Stinger Pro™ Tools

Electrical Safety - job briefing record

Made 2026-11-01 19:06 • Example - testing a 480Y/277 V panel

A guided reference: the decisions are made by qualified persons under the program in force where you're working. It approves nothing.

Inputs

Field	Value
Task	Testing, troubleshooting or voltage measurement
System	480Y/277 V
Electrically safe work condition possible	Yes
Energized parts exposed	Fixed circuit parts (bus, terminals, a panel's interior)
Arc flash label	No
Equipment type	Panelboard or other equipment
Available fault current (kA)	22
Clearing time (cycles)	1.5
Working distance (in)	18
Against the row's limits	Available fault current 22 kA (limit not over 25 kA); Clearing time 1.5 cycles (limit not over 2 cycles); Working distance 18 in (limit at least 18 in)
Status	Table limits met, based on entered and confirmed data
Upstream device	properly installed - confirmed; properly maintained - confirmed; rated for the available fault current - confirmed.
Current-limiting protection, 200 A or less, upstream	No

Answer

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Status: Table limits met, based on entered and confirmed data. Arc flash PPE category 2, arc flash
    boundary 900 mm (3 ft) (Table 130.7(C)(15)(a)) - and the shock protection in Step 3. A guided
    reference: the decisions are made by qualified persons under the program in force where you're
    working. It approves nothing.
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Step 1 - Put it in an electrically safe work condition

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Identify every source - drawings, one-lines, labels, and the equipment itself. [120.6(1), NFPA 70E-2027;
    1910.333(b)(2); 1926.417]
Interrupt the load, then open the disconnecting means for each source. [120.6(2), NFPA 70E-2027;
    1910.333(b)(2)]
See the opening - every blade fully open, or the drawout breaker withdrawn to test or disconnected.
    [120.6(3), NFPA 70E-2027]
Release stored electrical energy (capacitors, induced and backfeed sources). [120.6(4), NFPA 70E-2027;
    1910.333(b)(2)(ii)]
Block or relieve stored mechanical energy (springs, for example) so it cannot re-energize the parts.
    [120.6(5), NFPA 70E-2027]
Lock out and tag out every source, by the documented procedure in force where you're working. [120.6(6),
    NFPA 70E-2027; 1910.147; 1910.333(b)(2)(iii)]
A qualified person operates the equipment's controls, or verifies another way, that the equipment cannot
    restart. [1910.333(b)(2)(iv)(A)]
A qualified person tests for the absence of voltage on every exposed circuit part at the work location -
    every phase conductor or circuit part, between phases and from each phase to ground, including any
    voltage induced or backfed from another source - with a meter rated for it, checked on a known source
    before and after (live-dead-live). [120.6(7), NFPA 70E-2027; 1910.333(b)(2)(iv)(B)]
Ground the conductors before touching them where induced voltage or stored energy could return, or where
    they could contact other energized parts. [120.6(8), NFPA 70E-2027]
Where temporary protective grounds are required: plan their placement, location, sizing and application
    as part of the job planning; use grounding equipment able to carry the maximum fault current at that
    point for the time it takes to clear, with impedance low enough that the protective devices operate
    at once if the parts are energized by mistake. [120.6(9), NFPA 70E-2027]
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For estimating and planning - verify before relying on it. Not a substitute for a licensed engineer.
Based on the 2026 NEC and NFPA 70E-2027. Local amendments may apply - check with the authority having jurisdiction.

The test for absence of voltage is itself energized work: until it proves the equipment dead, the shock and arc flash steps below apply to the person testing.
Which procedures apply on this site - the host employer's, the general contractor's, your employer's? Coordinate the host's and the contractor's requirements, lockout/tagout included, before the work starts. Each employer keeps its own duties - following one program never removes another employer's duties. [110.5, 120.3(H), NFPA 70E-2027; OSHA CPL 02-00-124]

De-energized: the electrically safe work condition

Lock out and tag out; the shock and arc flash protection below applies while testing for absence of voltage. [120.6, NFPA 70E-2027; 1910.147; 1910.333(b)(2)]
The job safety plan and briefing cover: [110.3(I), NFPA 70E-2027]
- The job and each of its tasks
- The electrical hazards of each task
- The shock and arc flash risk assessments (Steps 3 and 4)
- The work procedures, special precautions and energy source controls
- The emergency response plan - address, nearest hospital, how to call 911, where the disconnect, first aid kit, AED and rescue hook are
- Plan and brief again when the job or the conditions change

Step 3 - Shock: the approach boundaries and the gloves

Limited approach boundary: 1.0 m (3 ft 6 in.) - exposed fixed circuit parts (3.1 m (10 ft 0 in.) for a movable conductor). [Table 130.4(E)(a); 130.4(F), NFPA 70E-2027]
Restricted approach boundary: 0.31 m (1 ft 0 in.). [Table 130.4(E)(a); 130.4(G), NFPA 70E-2027]
Rubber insulating gloves: Class 00 or higher - maximum use voltage 500 V AC covers 480Y/277 V. [29 CFR 1910.137, Table I-4 (eCFR, as of 2026-10-22)]
A common employer rule: Class 0 at 480 V and above - Class 00's 500 V leaves almost no margin. Follow the program in force where you're working.
Protectors: "Protector gloves shall be worn over insulating gloves, except as follows" - the limited-use exceptions that follow it [29 CFR 1910.137(c)(2)(vii)].
Before use: "Insulating equipment shall be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of causing damage. Insulating gloves shall be given an air test, along with the inspection." [29 CFR 1910.137(c)(2)(ii)]
Rubber insulating gloves: "Before first issue and every 6 months thereafter; upon indication that insulating value is suspect; after repair; and after use without protectors." [29 CFR 1910.137, Table I-5]

Step 4 - Arc flash: the table method

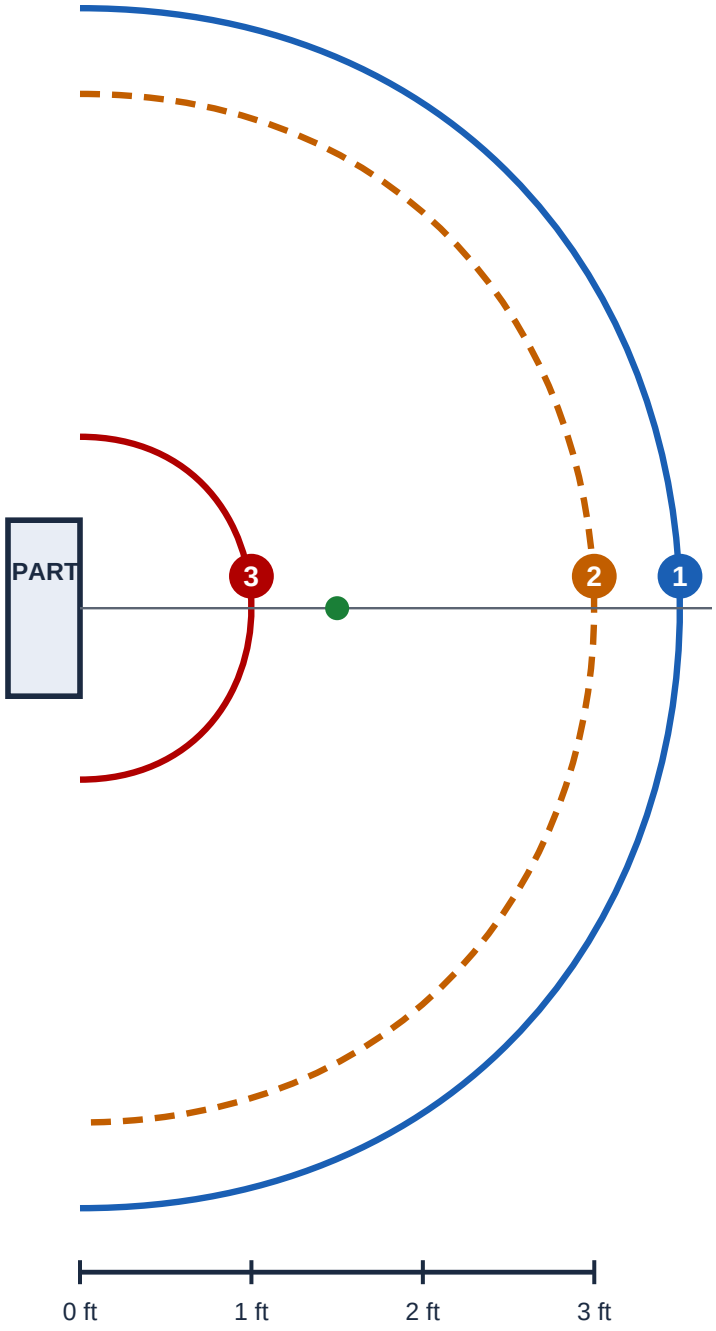
Equipment condition before work (its normal state): Properly installed - yes; Properly maintained - yes; Rated for the available fault current - yes; Used as its listing, labeling and maker's instructions say - yes; Doors closed and secured - yes; All covers in place and secured - yes; No evidence of impending failure - yes. [110.2(B) Exception No. 1, NFPA 70E-2027]
During this task: doors or covers are opened and energized parts are exposed - the likelihood below is for the task as it is done. [Table 130.5(C)(3), NFPA 70E-2027]
Likelihood of an arc flash - work on energized conductors and circuit parts, including electrical testing (AC): YES. [Table 130.5(C)(3), NFPA 70E-2027]
No arc flash label on this equipment: tell its owner - where 130.5(H) requires the equipment to be labeled (or, in a supervised industrial installation, the label's information documented and readily available), the owner is responsible for it. A missing label does not by itself stop the table method. [130.5(H)(1), (6), NFPA 70E-2027]
Panelboards or other equipment over 240 V up to 600 V: PPE category 2, arc flash boundary 900 mm (3 ft) - for not more than 25 kA, 2 cycles clearing, at 18 in or more. [Table 130.7(C)(15)(a), NFPA 70E-2027]
Available fault current 22 kA - limit not over 25 kA - met; Clearing time 1.5 cycles - limit not over 2 cycles - met; Working distance 18 in - limit at least 18 in - met. [Table 130.7(C)(15)(a), NFPA 70E-2027]
Upstream device: properly installed - confirmed; properly maintained - confirmed; rated for the available fault current - confirmed. [130.5(B)(2), (3), NFPA 70E-2027]
PPE category 2 - minimum arc rating 8 cal/cm2: [Table 130.7(C)(15)(c), NFPA 70E-2027]
- Arc-rated long-sleeve shirt and pants, or coverall
- An arc-rated arc flash suit hood, or an arc-rated wrap-around face shield worn with an arc-rated balaclava - minimum arc rating 8 cal/cm2
- Arc-rated outerwear as needed
- Hard hat
- Safety glasses or goggles
- Hearing protection: ear canal inserts
- Gloves: the rubber insulating gloves of Step 3, with leather protectors, wherever there is shock exposure - arc-rated or heavy-duty leather gloves never take their place (the arc flash table lists them for work with no shock exposure).

- Leather footwear
This tool does not calculate incident energy.

Approach boundaries - to scale

Approach boundaries - to scale

480Y/277 V - Testing, troubleshooting or voltage measurement - exposed fixed circuit parts



Scale: the distances measured from the exposed part, as drawn.

1. **Limited approach boundary: 1.0 m (3 ft 6 in.)**
   [Table 130.4(E)(a), NFPA 70E-2027]
2. **Arc flash boundary: 900 mm (3 ft)**
   [Table 130.7(C)(15)(a), NFPA 70E-2027]
3. **Restricted approach boundary: 0.31 m (1 ft 0 in.)**
   [Table 130.4(E)(a), NFPA 70E-2027]

- **Working distance (face and chest): 18 in - the green dot. PPE selection is based on this working distance.**

Plan view from the exposed part. A guided reference - the decisions are made by qualified persons under the program in force. Values: NFPA 70E-2027.

Signatures

Prepared by: _____ Date: _____

Qualified person(s): _____

Host employer representative: _____

Approved by (per the program in force where you're working): _____

Emergency - call for help first

1. Shout for help and have someone call 911 at once, and send for the AED - at the same time as the steps below, never after them.
2. Do not touch the person while they may still be in contact with the source. Keep everyone else clear.
3. De-energize at once if it can be done safely - open the disconnect or breaker.
4. If it can't be de-energized: contact release only by a person trained in it, with rescue equipment rated for the voltage (the insulated rescue hook) and the site's procedure. A dry insulating object is no substitute on industrial equipment - only on a low-voltage household-type circuit with no rated equipment at hand.
5. Once the electrical danger is controlled: check breathing, begin CPR if needed, and use the AED as trained.
6. Arc flash burns: cool with clean, cool running water; do not pull off clothing stuck to the skin - 911 already called.
7. Every shock victim gets a medical evaluation, even if they feel fine.

Reference only. The emergency plan for this site - the address, the nearest hospital, where the disconnect, first aid kit, AED and rescue hook are - is the one reviewed at the job briefing.

Source

Based on NFPA 70E, Standard for Electrical Safety in the Workplace, 2027 edition - its values cited by section and table, in our words. OSHA: 29 CFR 1910 Subpart S, 1910.137, 1910.147; 1926 Subpart K (eCFR, as of 2026-10-22). OSHA multi-employer citation policy, CPL 02-00-124.