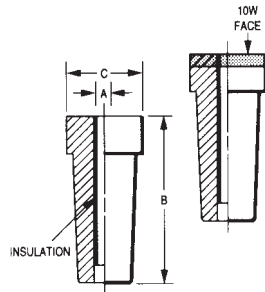


This style holder found at bottom of page 27

This style holder found at top of page 29



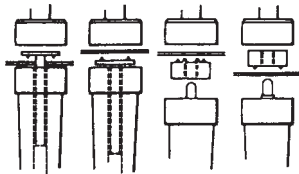
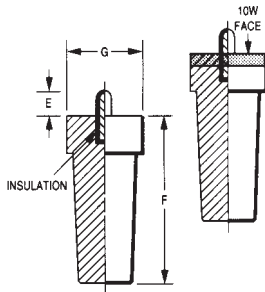
ELECTRODES

Stud Electrodes

Tuffaloy stud electrode tips are for projection-welding screws, bolts or pins, whether they pass through the sheet or are to be attached directly to its face.

Nut Electrodes

Tuffaloy projection weld nut electrodes are designed for either self-piloted or non-piloted nuts. The pilots of the non-piloted-nut electrodes are spring-loaded so they can't interfere with the contacting of nut and sheet under welding pressure.

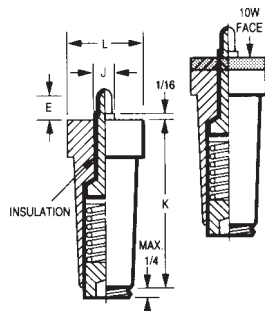


Welding a stud through a hole in sheet metal.

Welding a stud directly to face of sheet metal.

Self-piloted nut aligns itself with the hole in sheet.

Non-piloted-nut is guided by specially designed electrode.



The various types and sizes of TUFFALOY stud-and-nut welding electrodes and holders are described below. For excessive wear applications any of these electrodes may be ordered with refractory metal facings, such as TUFFALOY 10W.

STUD ELECTRODES

| A | B | C | Description | Part No. | With 10W Face Refractory - Item Number |
|------------|-------|-------|-------------|----------|--|
| .150 | 2-1/4 | 1 | 400 | 175-4001 | 175-4001-10W |
| .164 | | | 401 | 175-4011 | 175-4011-10W |
| .190 | | | 402 | 175-4021 | 175-4021-10W |
| .216 | | | 403 | 175-4031 | 175-4031-10W |
| 1/4 | | | 404 | 175-4041 | 175-4041-10W |
| 5/16 & 8mm | | | 405 | 175-4051 | 175-4051-10W |
| 3/8 | | | 406 | 175-4061 | 175-4061-10W |
| 6mm | | | 506 | 175-5061 | 175-5061-10W |
| 7mm | | | 507 | 175-5071 | 175-5071-10W |
| 9mm | | | 509 | 175-5091 | 175-5091-10W |
| 10mm | | | 510 | 175-5101 | 175-5101-10W |
| 3/8 | 2-3/4 | 1-1/2 | 436 | 175-4361 | 175-4361-10W |
| 7/16 | | | 437 | 175-4371 | 175-4371-10W |
| 1/2 | | | 438 | 175-4381 | 175-4381-10W |
| 9/16 | | | 439 | 175-4391 | 175-4391-10W |
| 5/8 | | | 440 | 175-4401 | 175-4401-10W |
| 11/16 | | | 441 | 175-4411 | 175-4411-10W |
| 3/4 | | | 442 | 175-4421 | 175-4421-10W |
| 10mm | | | 510-2 | 175-5102 | 175-5102-10W |
| 12mm | | | 512-2 | 175-5122 | 175-5122-10W |

SELF-PILOTED-NUT ELECTRODES

| For Nut Size | E Pin Length | F Electrode Length | G Electrode Diameter | Description | Part No. | With 10W Face Refractory - Item Number |
|--------------|--------------|--------------------|----------------------|-------------|----------|--|
| .164 | 3/16 | 2-1/4 | 1 | 411 | 175-4111 | 175-4111-10W |
| .190 | 3/16 | | | 412 | 175-4121 | 175-4121-10W |
| .216 | 1/4 | | | 413 | 175-4131 | 175-4131-10W |
| 1/4 | 5/16 | | | 414 | 175-4141 | 175-4141-10W |
| 5/16 & 8mm | 5/16 | | | 415 | 175-4151 | 175-4151-10W |
| 3/8 | 3/8 | | | 416 | 175-4161 | 175-4161-10W |
| 6mm | 1/4 | | | 606 | 175-6061 | 175-6061-10W |
| 7mm | 5/16 | | | 607 | 175-6071 | 175-6071-10W |
| 9mm | 3/8 | | | 609 | 175-6091 | 175-6091-10W |
| 10mm | 3/8 | | | 610 | 175-6101 | 175-6101-10W |
| 3/8 | 3/8 | | | 2-3/4 | 1-1/2 | 456 |
| 7/16 | 3/8 | 457 | 175-4571 | | | 175-4571-10W |
| 1/2 | 7/16 | 458 | 175-4581 | | | 175-4581-10W |
| 9/16 | 7/16 | 459 | 175-4591 | | | 175-4591-10W |
| 5/8 | 1/2 | 460 | 175-4601 | | | 175-4601-10W |
| 11/16 | 1/2 | 461 | 175-4611 | | | 175-4611-10W |
| 3/4 | 5/8 | 462 | 175-4621 | | | 175-4621-10W |
| 10mm | 3/8 | 610-2 | 175-6102 | | | 175-6102-10W |
| 12mm | 7/16 | 612-2 | 175-6122 | | | 175-6122-10W |

NON-PILOTED-NUT ELECTRODES

| For Nut Size | J Pin Diameter | K Electrode Length | L Electrode Diameter | Description | Part No. | With 10W Face Refractory - Item Number |
|--------------|----------------|--------------------|----------------------|-------------|----------|--|
| .164 | 0.18 | 2-1/4 | 1 | 421 | 175-4211 | 175-4211-10W |
| .190 | 0.215 | | | 422 | 175-4221 | 175-4221-10W |
| .216 | 0.24 | | | 423 | 175-4231 | 175-4231-10W |
| 1/4 | 0.275 | | | 424 | 175-4241 | 175-4241-10W |
| 5/16 & 8mm | 0.345 | | | 425 | 175-4251 | 175-4251-10W |
| 3/8 | 0.405 | | | 426 | 175-4261 | 175-4261-10W |
| 6mm | 0.261 | | | 706 | 175-7061 | 175-7061-10W |
| 7mm | 0.3 | | | 707 | 175-7071 | 175-7071-10W |
| 9mm | 0.385 | | | 709 | 175-7091 | 175-7091-10W |
| 10mm | 0.425 | | | 710 | 175-7101 | 175-7101-10W |
| 3/8 | 0.437 | | | 2-3/4 | 1-1/2 | 476 |
| 7/16 | 0.562 | 477 | 175-4771 | | | 175-4771-10W |
| 1/2 | 0.625 | 478 | 175-4781 | | | 175-4781-10W |
| 9/16 | 0.687 | 479 | 175-4791 | | | 175-4791-10W |
| 5/8 | 0.75 | 480 | 175-4801 | | | 175-4801-10W |
| 10mm | 0.453 | 710-2 | 175-7102 | | | 175-7102-10W |
| 12mm | 0.595 | 712-2 | 175-7122 | | | 175-7122-10W |



TUFFALOY NUT AND STUD WELDING

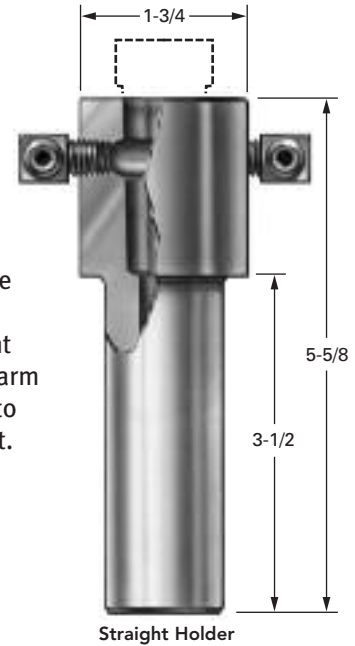
ELECTRODE HOLDERS

U.S. Pat. No. 3,504,159 Canada Pat. No. 858,060

Several standard electrode holders are manufactured by Tuffaloy to accommodate all the Tuffaloy stud-and nut electrode tips.

| Straight Holders Barrel Diameter | A Dia. | B Length | For 1" Dia. Electrodes | | For 1-1/2" Dia. Electrodes | |
|----------------------------------|--------|----------|------------------------|----------|----------------------------|----------|
| | | | Description | Part No. | Description | Part No. |
| 1 | 1-3/4 | 5-5/8 | 4530 | 350-4530 | | |
| 1-1/4 | 1-3/4 | 5-5/8 | 4531 | 350-4531 | | |
| 1-1/2 | 1-3/4 | 5-5/8 | 4532 | 350-4532 | | |
| 1 | 2 | 5-3/4 | | | 4535 | 350-4535 |
| 1-1/4 | 2 | 5-3/4 | | | 4536 | 350-4536 |
| 1-1/2 | 2 | 5-3/4 | | | 4537 | 350-4537 |

Straight Holders - Tuffaloy straight nut-and-stud-electrode holders are of the same high quality as the standard straight holders made for spot welder arm mounting. Coolant is brought to the tip and circulated around it. Holders are available in three barrel diameters.



Straight Holder

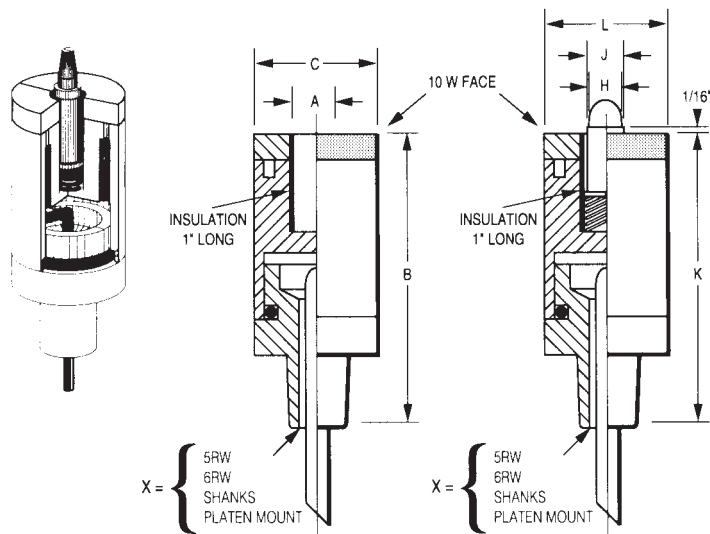
ARCTIC HOLDERS

ARCTIC STUD ELECTRODES

| A For Stud Diameter | B Electrode Length | C Electrode Diameter | Description | Part Number Shank Size | | |
|---------------------|--------------------|----------------------|-------------|------------------------|--|--|
| 0.150 | 3 | 1-1/4 | 115 | 175-1151-X | | |
| 0.164 | | | 116 | 175-1161-X | | |
| 0.190 | | | 119 | 175-1191-X | | |
| 0.216 | | | 122 | 175-1221-X | | |
| 1/4 | | | 125 | 175-1252-X | | |
| 5/16 & 8mm | | | 131 | 175-1312-X | | |
| 3/8 | | | 138 | 175-1382-X | | |
| 7/16 | | | 144 | 175-1442-X | | |
| 6mm | | | 106 | 175-1061-X | | |
| 7mm | | | 107 | 175-1072-X | | |
| 9mm | 109 | 175-1092-X | | | | |
| 10mm | 110 | 175-1102-X | | | | |
| 1/2 | 3 | 1-1/2 | 150 | 175-1503-X | | |
| 9/16 | | | 156 | 175-1563-X | | |
| 5/8 | | | 163 | 175-1633-X | | |
| 11/16 | | | 169 | 175-1693-X | | |
| 12mm | | | 112 | 175-1123-X | | |

Arctic Electrodes - The Arctic system is a compact stud-and-nut electrode with internal water cooling. Also available with optional air expulsion and platen mounts.

Patent Pending



ARCTIC NON-PILOTED-NUT ELECTRODES

| H For Nut Diameter | J Pilot Diameter | K Electrode Length | L Electrode Diameter | Description | Part Number Shank Size | | |
|--------------------|------------------|--------------------|----------------------|-------------|------------------------|--|--|
| 0.164 | 0.180 | 4 | 1-1/4 | 216 | 175-2162-X | | |
| 0.190 | 0.215 | | | 219 | 175-2192-X | | |
| 0.216 | 0.240 | | | 222 | 175-2222-X | | |
| 1/4 | 0.275 | | | 225 | 175-2252-X | | |
| 5/16 & 8mm | 0.345 | | | 231 | 175-2312-X | | |
| 3/8 | 0.405 | | | 238 | 175-2382-X | | |
| 6mm | 0.261 | | | 206 | 175-2062-X | | |
| 7mm | 0.300 | | | 207 | 175-2072-X | | |
| 9mm | 0.385 | | | 209 | 175-2092-X | | |
| 10mm | 0.425 | | | 210 | 175-2102-X | | |
| 7/16 | 0.562 | 4 | 1-1/2 | 244 | 175-2443-X | | |
| 1/2 | 0.625 | | | 250 | 175-2503-X | | |
| 9/16 | 0.687 | | | 256 | 175-2563-X | | |
| 12mm | 0.595 | | | 212 | 175-2123-X | | |

