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## Capacitors Of All Types

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**What You Want When You Need It.**



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[Click Here](#) for Suggested Capacitor Ratings for T-Frame NEMA Class B Motors

[Click Here](#) for Suggested Capacitor Ratings for Non T-Frame NEMA Class B Open Squirrel-Cage Motors

[Click Here](#) for KW Multipliers for Determining Capacitor Kilovars

[Click Here](#) for Article 460.8 & 460.9 notes.

[Click Here](#) for typical connection diagram

[Click Here](#) for Recommended Wire, Switch, and Fuse Sizes for Power Factor Capacitors.

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TABLE 1

### Suggested Capacitor Ratings for T-Frame NEMA Class B Motors

| Induction<br>Motor<br>Rating<br>(HP) | Nominal Motor Speed |                 |                  |                 |                  |                 |                  |                 |                  |                 |                  |                 |
|--------------------------------------|---------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|
|                                      | 3600 RPM            |                 | 1800 RPM         |                 | 1200 RPM         |                 | 900 RPM          |                 | 720 RPM          |                 | 600 RPM          |                 |
|                                      | Capa-<br>citor      | Line<br>Current | Capa-<br>citor   | Line<br>Current | Capa-<br>citor   | Line<br>Current | Capa-<br>citor   | Line<br>Current | Capa-<br>citor   | Line<br>Current | Capa-<br>citor   | Line<br>Current |
|                                      | Rating<br>Rating    | Reduced<br>(%)  | Rating<br>Rating | Reduced<br>(%)  | Rating<br>Rating | Reduced<br>(%)  | Rating<br>Rating | Reduced<br>(%)  | Rating<br>Rating | Reduced<br>(%)  | Rating<br>Rating | Reduced<br>(%)  |
| 3                                    | 1.5                 | 14              | 15               | 23              | 2.5              | 28              | 3                | 38              | 3                | 40              | 4                | 40              |
| 5                                    | 2                   | 14              | 25               | 22              | 3                | 26              | 4                | 31              | 4                | 40              | 5                | 40              |
| 7.5                                  | 2.5                 | 14              | 3                | 20              | 4                | 21              | 5                | 28              | 5                | 38              | 6                | 45              |
| 10                                   | 4                   | 14              | 4                | 18              | '                | 21              | 6                | 27              | 7.5              | 36              | 8                | 38              |
| 15                                   | 5                   | 12              | 5                | 18              | 6                | 20              | 7.5              | 24              | 8                | 32              | 10               | 34              |
| 20                                   | 6                   | 12              | 6                | 17              | 5                | 19              | 9                | 23              | 10               | 29              | 12               | 30              |
| 25                                   | 7.5                 | 12              | 7.5              | 17              | 8                | 19              | 10               | 23              | 12               | 25              | 18               | 30              |
| 30                                   | 8                   | 11              | 8                | 16              | 10               | 19              | 14               | 22              | 15               | 24              | 22.5             | 30              |
| 40                                   | 12                  | 12              | 13               | 15              | 16               | 19              | 18               | 21              | 22.5             | 24              | 25               | 30              |
| 50                                   | 15                  | 12              | 18               | 15              | 20               | 19              | 22.5             | 21              | 24               | 24              | 30               | 30              |
| 60                                   | 18                  | 12              | 21               | 14              | 22.5             | 17              | 26               | 20              | 30               | 22              | 35               | 28              |
| 75                                   | 20                  | 12              | 23               | 14              | 25               | 15              | 28               | 17              | 33               | 14              | 40               | 19              |
| 100                                  | 12.5                | 11              | 30               | 14              | 30               | 12              | 35               | 16              | 40               | 15              | 45               | 17              |
| 125                                  | 25                  | 10              | 36               | 12              | 35               | 12              | 42               | 14              | 45               | 15              | 50               | 17              |
| 150                                  | 30                  | 10              | 42               | 12              | 40               | 12              | 52.5             | 14              | 52.5             | 14              | 60               | 17              |
| 200                                  | 35                  | 10              | 50               | 11              | 50               | 10              | 65               | 13              | 68               | 13              | 90               | 17              |
| 250                                  | 40                  | 11              | 60               | 10              | 62.5             | 10              | 82               | 13              | 87.5             | 13              | 100              | 17              |
| 300                                  | 45                  | 11              | 68               | 10              | 75               | 12              | 100              | 14              | 100              | 13              | 120              | 17              |
| 350                                  | 50                  | 12              | 75               | 8               | 90               | 12              | 120              | 13              | 120              | 13              | 135              | 15              |
| 400                                  | 75                  | 10              | 80               | 8               | 100              | 12              | 130              | 13              | 140              | 13              | 150              | 15              |
| 450                                  | 80                  | 8               | 90               | 8               | 120              | 10              | 140              | 12              | 160              | 14              | 160              | 15              |
| 500                                  | 100                 | 8               | 120              | 9               | 150              | 12              | 160              | 12              | 180              | 13              | 180              | 15              |

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| TABLE 2                                                                            |                |                 |                |                 |                |                 |                |                 |                |                 |                |                 |
|------------------------------------------------------------------------------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Suggested Capacitor Ratings for Non T-Frame NEMA Class B Open Squirrel-Cage Motors |                |                 |                |                 |                |                 |                |                 |                |                 |                |                 |
| Nominal Motor Speed                                                                |                |                 |                |                 |                |                 |                |                 |                |                 |                |                 |
| Induction<br>Motor<br>Rating<br>(HP)                                               | 3600 RPM       |                 | 1200 RPM       |                 | 720 RPM        |                 |                |                 |                |                 |                |                 |
|                                                                                    | Capa-<br>citor | Lure<br>Current | Capa-<br>citor | Line<br>Current | Capa-<br>citor | Lure<br>Current | Capa-<br>citor | Line<br>Current | Capa-<br>citor | Line<br>Current | Capa-<br>citor | Line<br>Current |
|                                                                                    | Rating         | Reduced         | Rating         | Reduced         | Rating         | Reduced         | Rating         | Reduced         | Rating         | Reduced         | Rating         | Reduced         |
|                                                                                    | (KVAR)         | (%)             | (KVAR)         | (%)             | (KVAR)         | (%)             | (KVAR)         | (%)             | (KVAR)         | (%)             | (KVAR)         | (%)             |
| 3                                                                                  | 1.5            | 14              | 1.5            | 15              | 1.5            | 20              | 2              | 27              | 15             | 35              | 3.5            | 41              |
| 5                                                                                  | 2              | 12              | 2              | 13              | 2              | 17              | 3              | 25              | 4              | 32              | 4.5            | 37              |
| 7.5                                                                                | 2.5            | 11              | 2.5            | 12              | 3              | 15              | 4              | 22              | 5_5            | 30              | 6              | 34              |
| 10                                                                                 | 3              | 10              | 3              | 11              | 3.5            | 14              | 5              | 21              | 6.5            | 27              | 7.5            | 31              |
| 15                                                                                 | 4              | 9               | 4              | 10              | 5              | 13              | 6.5            | 18              | 8              | 23              | 9.5            | 27              |
| 20                                                                                 | 5              | 9               | 5              | 10              | 6.5            | 12              | 7.5            | 16              | 9              | 21              | 12             | 25              |
| 25                                                                                 | 6              | 9               | 6              | 10              | 7.5            | 11              | 9              | 15              | 11             | 20              | 14             | 23              |
| 30                                                                                 | 7              | 8               | 7              | 9               | 9              | 11              | 10             | 14              | 12             | 18              | 16             | 11              |
| 40                                                                                 | 9              | 8               | 9              | 9               | 11             | 10              | 12             | 13              | 15             | 16              | 20             | 20              |
| 50                                                                                 | 12             | 8               | 11             | 9               | 13             | 10              | 15             | 12              | 19             | 15              | 24             | 19              |
| 60                                                                                 | 14             | 8               | 14             | 8               | 15             | 10              | 18             | 11              | 22             | 15              | 27             | 19              |
| 75                                                                                 | 17             | 8               | 16             | 8               | 18             | 10              | 21             | 10              | 26             | 14              | 32.5           | 18              |
| 100                                                                                | 22             | 8               | 21             | 8               | 25             | 9               | 27             | 10              | 32.5           | 13              | 40             | 17              |
| 125                                                                                | 27             | 8               | 26             | 8               | 30             | 9               | 32.5           | 10              | 40             | 13              | 47.5           | 16              |
| 150                                                                                | 32.5           | 8               | 30             | 8               | 35             | 9               | 37.5           | 10              | 47.5           | 12              | 52.5           | 15              |
| 200                                                                                | 40             | 8               | 37.5           | 8               | 41.5           | 9               | 47.5           | 10              | 60             | 12              | 65             | 14              |
| 250                                                                                | 50             | 8               | 45             | 7               | 52.5           | 8               | 57.5           | 9               | 70             | 11              | 77.5           | 13              |
| 300                                                                                | 57.5           | 8               | 52.5           | 7               | 60             | 8               | 65             | 9               | 80             | 11              | 87.5           | 12              |
| 350                                                                                | 65             | 8               | 60             | 7               | 67.5           | 8               | 75             | 9               | 87.5           | 10              | 95             | 11              |
| 400                                                                                | 70             | 8               | 65             | 6               | 75             | 8               | 85             | 9               | 95             | 10              | 105            | 11              |
| 450                                                                                | 75             | 8               | 67.5           | 6               | 80             | 8               | 92.5           | 9               | 100            | 9               | 110            | 11              |
| 500                                                                                | 77.5           | 8               | 72.5           | 6               | 81.5           | 8               | 97.5           | 9               | 107.5          | 9               | 115            | 10              |

Tables 1 & 2 apply to three phase, 60 Hz motors when switched with capacitors as a single unit. IEEE Std 141-1986

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| TABLE 3 See Example At The Bottom Of The Page     |                      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---------------------------------------------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| KW Multipliers for Determining Capacitor Kilovars |                      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Original                                          | Desired Power Factor |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Power                                             | 0.81                 | 0.82  | 0.83  | 0.84  | 0.85  | 0.86  | 0.87  | 0.88  | 0.89  | 0.9   | 0.91  | 0.92  | 0.93  | 0.94  | 0.95  | 0.96  | 0.97  | 0.98  | 0.99  | 1     |
| Factor                                            |                      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 0.51                                              | 0.962                | 0.989 | 1.015 | 1.041 | 1.067 | 1.094 | 1.12  | 1.147 | 1.175 | 1.203 | 1.231 | 1.261 | 1.292 | 1.324 | 1.358 | 1.395 | 1.436 | 1.484 | 1.544 | 1.687 |
| 0.52                                              | 0.919                | 0.945 | 0.971 | 0.997 | 1.023 | 1.05  | 1.076 | 1.103 | 1.131 | 1.159 | 1.187 | 1.217 | 1.248 | 1.28  | 1.314 | 1.351 | 1.392 | 1.44  | 1.5   | 1.643 |
| 0.53                                              | 0.876                | 0.902 | 0.928 | 0.954 | 0.98  | 1.007 | 1.033 | 1.06  | 1.088 | 1.116 | 1.144 | 1.174 | 1.205 | 1.237 | 1.271 | 1.308 | 1.349 | 1.397 | 1.457 | 1.6   |
| 0.54                                              | 0.835                | 0.861 | 0.887 | 0.913 | 0.939 | 0.966 | 0.992 | 1.019 | 1.047 | 1.075 | 1.103 | 1.133 | 1.164 | 1.196 | 1.23  | 1.267 | 1.308 | 1.356 | 1.416 | 1559  |
| 0.55                                              | 0.795                | 0.821 | 0.847 | 0.873 | 0.899 | 0.926 | 0.952 | 0.979 | 1.007 | 1.035 | 1.063 | 1.093 | 1.124 | 1.156 | 1.19  | 1.227 | 1.268 | 1.316 | 1.377 | 1.519 |
| 0.56                                              | 0.756                | 0.782 | 0.808 | 0.834 | 0.86  | 0.887 | 0.913 | 0.94  | 0.968 | 0.996 | 1.024 | 1.054 | 1.085 | 1.117 | 1.151 | 1.188 | 1.229 | 1.277 | 1.338 | 1.48  |
| 0.57                                              | 0.718                | 0.744 | 0.77  | 0.796 | 0.822 | 0.849 | 0.875 | 0.902 | 0.93  | 0.958 | 0.986 | 1.016 | 1.047 | 1.079 | 1.113 | 1.15  | 1.191 | 1.239 | 1.3   | 1.442 |
| 0.58                                              | 0.681                | 0.707 | 0.733 | 0.759 | 0.785 | 0.812 | 0.838 | 0.865 | 0.893 | 0.921 | 0.949 | 0.979 | 1.01  | 1.042 | 1.076 | 1.113 | 1.154 | 1.202 | 1.263 | 1.405 |
| 0.59                                              | 0.645                | 0.671 | 0.697 | 0.723 | 0.749 | 0.776 | 0.802 | 0.829 | 0.857 | 0.885 | 0.913 | 0.943 | 0.974 | 1.006 | 1.04  | 1.077 | 1.118 | 1.166 | 1.226 | 1.368 |
| 0.6                                               | 0.609                | 0.635 | 0.661 | 0.687 | 0.713 | 0.74  | 0.766 | 0.793 | 0.821 | 0.849 | 0.877 | 0.907 | 0.938 | 0.97  | 1.004 | 1.041 | 1.082 | 1.13  | 1.192 | 1.334 |
| 0.61                                              | 0.575                | 0.601 | 0.627 | 0.653 | 0.679 | 0.706 | 0.732 | 0.759 | 0.787 | 0.815 | 0.843 | 0.873 | 0.904 | 0.936 | 0.97  | 1.007 | 1.048 | 1.096 | 1.157 | 1.299 |
| 0.62                                              | 0.542                | 0.568 | 0.594 | 0.62  | 0.646 | 0.673 | 0.699 | 0.726 | 0.754 | 0.782 | 0.81  | 0.84  | 0.871 | 0.903 | 0.937 | 0.974 | 1.015 | 1.063 | 1.123 | 1.265 |
| 0.63                                              | 509                  | 0.535 | 561   | 0.587 | 0.613 | 0.64  | 0.666 | 0.693 | 0.721 | 0.749 | 0.777 | 0.807 | 0.838 | 0.87  | 0.904 | 0.941 | 0.982 | 1.03  | 1.091 | 1.233 |
| 0.64                                              | 0.474                | 0.503 | 0.529 | 0.555 | 0.581 | 0.608 | 0.634 | 0.661 | 0.689 | 0.717 | 0.745 | 0.775 | 0.806 | 0.838 | 0.872 | 0.909 | 0.95  | 0.998 | 1.068 | 1.2   |
| 0.65                                              | 0.445                | 0.471 | 0.497 | 0.523 | 0.549 | 0.576 | 0.602 | 0.629 | 0.657 | 0.685 | 0.713 | 0.743 | 0.774 | 0.806 | 0.84  | 0.877 | 0.918 | 0.966 | 1.027 | 1.169 |
| 0.66                                              | 0.414                | 0.44  | 0.466 | 0.492 | 0.518 | 0.545 | 0.571 | 0.598 | 0.626 | 0.654 | 0.682 | 0.712 | 0.743 | 0.775 | 0.809 | 0.846 | 0.887 | 0.935 | 0.996 | 1.138 |
| 0.67                                              | 0.384                | 0.41  | 0.436 | 0.462 | 0.488 | 0.515 | 0.541 | 0.568 | 0.596 | 0.624 | 0.652 | 0.682 | 0.713 | 0.745 | 0.779 | 0.816 | 0.857 | 0.905 | 0.966 | 1.108 |
| 0.68                                              | 0.354                | 0.38  | 0.406 | 0.432 | 0.458 | 0.485 | 0.511 | 0.538 | 0.566 | 0.594 | 0.622 | 0.652 | 0.683 | 0.715 | 0.749 | 0.786 | 0.827 | 0.875 | 0.937 | 1.079 |
| 0.69                                              | 0.325                | 0.351 | 0.377 | 0.403 | 0.429 | 0.456 | 0.482 | 0.509 | 0.537 | 0.565 | 0.593 | 0.623 | 0.654 | 0.686 | 0.72  | 0.757 | 0.798 | 0.846 | 0.907 | 1.049 |
| 0.7                                               | 0.296                | 0.322 | 0.348 | 0.374 | 0.4   | 0.427 | 0.453 | 0.48  | 0.508 | 0.536 | 0.564 | 0.594 | 0.625 | 0.657 | 0.691 | 0.728 | 0.769 | 0.817 | 0.878 | 1.02  |
| 0.71                                              | 0.268                | 0.294 | 0.32  | 0.346 | 0.372 | 0.399 | 0.425 | 0.452 | 0.48  | 0.508 | 0.536 | 0.566 | 0.597 | 0.629 | 0.663 | 0.7   | 0.741 | 0.789 | 0.85  | 0.992 |
| 0.72                                              | 0.24                 | 0.266 | 0.292 | 0.318 | 0.344 | 0.371 | 0.397 | 0.424 | 0.452 | 0.48  | 0.508 | 0.538 | 0.569 | 0.601 | 0.635 | 0.672 | 0.713 | 0.761 | 0.821 | 0.963 |
| 0.73                                              | 0.212                | 0.238 | 0.264 | 0.29  | 0.316 | 0.343 | 0.369 | 0.396 | 0.424 | 0.452 | 0.48  | 0.51  | 0.541 | 0.573 | 0.607 | 0.644 | 0.685 | 0.733 | 0.794 | 0.936 |
| 0.74                                              | 0.185                | 0.211 | 0.237 | 0.263 | 0.289 | 0.316 | 0.342 | 0.369 | 0.397 | 0.425 | 0.453 | 0.483 | 0.514 | 0.546 | 0.58  | 0.617 | 0.658 | 0.706 | 0.767 | 0.909 |
| 0.75                                              | 0.158                | 0.184 | 0.21  | 0.236 | 0.262 | 0.289 | 0.315 | 0.342 | 0.37  | 0.398 | 0.426 | 0.456 | 0.487 | 0.519 | 0.553 | 0.59  | 0.631 | 0.679 | 0.74  | 0.882 |
| 0.76                                              | 0.131                | 0.157 | 0.183 | 0.209 | 0.235 | 0.262 | 0.288 | 0.315 | 0.343 | 0.371 | 0.399 | 0.429 | 0.46  | 0.492 | 0.526 | 0.563 | 0.604 | 0.652 | 0.713 | 0.855 |
| 0.77                                              | 0.105                | 0.131 | 0.157 | 0.183 | 0.209 | 0.236 | 0.262 | 0.289 | 0.317 | 0.345 | 0.373 | 0.403 | 0.434 | 0.466 | 0.5   | 0.537 | 0.578 | 0.626 | 0.687 | 0.829 |
| 0.78                                              | 0.078                | 0.104 | 0.13  | 0.156 | 0.182 | 0.209 | 0.235 | 0.262 | 0.29  | 0.318 | 0.346 | 0.376 | 0.407 | 0.439 | 0.473 | 0.51  | 0.551 | 0.599 | 0.661 | 0.803 |
| 0.79                                              | 0.052                | 0.078 | 0.104 | 0.13  | 0.156 | 0.183 | 0.209 | 0.236 | 0.264 | 0.292 | 0.32  | 0.35  | 0.381 | 0.413 | 0.447 | 0.484 | 0.525 | 0.573 | 0.634 | 0.776 |
| 0.8                                               | 0.026                | 0.052 | 0.078 | 0.104 | 0.13  | 0.157 | 0.183 | 0.21  | 0.238 | 0.266 | 0.294 | 0.324 | 0.355 | 0.387 | 0.421 | 0.458 | 0.499 | 0.547 | 0.608 | 0.75  |
| 0.81                                              | 0                    | 0.026 | 0.052 | 0.078 | 0.104 | 0.131 | 0.157 | 0.184 | 0.212 | 0.24  | 0.268 | 0.298 | 0.329 | 0.361 | 0.395 | 0.432 | 0.473 | 0.521 | 0.582 | 0.724 |
| 0.82                                              |                      | 0     | 0.026 | 0.052 | 0.078 | 0.105 | 0.131 | 0.158 | 0.186 | 0.214 | 0.242 | 0.272 | 0.303 | 0.335 | 0.369 | 0.406 | 0.447 | 0.495 | 0.556 | 0.698 |
| 0.83                                              |                      |       | 0     | 0.026 | 0.052 | 0.079 | 0.105 | 0.132 | 0.16  | 0.188 | 0.216 | 0.246 | 0.277 | 0.309 | 0.343 | 0.38  | 0.421 | 0.469 | 0.53  | 0.672 |
| 0.84                                              |                      |       |       | 0     | 0.026 | 0.053 | 0.079 | 0.106 | 0.134 | 0.162 | 0.19  | 0.22  | 0.251 | 0.283 | 0.317 | 0.354 | 0.395 | 0.443 | 0.504 | 0.645 |
| 0.85                                              |                      |       |       |       | 0     | 0.027 | 0.053 | 0.08  | 0.108 | 0.136 | 0.164 | 0.194 | 0.225 | 0.257 | 0.291 | 0.328 | 0.369 | 0.417 | 0.478 | 0.62  |
| 0.86                                              |                      |       |       |       |       | 0     | 0.026 | 0.053 | 0.081 | 0.109 | 0.137 | 0.167 | 0.198 | 0.23  | 0.264 | 0.301 | 0.342 | 0.39  | 0.451 | 0.593 |
| 0.87                                              |                      |       |       |       |       |       | 0     | 0.027 | 0.055 | 0.083 | 0.111 | 0.141 | 0.172 | 0.204 | 0.238 | 0.275 | 0.316 | 0.364 | 0.425 | 0.567 |
| 0.88                                              |                      |       |       |       |       |       |       | 0     | 0.028 | 0.056 | 0.084 | 0.114 | 0.145 | 0.177 | 0.211 | 0.248 | 0.289 | 0.337 | 0.398 | 0.54  |
| 0.89                                              |                      |       |       |       |       |       |       |       | 0     | 0.028 | 0.056 | 0.086 | 0.117 | 0.149 | 0.183 | 0.22  | 0.261 | 0.309 | 0.37  | 0.512 |
| 0.9                                               |                      |       |       |       |       |       |       |       |       | 0     | 0.028 | 0.058 | 0.089 | 0.121 | 0.155 | 0.192 | 0.233 | 0.281 | 0.342 | 0.484 |
| 0.91                                              |                      |       |       |       |       |       |       |       |       |       | 0     | 0.03  | 0.061 | 0.093 | 0.127 | 0.164 | 0.205 | 0.253 | 0.314 | 0.456 |
| 0.92                                              |                      |       |       |       |       |       |       |       |       |       |       | 0     | 0.031 | 0.063 | 0.097 | 0.134 | 0.175 | 0.223 | 0.284 | 0.426 |
| 0.93                                              |                      |       |       |       |       |       |       |       |       |       |       |       | 0     | 0.032 | 0.066 | 0.103 | 0.144 | 0.192 | 0.253 | 0.395 |
| 0.94                                              |                      |       |       |       |       |       |       |       |       |       |       |       |       | 0     | 0.034 | 0.071 | 0.112 | 0.16  | 0.221 | 0.363 |
| 0.95                                              |                      |       |       |       |       |       |       |       |       |       |       |       |       |       | 0     | 0.037 | 0.079 | 0.126 | 0.187 | 0.328 |

Example: Total KW-input of load from wattmeter reading 100 KW at a power factor of 65%. The capacitive KVAR necessary to raise the power factor to 95% is found by multiplying the 100 KW by the factor found on the table (.840). Then 100 KW x 0.840 = 84 KVAR. Use 85 KVAR.

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411 N Platte Ave.  
York, NE. 68467

For Fast & Friendly Assistance  
Call Us 888-226-4917  
Hours Are 8:00AM- 5:00PM CST.

## Capacitors Of All Types

With The Punch  
Needed To Get You  
Up And Running,  
While Our Power  
Factor Capacitors Will  
Save You Money.

**What You Want When You Need It.**



### Notice:

NEC is a registered trademark of the National Fire Protection Association, Inc.

All NEC references by Electrical Helper are interpretations of the NEC by the Electrical Helper staff and are not NEC statements. The official position of the NEC requires that the NEC be referred to in its entirety.

Now that we have the power factor capacitor sized we must refer to Article 430.27 in the NEC which states the conductors shall comply with 460.8 and 460.9

#### Article 460.8

A) states the ampacity capacity of the capacitor conductors shall not be less than 135 percent of the capacitor rated current in any case and shall not be less than one third the ampacity of the motor circuit conductors.

B) states that an overcurrent device shall be provided in each of the ungrounded conductors or each capacitor bank set to the lowest practical setting, except if the capacitor bank is connected on the load side of the motor overload protector.

C) states that a disconnect capable of opening all ungrounded phase conductors to the capacitor bank simultaneously be installed with rating of not less than 135 percent of the rated current of the capacitor(s) except it is not required when the capacitor(s) is connected on the load side of a motor controller.

Article 460.9 states that the overload current device, shall be set according to the improved power factor and that the effects of the capacitor(s) shall not affect the wire size conductors serving the motor in accordance with Article 430.22

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## INDIVIDUAL MOTOR CORRECTION

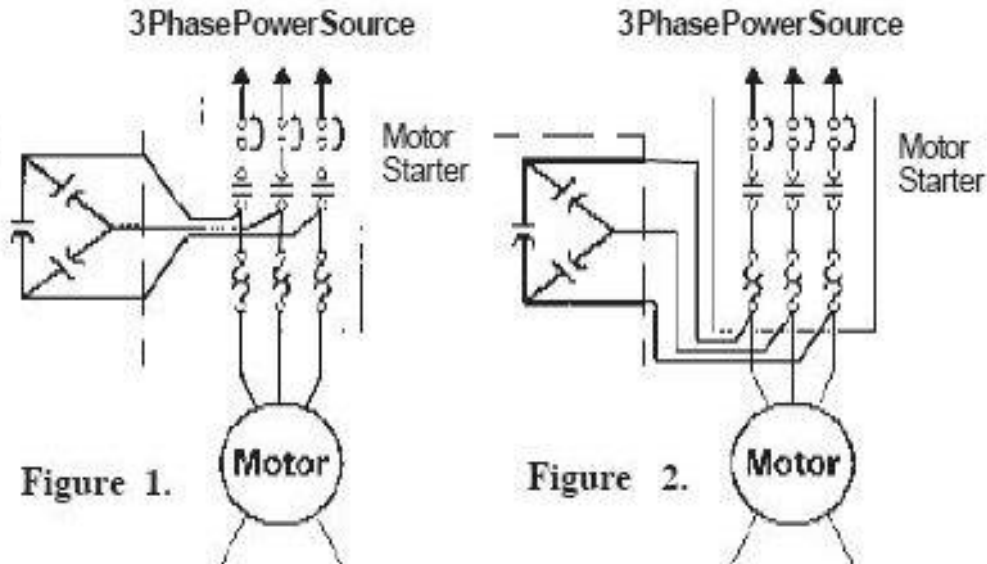
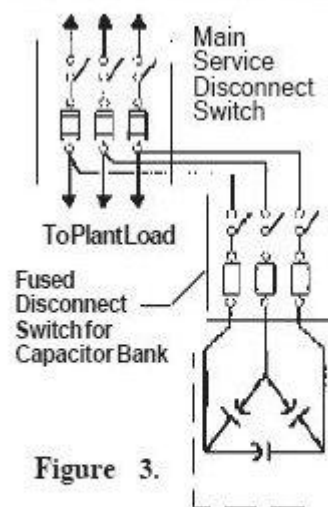


Figure 1 is the preferred connection to use when possible. If Figure 2 is used, the overload relay heater coils must be resized.

**Caution:** Do not oversize power factor correction capacitors. Do not connect KVAR units to the load side of a starter or contactor for motors subject to reversing, plugging, or frequent starts; crane or elevator motors, or any motor where the load may drive the motor, or multispeed motors, or motors involving open transition reduced voltage starting. On these applications, the KVAR units should be installed on the distribution system ahead of the motor controller, and must not be switched with the load motor.

## DISTRIBUTION PANEL



**Caution:** Applying large fixed KVR units on the main service can cause a leading power factor when plant loads vary widely. The capacitors should only be on line when the load requires KVAR and disconnected when the load is reduced.



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The following tables are for sizing wire, switches and fuses for power factor correction capacitors.

| RECOMMENDED WIRE SIZES, SWITCHES, & FUSES |       |           |             |               |
|-------------------------------------------|-------|-----------|-------------|---------------|
| 480 VOLTS                                 |       |           |             |               |
| KVAR SIZE                                 | Amps  | Wire Size | Fuse Rating | Switch Rating |
| 0.5                                       | 0.6   | 14        | 1           | 30            |
| 1                                         | 1.2   | 14        | 2.5         | 30            |
| 1.5                                       | 1.8   | 14        | 3.5         | 30            |
| 2                                         | 2.4   | 14        | 4           | 30            |
| 2.5                                       | 3     | 14        | 5           | 30            |
| 3                                         | 3.6   | 14        | 6.5         | 30            |
| 4                                         | 4.8   | 14        | 8           | 30            |
| 5                                         | 6     | 14        | 10          | 30            |
| 6                                         | 7.2   | 14        | 12          | 30            |
| 7                                         | 8.4   | 14        | 15          | 30            |
| 7.5                                       | 9     | 14        | 15          | 30            |
| 8                                         | 9.6   | 12        | 17.5        | 30            |
| 9                                         | 10.8  | 12        | 20          | 30            |
| 10                                        | 12    | 12        | 20          | 30            |
| 11                                        | 13.2  | 10        | 25          | 30            |
| 12                                        | 14.4  | 10        | 25          | 30            |
| 13                                        | 15.6  | 10        | 30          | 30            |
| 14                                        | 16.8  | 10        | 30          | 30            |
| 15                                        | 18    | 10        | 30          | 30            |
| 16                                        | 19.2  | 10        | 30          | 30            |
| 17                                        | 20.4  | 10        | 35          | 60            |
| 18                                        | 21.7  | 8         | 40          | 60            |
| 19                                        | 22.9  | 8         | 40          | 60            |
| 20                                        | 24.1  | 8         | 40          | 60            |
| 21                                        | 25.3  | 8         | 45          | 60            |
| 22                                        | 26.5  | 8         | 45          | 60            |
| 23                                        | 27.7  | 8         | 50          | 60            |
| 25                                        | 30.1  | 8         | 50          | 60            |
| 30                                        | 36.1  | 6         | 60          | 60            |
| 35                                        | 42.1  | 6         | 70          | 100           |
| 40                                        | 48.1  | 6         | 80          | 100           |
| 45                                        | 54.1  | 4         | 90          | 100           |
| 50                                        | 60.1  | 4         | 100         | 100           |
| 55                                        | 66.2  | 3         | 110         | 200           |
| 60                                        | 72.2  | 3         | 125         | 200           |
| 65                                        | 78.2  | 2         | 150         | 200           |
| 70                                        | 84.2  | 2         | 150         | 200           |
| 75                                        | 90.2  | 1         | 150         | 200           |
| 80                                        | 96.2  | 1         | 175         | 200           |
| 85                                        | 102.2 | 1/0       | 175         | 200           |
| 90                                        | 108.3 | 1/0       | 200         | 200           |
| 95                                        | 114.3 | 2/0       | 200         | 200           |
| 100                                       | 120.3 | 2/0       | 200         | 200           |
| 125                                       | 150.4 | 4/0       | 250         | 400           |
| 150                                       | 180.4 | 250       | 300         | 400           |
| 175                                       | 210.5 | 350       | 350         | 400           |
| 200                                       | 240.6 | 400       | 400         | 400           |
| 225                                       | 270.6 | 500       | 450         | 600           |
| 250                                       | 300.7 | (2)4/0    | 500         | 600           |
| 300                                       | 360.8 | (2)250    | 600         | 600           |

| RECOMMENDED WIRE SIZES, SWITCHES, & FUSES |       |           |             |               |
|-------------------------------------------|-------|-----------|-------------|---------------|
| 240 VOLTS                                 |       |           |             |               |
| KVAR SIZE                                 | Amps  | Wire Size | Fuse Rating | Switch Rating |
| 0.5                                       | 1.2   | 14        | 2.5         | 30            |
| 1                                         | 2.4   | 14        | 5           | 30            |
| 1.5                                       | 3.6   | 14        | 6.5         | 30            |
| 2                                         | 4.8   | 14        | 8           | 30            |
| 2.5                                       | 6     | 14        | 10          | 30            |
| 3                                         | 7.2   | 14        | 12          | 30            |
| 4                                         | 9.6   | 12        | 18          | 30            |
| 5                                         | 12    | 12        | 20          | 30            |
| 6                                         | 14.4  | 10        | 25          | 30            |
| 7                                         | 16.8  | 10        | 30          | 30            |
| 7.5                                       | 18    | 10        | 30          | 30            |
| 8                                         | 19.2  | 10        | 30          | 30            |
| 9                                         | 21.7  | 8         | 40          | 60            |
| 10                                        | 24.1  | 8         | 40          | 60            |
| 11                                        | 26.5  | 8         | 45          | 60            |
| 12                                        | 28.9  | 8         | 50          | 60            |
| 13                                        | 31.3  | 8         | 60          | 60            |
| 14                                        | 33.7  | 6         | 60          | 60            |
| 15                                        | 36.1  | 6         | 60          | 60            |
| 16                                        | 38.5  | 6         | 70          | 100           |
| 17                                        | 40.9  | 6         | 70          | 100           |
| 18                                        | 43.3  | 6         | 80          | 100           |
| 19                                        | 45.7  | 6         | 80          | 100           |
| 20                                        | 48.1  | 6         | 80          | 100           |
| 21                                        | 50.5  | 4         | 90          | 100           |
| 22                                        | 52.9  | 4         | 90          | 100           |
| 23                                        | 55.3  | 4         | 100         | 100           |
| 25                                        | 60.1  | 4         | 100         | 100           |
| 30                                        | 72.2  | 3         | 125         | 200           |
| 35                                        | 84.2  | 2         | 150         | 200           |
| 40                                        | 96.2  | 1         | 175         | 200           |
| 45                                        | 108.3 | 1/0       | 200         | 200           |
| 50                                        | 120.3 | 2/0       | 200         | 200           |
| 55                                        | 132.3 | 3/0       | 225         | 400           |
| 60                                        | 144.3 | 3/0       | 250         | 400           |
| 65                                        | 156.4 | 4/0       | 300         | 400           |
| 70                                        | 168.4 | 4/0       | 300         | 400           |
| 75                                        | 180.4 | 250       | 300         | 400           |
| 80                                        | 192.5 | 300       | 350         | 400           |
| 85                                        | 204.5 | 300       | 350         | 400           |
| 90                                        | 216.5 | 350       | 400         | 400           |
| 95                                        | 228.5 | 350       | 400         | 400           |
| 100                                       | 240.6 | 400       | 400         | 400           |
| 125                                       | 300.7 | (2)4/0    | 500         | 600           |
| 150                                       | 360.8 | (2)250    | 600         | 600           |
| 175                                       | 421   | (2)350    | 700         | 800           |
| 200                                       | 481.1 | (2)400    | 800         | 800           |
| 225                                       | 541.3 | (2)500    | 900         | 1200          |
| 250                                       | 601.4 | (2)350    | 1000        | 1200          |
| 300                                       | 721.7 | (2)350    | 1200        | 1200          |

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