



WORK INSTRUCTION

**QUICK CONNECT, LUG TERMINATION, AND NEMA I HOUSING SPOT WELDING
PROCESS FOR TUBULAR PROCESS HEATERS**

REVISION: 00

PROCEDURE NO.: WI-8.2.4.41

DATE EFFECTIVE: 12/16/2011

| SEQUENCE* | OPERATION DESCRIPTION |
|--|---|
| 1 | Verify material/heater part number with visual and dimensional inspection on the first piece followed by a random sample basis. |
| 2 | Visually inspect material/weld area for damage. |
| 3 | Clean and prepare materials as needed. |
| 4 | Make sure the machine is off before adjusting electrodes. |
| 5 | Choose the proper weld electrodes to match the specific job. |
| 6 | Adjust the upper and lower electrode arms to achieve the minimum necessary space to make the weld. |
| 7 | Turn on the main power to the spot welder. |
| 8 | Adjust the PSI and welding machine parameters per the specifications listed below. |
| 9 | Ensure proper protective equipment is used during the welding process. |
| 10 | Position the pieces to be spot welded between the electrodes accordingly. |
| 11 | Activate the spot welding process by using the foot pedal switch. |
| 12 | Continue holding the foot pedal down until the entire welding process is complete. |
| 13 | Visually inspect weld quality (see below). Inspection based on the first piece followed by a random sample basis. |
| 14 | Clean and or dress the electrodes for welding as needed. |
| *Sequence may vary based on requirements of individual jobs. | |



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Terminal Lug Weld Setup

| Tempco Terminal PN | 0.091" PIN Ø | 0.105" PIN Ø | 0.125" PIN Ø |
|--------------------|--------------|--------------|--------------|
| TER-106-103 | SETUP A | SETUP B | SETUP C |
| TER-106-105 | SETUP A | SETUP B | SETUP C |
| TER-107-101 | SETUP A | SETUP B | SETUP C |
| TER-112-101 | SETUP D | | |
| TER-112-104 | | | |
| TER-112-110 | | | |
| TER-112-121 | | | |

| SETUP | PSI | SQUEEZE | WELD TIME | CURRENT | HOLD | OFF | COMP OFF | SINGLE | WELD TIME 2 | CURRENT 2 | SLOPE | COLD | IMPULSE NUMBER |
|----------|-----------|---------|-----------|-----------|------|-----|----------|--------|-------------|-----------|-----------|------|----------------|
| A | 20 | 10 | 04 | 70 | 10 | 01 | 0 | 0 | 0 | 0 | 02 | 01 | 0 |
| B | 20 | 10 | 07 | 63 | 10 | 01 | 0 | 0 | 0 | 0 | 03 | 01 | 0 |
| C | 20 | 10 | 07 | 70 | 10 | 01 | 0 | 0 | 0 | 0 | 05 | 01 | 0 |
| D | 20 | 10 | 02 | 75 | 10 | 01 | 0 | 0 | 0 | 0 | 02 | 01 | 0 |

TPN Housing Weld Setup

| PSI | SQUEEZE | WELD TIME | CURRENT | HOLD | OFF | COMP OFF | SINGLE | WELD TIME 2 | CURRENT 2 | SLOPE | COLD | IMPULSE NUMBER |
|-----------|---------|-----------|-----------|------|-----|----------|--------|-------------|-----------|-------|------|----------------|
| 20 | 20 | 18 | 70 | 20 | 01 | 0 | 0 | 0 | 0 | 05 | 01 | 0 |

NOTE: The above settings can vary slightly depending on variances in manufacturing processes. They are to be used only as a reference point during a machine setup.



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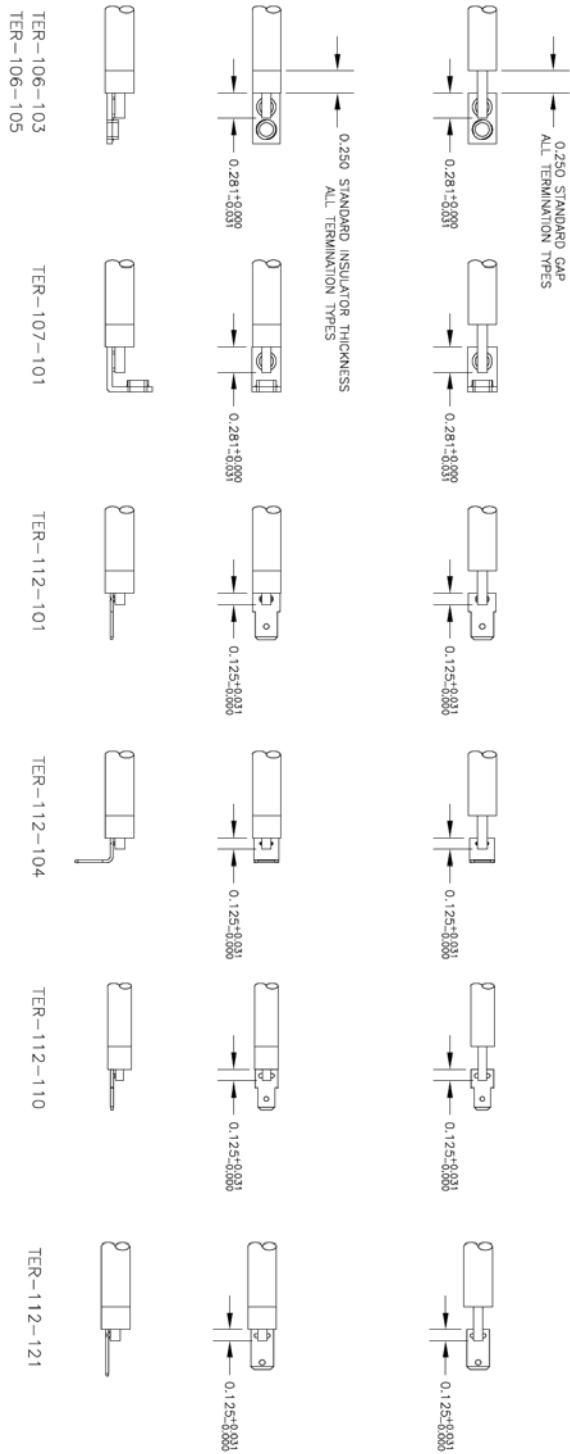
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ECO # NO.

REVISION

DATE BY

CORRECT WAY TO SPOT WELD TERMINALS TO PINS
 MANERA CORRECTA DE SOLDAR TERMINALS EN EL PIN



PRODUCTION COPY

| ITEM | PART NO. | REQD. | DESCRIPTION |
|--|----------|-------|--------------|
| TEMPACO | TEMPACO | 0 | TERMSPOTWELD |
| TITLE: FLAG TERMINAL SPOT WELDING DETAILS FOR TUBULAR ELEMENTS DATE: 2/9/12 SCALE: FULL DRAWN BY: JPC CHECKED BY: JPC APPROVED BY: JPC DATE: 2/9/12 SCALE: FULL CUSTOMER PART NO.: VA.066\MSCV 0 1 of 1 | | | |
| TEMPACO Electric Heater Corporation 10000 S.W. 15th St., L. 10111-1102 Miami, FL 33187-1102 Phone: (305) 385-5555 Fax: (305) 385-5115 Email: sales@tempaco.com | | | |



WORK INSTRUCTION

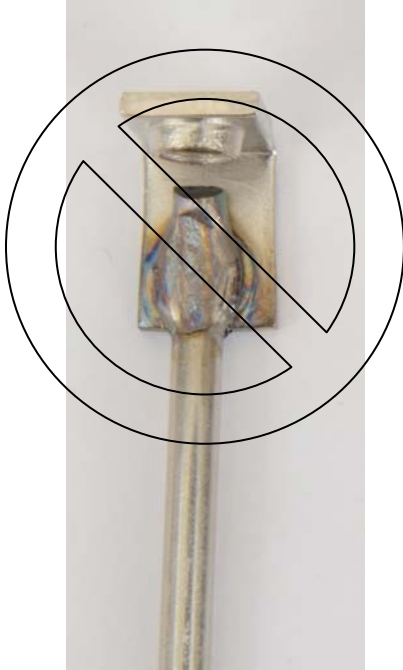
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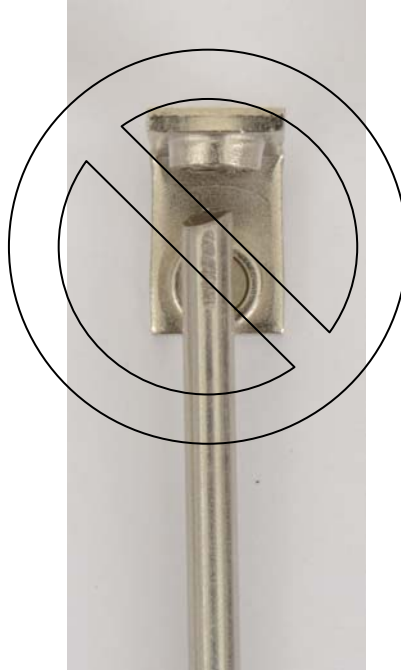
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Terminal Lug Visual Weld Guide



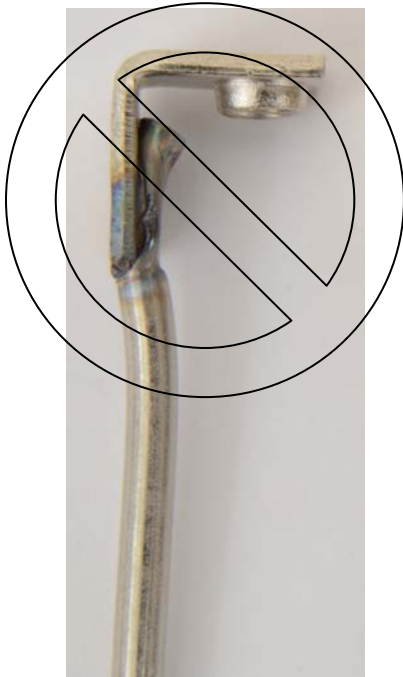
Too Much Time/Current



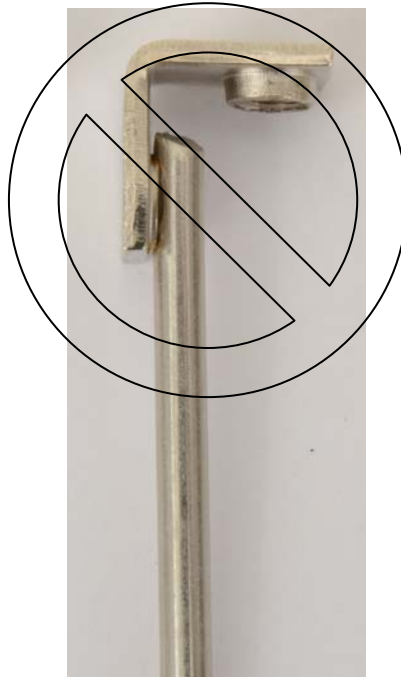
Not Enough Time/Current



Correct Weld Joint



Too Much Time/Current



Not Enough Time/Current



Correct Weld Joint



| | | |
|---|----------------------------|----------------------------|
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REVISION HISTORY

| REVISION | DATE OF | SECTIONS | DESCRIPTION OF CHANGE |
|----------|----------|----------|-----------------------|
| 00 | 12/16/11 | All | Initial release |

AUTHORIZATION

| POSITION | HELD BY | AUTHORIZATION SIGNATURE OR INITIALS |
|--|--------------------|-------------------------------------|
| Prepared By: Production Engineering Manager | Josh Czerniejewski | |
| Senior Management Representative/ Management Representative: | Abe Joseph | |