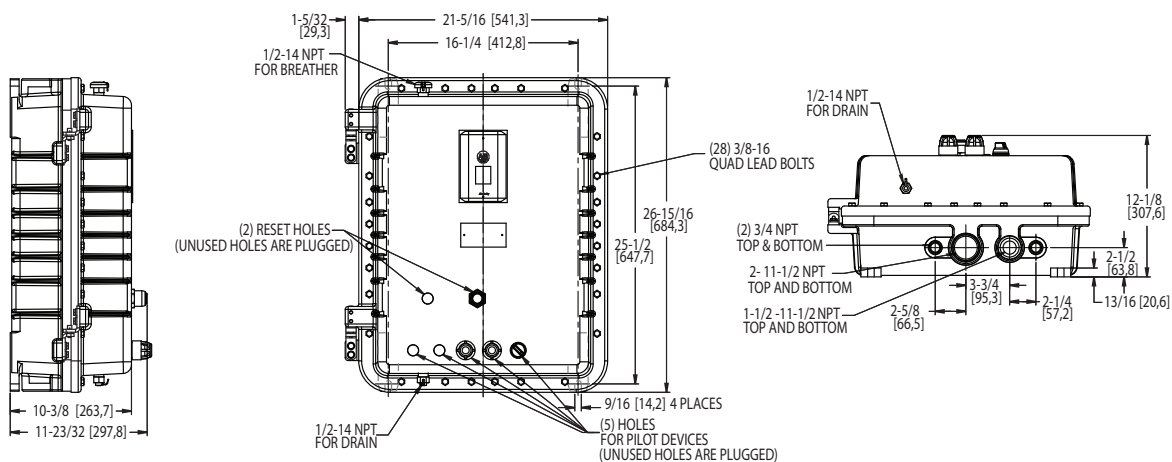


Figure 2E

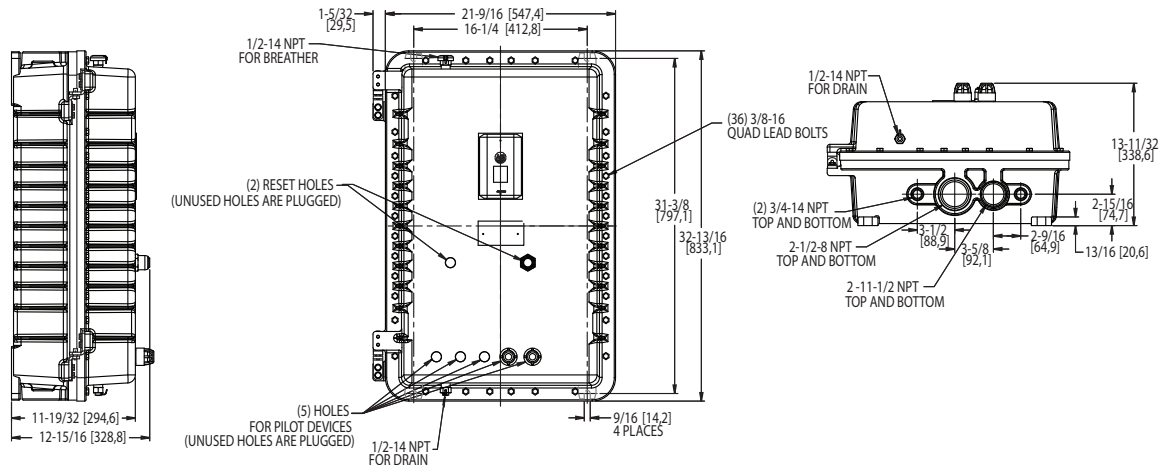
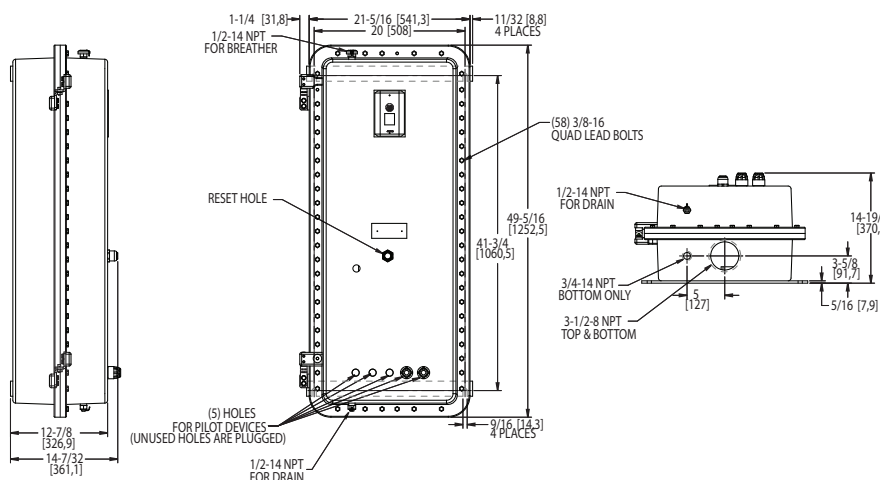


Figure 2F



Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Bolted Enclosures — Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletins 503, 507, 513 Starters**

| NEMA Size | Bulletins 503 and 513 |              | Bulletin 507 |              |
|-----------|-----------------------|--------------|--------------|--------------|
|           | with CCT★             | without CCT★ | with CCT★    | without CCT★ |
| 0         | Figure 3A             | Figure 3A    | Figure 3B‡   | Figure 3A    |
| 1         | Figure 3A             | Figure 3A    | Figure 3B‡   | Figure 3A    |
| 2         | Figure 3A             | Figure 3A    | Figure 3B    | Figure 3B    |
| 3         | Figure 3B             | Figure 3B    | Figure 3C    | Figure 3C    |
| 4         | Figure 3C             | Figure 3C    | Figure 3D    | Figure 3D    |
| 5         | Figure 3D             | Figure 3D    | —            | —            |

★ CCT=Control circuit transformer

‡ Figure 3A should be used for 80VA maximum transformers.

Figure 3A

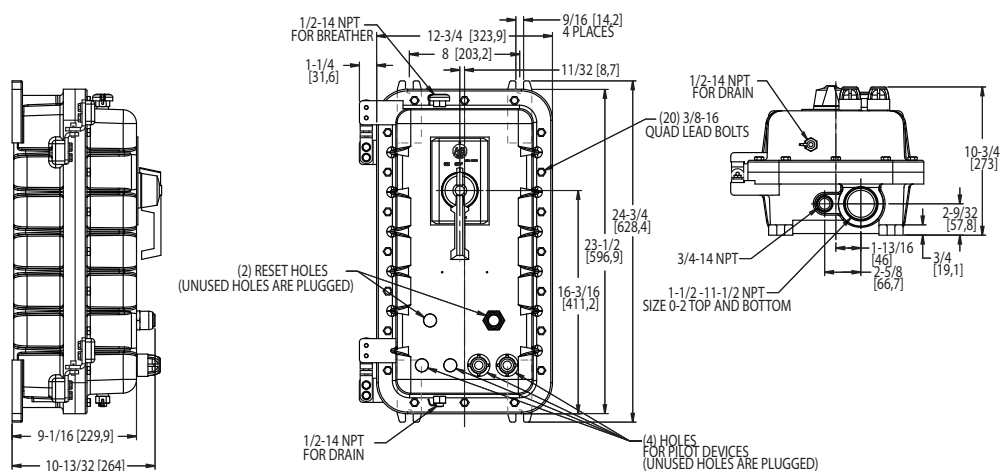
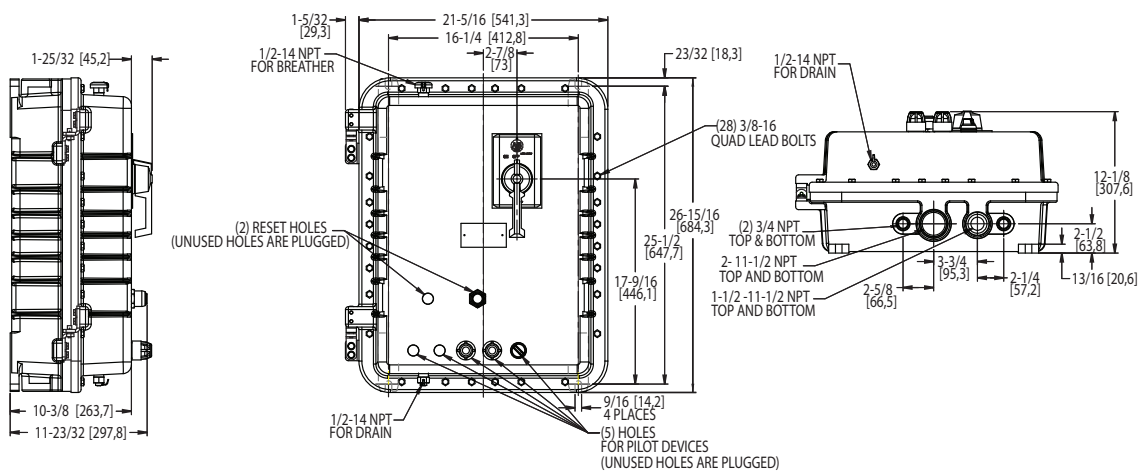


Figure 3B



Approximate dimensions are shown in inches (millimeters). Dimensions are not intended to be used for manufacturing purposes.

**Bolted Enclosures — Type 3R, 7 & 9, Class I, Groups C & D, Class II, Groups E, F, & G — Divisions 1 & 2 for Bulletins 503, 507, 513 Starters (Continued)**

| NEMA Size | Bulletins 503 and 513 |              | Bulletin 507 |              |
|-----------|-----------------------|--------------|--------------|--------------|
|           | with CCT★             | without CCT★ | with CCT★    | without CCT★ |
| 0         | Figure 3A             | Figure 3A    | Figure 3B†   | Figure 3A    |
| 1         | Figure 3A             | Figure 3A    | Figure 3B†   | Figure 3A    |
| 2         | Figure 3A             | Figure 3A    | Figure 3B    | Figure 3B    |
| 3         | Figure 3B             | Figure 3B    | Figure 3C    | Figure 3C    |
| 4         | Figure 3C             | Figure 3C    | Figure 3D    | Figure 3D    |
| 5         | Figure 3D             | Figure 3D    | —            | —            |

★ CCT=Control circuit transformer

Figure 3C

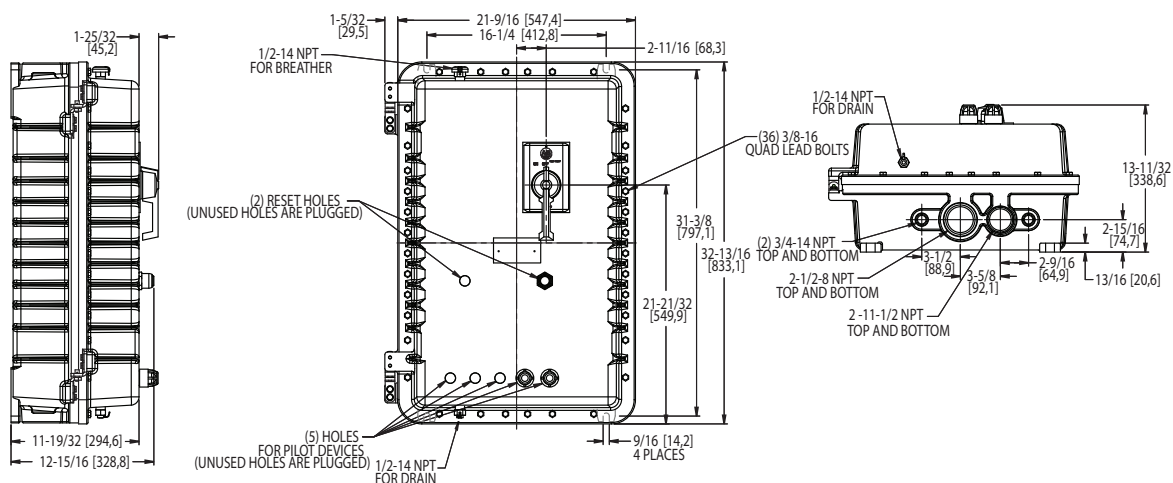
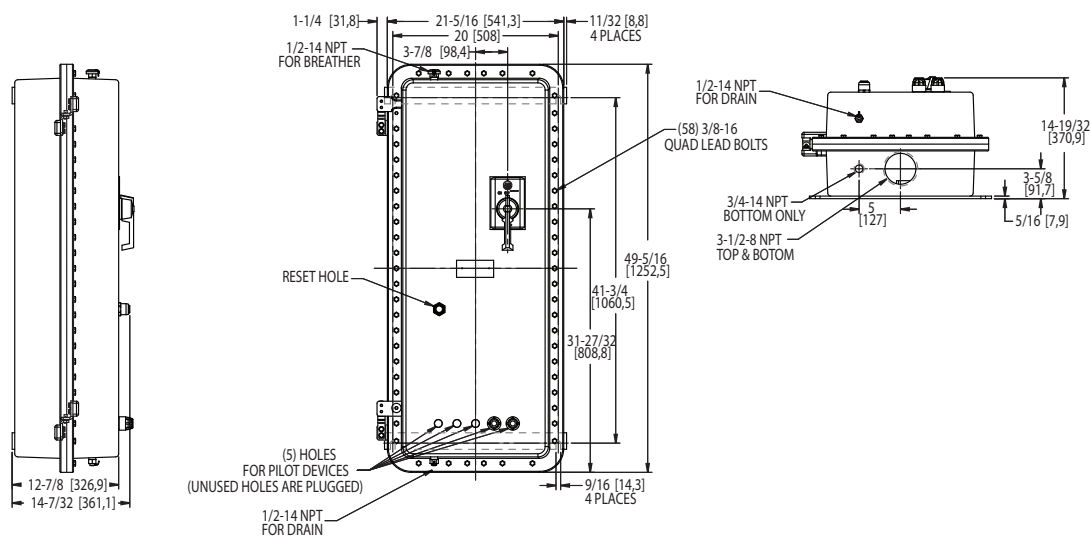


Figure 3D



## Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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