



TYPE UT 100-percent Rated Universal Fuse Links



Application

Westinghouse Type UT fuse links are suitable for all standard open and enclosed fuse cutouts rated up to and including 15 kv. They meet NEMA standards and are 100-per cent "N" rated; that is, they will carry their full rated current continuously. They are strong; while carrying rated current, they easily stand a ten-pound pull. The 20-inch length makes them easy to install in any size of fuse tube.

Westinghouse Special Features

- **HIGH SURGE CAPACITY** lessens fuse blowings due to lightning.
- **MOISTURE-PROOF SLEEVE** around fusible element prevents swelling and warping.
- **LOW MELTING TEMPERATURE** eliminates the possibility of burned or charred fuse tubes.
- **GREATER INVERSE TIME CHARACTERISTICS** make Type UT fuse links better adapted to co-ordination and other protective schemes than links having steeper characteristic curves.

Supersedes Descriptive Data 38-665 dated April, 1941 and Temporary Catalog Section 38-668 dated November 30, 1947
Mailed to: E42-ST; D64-SH; C28-SX

SUPER SURGE 2-in-1 Fuse Links



Application

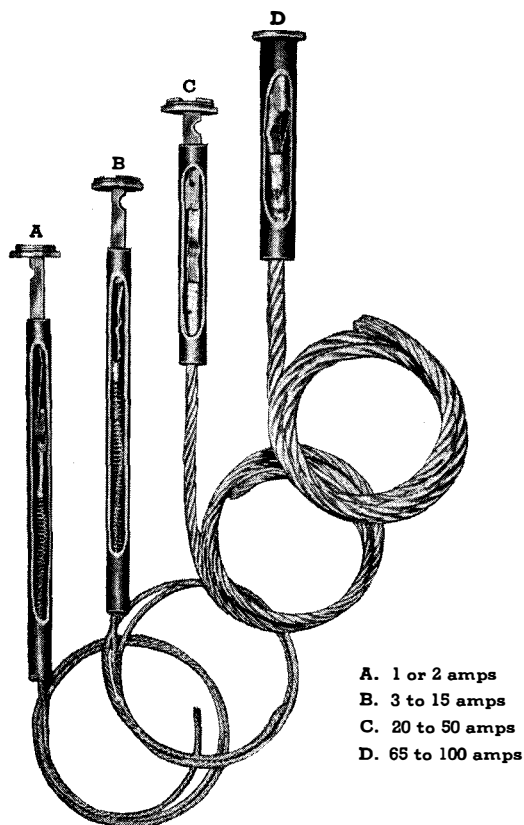
Super Surge fuse links provide two-way protection:

1. **OVERLOAD PROTECTION** for transformers through two coiled-wire heaters which conduct the heat in to the precision-soldered lap joint, initiating the circuit interruption in time to prevent transformer burnouts on steady overloads.
2. **HIGH SURGE CAPACITY**, equivalent to that of a 10 to 15-ampere link. A large mass of coiled wire combined with the soldered joint absorb the energy in motor starting and lightning surges to reduce service interruptions resulting from blown fuses.

Westinghouse Special Features

- **HIGH SURGE CAPACITY** reduces service trips and outages due to sudden load and lightning surges. This results in lower maintenance and better service to the customer.
- **LOW MELTING POINT** provides better overload protection to the transformer, resulting in fewer burnouts due to secondary shorts or overloads.
- **MAXIMUM USE OF TRANSFORMER CAPACITY**—Closer fusing of lower ratings of transformers permits the use of all of the transformer capacity.

TYPE UT FUSE LINKS



- A. 1 or 2 amps
- B. 3 to 15 amps
- C. 20 to 50 amps
- D. 65 to 100 amps

Description

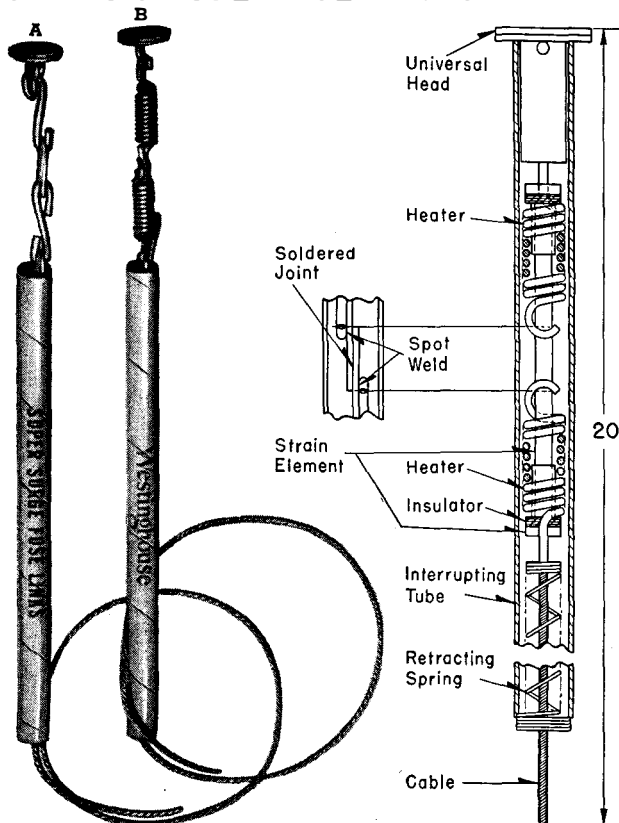
On all ratings of Type UT fuse links, the fusible section is fixed between an upper contact head and a flexible cable for fastening to the lower cutout contact. The fusible section is enclosed in a moisture-proof sleeve. The use of a tin fusible element insures low operating temperatures within the cutout.

The cable is extra-flexible tinned copper cable which is readily ejected from any type of fuse holder when the fuse blows. Spring operation aids ejection on ratings of 1 to 15 amperes, inclusive. The fusible section on all UT links rated 3 amperes and above is paralleled by a strain wire to obtain high tensile strength. The same high strength is obtained on 1 and 2-ampere links by a special fuse wire having the tensile strength of the strain element.

On ratings of 1 through 50 amperes, the combination head consists of a fixed head $\frac{1}{2}$ inch in diameter and a removable washer which is $\frac{3}{4}$ inch in diameter. When used in 50 ampere cutouts the washer is discarded. Fuse links rated 65 through 100 amperes have a solid $\frac{3}{4}$ inch diameter button head.

On the head of each fuse link there is stamped a (W) to identify the manufacturer, a figure signifying the ampere rating, and the letter N to denote that the link will carry 100 percent rated amperes continuously and that it will melt at not over 230 percent of its rating within five minutes.

SUPER SURGE FUSE LINKS



- A. 3 to 5 amps
- B. $\frac{1}{2}$ to 2 amps

Description

Super Surge fuses rated $\frac{1}{2}$ to 5 amp. are dual element fuses. They are designed to reduce unnecessary fuse blowings, which are prevalent in these low rated links and yet provide secondary fault protection to the transformer.

Their low current melting characteristics are that of standard $\frac{1}{2}$ to 5 amp. "N" rated fuses. This assures transformer protection on overload and on secondary short circuits. To prevent their being blown on lightning surges, their high current melting and clearing characteristics are the same as those of 10 to 15 amp UT links.

On low currents heat generated in the coiled springs (ratings $\frac{1}{2}$ to 2 amp) flows into the soldered joint. The stainless steel retracting spring in the protective tube separates the arcing ends, aiding in interruption.

On high fault currents, melting and fuse separation take place in the coiled wire section. The large mass of the fuse plus the proper selection of the coiled wire heater provides the high surge capacity normally found in the 10 to 15 amp UT links. These sizes are rarely blown on lightning.

In ratings 3 to 5 amp similar melting characteristics are obtained using a soldered joint and heavier series wire construction.

The use of a dual element construction provides a fuse whose time-current characteristics very nearly match the overload characteristics of the transformer. The cross-hatched area in figure 1 illustrates the additional transformer capacity the Super Surge fuse has made available for use.

Ratings

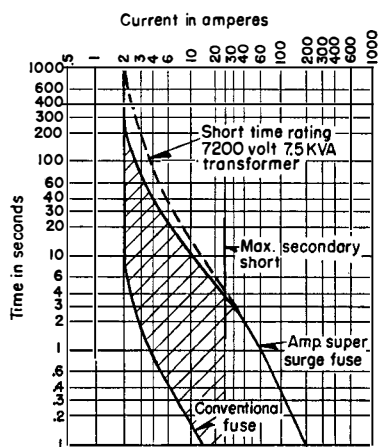
| CONTINUOUS AMPERE RATING* | STYLE NUMBER | WEIGHT IN LBS. PER BOX OF 5 LINKS |
|------------------------------|-----------------|--------------------------------------|
| 1 | 1105 500 | 1/2 |
| 2 | 1105 501 | 1/2 |
| 3 | 1105 502 | 1/2 |
| 5 | 1105 503 | 1/2 |
| 7 | 1105 504 | 1/2 |
| 10 | 1105 505 | 1/2 |
| 15 | 1105 506 | 3/4 |
| 20 | 1105 507 | 3/4 |
| 25 | 1105 508 | 3/4 |
| 30 | 1105 509 | 1 1/4 |
| 40 | 1105 510 | 1 1/4 |
| 50 | 1105 511 | 1 1/4 |
| 65 | 1105 512 | 1 1/4 |
| 85 | 1105 513 | 1 1/4 |
| 100 | 1105 514 | 1 1/4 |

* Fuse links will carry 100% rating continuously without any conducting parts of the cutout fuse holder assembly (except the fuse links) exceeding a temperature rise of 30°C above an ambient temperature of 40°C.

Ratings

| CONTINUOUS AMPERE RATING* | STYLE NUMBER | WEIGHT IN LBS. PER BOX OF 5 LINKS |
|------------------------------|-----------------|--------------------------------------|
| 1/2 | 1481 466 | 1/2 |
| 1 | 1481 272 | 1/2 |
| 2 | 1481 273 | 1/2 |
| 3 | 1481 274 | 1/2 |
| 5 | 1481 275 | 1/2 |

* Fuse links will carry 100% rating continuously without any conducting parts of the cutout fuse holder assembly (except the fuse links) exceeding a temperature rise of 30°C above an ambient temperature of 40°C.



Comparison of Super Surge and Conventional Fuse

Fig. 1

**WESTINGHOUSE FUSE LINKS
ARE PACKED IN CONVENIENT
BOXES OF FIVE LINKS**



1. Individual paper tubes for each link prevents tangling of cable leads.
2. Five individual tubes are then packed in one flat drawer-type box, with ratings on the end of the box.
3. When the box is opened, fuse rating shows clearly on the stamped head of the fuse link.

TRANSFORMERS FUSE SELECTION TABLE

| Kva | 2400 VOLTS | | | 4160 VOLTS | | | 4800 VOLTS | | | 7200 VOLTS | | | 11500 VOLTS | | | 13800 VOLTS | | |
|---|------------|------------------------------------|----|------------|------------------------------------|-----|------------|------------------------------------|-----|------------|------------------------------------|-----|-------------|------------------------------------|-----|-------------|------------------------------------|-----|
| | AMPERES | | | AMPERES | | | AMPERES | | | AMPERES | | | AMPERES | | | AMPERES | | |
| | Full Load | Fuse Rating Type UT Super Surge | | Full Load | Fuse Rating Type UT Super Surge | | Full Load | Fuse Rating Type UT Super Surge | | Full Load | Fuse Rating Type UT Super Surge | | Full Load | Fuse Rating Type UT Super Surge | | Full Load | Fuse Rating Type UT Super Surge | |
| SINGLE-PHASE TRANSFORMER INSTALLATIONS† | | | | | | | | | | | | | | | | | | |
| 1.5 | .63 | 3 | 1 | .362 | 2 | 1/2 | .315 | 2 | 1/2 | .208 | 1 | 1/2 | .131 | 1 | 1/2 | .109 | 1 | 1/2 |
| 3 | 1.25 | 5 | 2 | .720 | 3 | 1 | .625 | 3 | 1 | .416 | 2 | 1/2 | .261 | 2 | 1/2 | .217 | 1 | 1/2 |
| 5 | 2.08 | 5 | 2 | 1.20 | 5 | 2 | 1.04 | 5 | 1 | .695 | 3 | 1/2 | .362 | 2 | 1/2 | .362 | 2 | 1/2 |
| 7.5 | 3.12 | 7 | 3 | 1.80 | 5 | 2 | 1.56 | 5 | 2 | 1.04 | 5 | 1 | .650 | 3 | 1 | .542 | 3 | 1/2 |
| 10 | 4.16 | 10 | 5 | 2.40 | 5 | 3 | 2.08 | 5 | 2 | 1.39 | 5 | 2 | .867 | 3 | 1 | .724 | 3 | 1 |
| 15 | 6.25 | 15 | 5 | 3.61 | 7 | 5 | 3.12 | 7 | 3 | 2.08 | 5 | 2 | 1.30 | 5 | 2 | 1.09 | 5 | 1 |
| 25 | 10.4 | 25 | .. | 6.0 | 15 | .. | 5.21 | 15 | .. | 3.46 | 7 | 5 | 2.17 | 5 | 2 | 1.81 | 5 | 2 |
| 37.5 | 15.6 | 40 | .. | 9.0 | 20 | .. | 7.82 | 20 | .. | 5.21 | 15 | .. | 3.26 | 7 | 5 | 2.71 | 7 | 3 |
| 50 | 20.8 | 50 | .. | 12.0 | 25 | .. | 10.4 | 25 | .. | 6.95 | 15 | .. | 4.34 | 10 | 5 | 3.62 | 10 | 5 |
| 75 | 31.2 | 65 | .. | 18.0 | 40 | .. | 15.6 | 40 | .. | 10.4 | 25 | .. | 6.50 | 15 | .. | 5.42 | 15 | .. |
| 100 | 41.6 | 85 | .. | 24.0 | 50 | .. | 20.8 | 50 | .. | 13.9 | 30 | .. | 8.67 | 20 | .. | 7.24 | 20 | .. |
| 150 | 62.5 | 100 | .. | 36.1 | 85 | .. | 31.3 | 65 | .. | 20.8 | 50 | .. | 13.0 | 30 | .. | 10.9 | 25 | .. |
| 200 | 83.2 | .. | .. | 48.1 | 100 | .. | 41.6 | 85 | .. | 27.8 | 65 | .. | 17.3 | 40 | .. | 14.5 | 30 | .. |
| 250 | 104.0 | .. | .. | 60.0 | .. | .. | 52.1 | 100 | .. | 34.8 | 85 | .. | 21.6 | 50 | .. | 18.1 | 40 | .. |
| 333 | 139.0 | .. | .. | 80.2 | .. | .. | 69.4 | .. | .. | 46.4 | 100 | .. | 29.0 | 65 | .. | 24.2 | 50 | .. |
| 400 | 166.0 | .. | .. | 96.4 | .. | .. | 83.2 | .. | .. | 55.5 | .. | .. | 34.6 | 85 | .. | 38.8 | 65 | .. |
| 500 | 208.0 | .. | .. | 120.0 | .. | .. | 104.0 | .. | .. | 69.5 | .. | .. | 43.4 | 100 | .. | 36.2 | 85 | .. |
| THREE-PHASE TRANSFORMER INSTALLATIONS*† | | | | | | | | | | | | | | | | | | |
| 5 | 1.20 | 5 | 2 | .69 | 3 | 1 | .60 | 3 | 1 | .40 | 2 | 1/2 | .25 | 1 | 1/2 | .208 | 1 | 1/2 |
| 10 | 2.40 | 7 | 3 | 1.38 | 5 | 2 | 1.20 | 5 | 2 | .80 | 3 | 1 | .50 | 2 | 3 | .417 | 2 | 3 |
| 15 | 3.60 | 10 | 5 | 2.08 | 7 | 3 | 1.80 | 7 | 3 | 1.20 | 5 | 2 | .75 | 3 | 1 | .626 | 3 | 1 |
| 25 | 6.0 | 15 | .. | 3.47 | 7 | 5 | 3.00 | 7 | 3 | 2.0 | 5 | 2 | 1.25 | 5 | 2 | 1.04 | 5 | 1 |
| 37.5 | 9.0 | 20 | .. | 5.20 | 15 | .. | 4.50 | 10 | 5 | 3.0 | 7 | 3 | 1.87 | 5 | 2 | 1.56 | 5 | 2 |
| 50 | 12.0 | 25 | .. | 6.94 | 15 | .. | 6.00 | 15 | .. | 4.0 | 10 | 5 | 2.50 | 7 | 3 | 2.08 | 5 | 2 |
| 75 | 18.0 | 40 | .. | 10.4 | 25 | .. | 9.0 | 20 | .. | 6.0 | 15 | .. | 3.75 | 10 | 5 | 3.13 | 7 | 3 |
| 100 | 24.0 | 50 | .. | 13.8 | 30 | .. | 12.0 | 25 | .. | 8.0 | 20 | .. | 5.00 | 10 | 5 | 4.17 | 10 | 5 |
| 150 | 36.0 | 85 | .. | 20.8 | 50 | .. | 18.0 | 40 | .. | 12.0 | 25 | .. | 7.50 | 15 | .. | 6.27 | 15 | .. |
| 200 | 48.0 | 100 | .. | 27.8 | 65 | .. | 24.0 | 50 | .. | 16.0 | 40 | .. | 10.0 | 20 | .. | 8.35 | 20 | .. |
| 300 | 72.0 | .. | .. | 41.6 | 85 | .. | 36.0 | 85 | .. | 24.0 | 50 | .. | 15.0 | 30 | .. | 12.5 | 25 | .. |
| 450 | 108.0 | .. | .. | 62.4 | .. | .. | 54.0 | 100 | .. | 36.0 | 85 | .. | 22.5 | 50 | .. | 18.8 | 40 | .. |
| 500 | 120.0 | .. | .. | 69.4 | .. | .. | 60.0 | .. | .. | 40.0 | 85 | .. | 25.0 | 50 | .. | 20.9 | 50 | .. |
| 600 | 144.0 | .. | .. | 83.2 | .. | .. | 72.2 | .. | .. | 48.0 | 100 | .. | 30.0 | 65 | .. | 25.0 | 50 | .. |
| 750 | 180.0 | .. | .. | 140.0 | .. | .. | 90.0 | .. | .. | 60.0 | .. | .. | 37.5 | 85 | .. | 31.2 | 65 | .. |
| 1000 | 240.0 | .. | .. | 138.0 | .. | .. | 120.0 | .. | .. | 80.0 | .. | .. | 50.0 | 100 | .. | 41.7 | 85 | .. |
| 1500 | 360.0 | .. | .. | 208.0 | .. | .. | 180.0 | .. | .. | 120.0 | .. | .. | 75.0 | .. | .. | 62.6 | .. | .. |
| 2000 | 480.0 | .. | .. | 278.0 | .. | .. | 240.0 | .. | .. | 160.0 | .. | .. | 100.0 | .. | .. | 83.5 | .. | .. |

* Protected by three fuses.

† Protected by one fuse.

‡ If 3 single-phase transformers, use total kva.

Note: The above table indicates the fuse link to be used with any given transformer at any given voltage. Thus for a bank of three transformers, 5 kva each, line to line voltage of 4160 V, it is seen that the line current is 2.08 amperes and a 5-ampere fuse link is recommended. The line current will be the same for either delta or wye connection.

For 2 Phase, 4 wire banks, fuse each single phase transformer in accordance with single phase data above.

For 2 phase, 3 wire, fuse each outside line same as for single phase transformers but bear in mind that common conductor carries 1.41 times the current in outside wires. Select link rating approximately twice normal current.

For 2 phase, 5 wire, use same as for 2 phase, 4 wire.

LITERATURE REFERENCE

● PRICES—P.L. 38-620.

● APPLICATION CURVES AND TABLES—A.D. 38-665, D.B. 38-625, D.B. 38-628.

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