PERFORMANCE ACCREDITATION TASKS

PATs provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for trainees.

The following tasks are designed to evaluate your ability to run open-root V-groove pipe welds with SMAW equipment in the four standard test positions using E6010 and E7018 electrodes. Perform each task when you are instructed to do so by your instructor. As you complete each task, take it to your instructor for evaluation. Do not proceed to the next task until instructed to do so.


PATs 2 through 4 correspond to *AWS EG3.0-96, Section 3.3.6.1, Unit #1 SMAW, Learning Objective #10.* PAT 1 has no AWS correlation.
OPEN-ROOT V-GROOVE PIPE WELD IN THE 1G-ROTATED POSITION

Using ¼" (3.2 mm) E6010 electrodes for the root pass, ⅜" (2.4 mm) E7018 electrodes for the hot pass, and ⅜" or ⅛" (2.4 or 3.2 mm) E7018 electrodes for the remaining passes, make an open-root V-groove weld on carbon steel pipe in the 1G-ROTATED position as shown.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ⅛" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks

NOTE: THE ACTUAL NUMBER OF WELD BEADS WILL VARY DEPENDING ON THE WALL THICKNESS.
OPEN-ROOT V-GROOVE PIPE WELD IN THE 2G POSITION

Using 1/8" (3.2 mm) E6010 electrodes for the root pass, 3/32" (2.4 mm) E7018 electrodes for the hot pass, and 3/32" or 1/8" (2.4 or 3.2 mm) E7018 electrodes for the remaining passes, make an open-root V-groove weld on carbon steel pipe in the 2G position as shown.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
Using ⅛" (3.2 mm) E6010 electrodes for the root pass, ⅝" (2.4 mm) E7018 electrodes for the hot pass, and ⅜" or ⅛" (2.4 or 3.2 mm) E7018 electrodes for the remaining passes, make an open-root V-groove weld on carbon steel pipe in the 5G position as shown. For the root pass, the requirement is to weld uphill. The downhill progression can be used for additional practice.

**Criteria for Acceptance:**

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ⅛" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
OPEN-ROOT V-GROOVE PIPE WELD IN THE 6G POSITION

Using \( \frac{1}{8} \)" (3.2 mm) E6010 electrodes for the root pass, \( \frac{3}{32} \)" (2.4 mm) E7018 electrodes for the hot pass, and \( \frac{3}{32} \)" or \( \frac{1}{8} \)" (2.4 or 3.2 mm) E7018 electrodes for the remaining passes, make an open-root V-groove weld on carbon steel pipe in the 6G position as shown. If required for qualification test purposes, a restricting ring may be added to the 6G position coupon to form a 6GR position coupon. For the root pass, the requirement is to weld uphill. The downhill progression can be used for additional practice.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of \( \frac{1}{8} \)" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks

NOTE:
IF REQUIRED FOR QUALIFICATION PURPOSES, A RESTRICTING RING MAY BE ADDED TO THE 6G POSITION COUPON TO FORM A 6GR POSITION COUPON.
PERFORMANCE ACCREDITATION TASKS

PATs provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for students.

The following tasks are designed to evaluate your ability to run open-root V-groove welds with GMAW equipment in the four standard test positions, using carbon steel wire of the appropriate diameter, and shielding gas. Perform each task when you are instructed to do so by your instructor. As you complete each task, show it to your instructor for evaluation. Do not proceed to the next task until told to do so by your instructor.


PATs 2 and 3 correspond to AWS EG3.0-96, Section 3.3.6.2, Unit #2 GMAW, Learning Objective #11. PAT 4 corresponds to AWS EG4.0-96, Section 3.3.6.3, Unit #3 GMAW, Learning Objective #7. PAT 1 has no AWS correlation.
OPEN-ROOT V-GROOVE PIPE WELD IN THE 1G-ROTATED POSITION

Using carbon steel wire of the appropriate diameter, shielding gas, and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 1G-ROTATED position.

PIPE ROTATION

GMAW

60° – 75°

WORKPIECE CLAMP

NOTE: THE ACTUAL NUMBER OF WELD BEADS WILL VARY DEPENDING ON THE WALL THICKNESS.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion

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OPEN-ROOT V-GROOVE PIPE WELD IN THE 2G POSITION

Using carbon steel wire of the appropriate diameter, shielding gas, and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 2G position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
OPEN-ROOT V-GROOVE PIPE WELD IN THE 5G POSITION

Using carbon steel wire of the appropriate diameter, shielding gas, and stringer or weave beads, make an open-root V-groove weld on carbon steel pipe in the 5G position. The root pass can be accomplished uphill or downhill at the discretion of the instructor. Fill and cap passes shall be done uphill.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
OPEN-ROOT V-GROOVE PIPE WELD IN THE 6G (OR 6GR) POSITION

Using carbon steel wire of the appropriate diameter, shielding gas, and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 6G (or 6GR) position. The root pass can be accomplished uphill or downhill at the discretion of the instructor. Fill and cap passes shall be done uphill.

**Criteria for Acceptance:**
- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ½" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion

**GMAW**

**NOTE:**
IF REQUIRED FOR QUALIFICATION PURPOSES, A RESTRICTING RING MAY BE ADDED TO THE 6G POSITION COUPON TO FORM A 6GR POSITION COUPON.
**Performance Accreditation Tasks**

PATs provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for students.

The following tasks are designed to evaluate your ability to run open-root V-groove welds with FCAW-G or FCAW-S equipment in three standard test positions using carbon steel wire of the appropriate diameter. Perform each task when you are instructed to do so by your instructor. As you complete each task, show it to your instructor for evaluation. Do not proceed to the next task until told to do so.


PATs 2 and 3 correspond to *AWS EG3.0-96, Section 3.3.6.3, Unit #3 FCAW, Learning Objective #7*. PAT 4 corresponds to *AWS EG4.0-96, Section 3.3.6.4, Unit #4 FCAW, Learning Objectives #7 and #8*. PAT 1 has no AWS correlation.
OPEN-ROOT V-GROOVE PIPE WELD IN THE 1G-ROTATED POSITION

Using FCAW-G or FCAW-S carbon steel wire of the appropriate diameter and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 1G-ROTATED position. For FCAW-G, use the appropriate shielding gas.

Note: Depending on site procedures or practices, the root pass for the following tasks may be run using another welding process such as GTAW, GMAW, SMAW, or backing material. Check with your instructor to determine the welding process to use for the root pass.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ⅛” (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
- No pinholes
- No inclusions

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OPEN-ROOT V-GROOVE PIPE WELD IN THE 2G POSITION

Using FCAW-G or FCAW-S carbon steel wire of the appropriate diameter and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 2G position. For FCAW-G, use the appropriate shielding gas.

Note: Depending on site procedures or practices, the root pass for the following tasks may be run using another welding process such as GTAW, GMAW, SMAW, or backing material. Check with your instructor to determine the welding process to use for the root pass.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
- No pinholes
- No inclusions

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OPEN-ROOT V-GROOVE PIPE WELD IN THE 5G POSITION

Using FCAW-G or FCAW-S carbon steel wire of the appropriate diameter and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 5G position. For FCAW-G, use the appropriate shielding gas.

**Note:** Depending on site procedures or practices, the root pass for the following tasks may be run using another welding process such as GTAW, GMAW, SMAW, or backing material. Check with your instructor to determine the welding process to use for the root pass.

**Criteria for Acceptance:**

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8” (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
- No pinholes
- No inclusions
OPEN-ROOT V-GROOVE PIPE WELD IN THE 6G (OR 6GR) POSITION

Using FCAW-G or FCAW-S carbon steel wire of the appropriate diameter and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 5G position. For FCAW-G, use the appropriate shielding gas.

Note: Depending on site procedures or practices, the root pass for the following tasks may be run using another welding process such as GTAW, GMAW, SMAW, or backing material. Check with your instructor to determine the welding process to use for the root pass.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
- No pinholes
- No inclusions

NOTE:
IF REQUIRED FOR QUALIFICATION PURPOSES, A RESTRICTING RING MAY BE ADDED TO THE 6G POSITION COUPON TO FORM A 6GR POSITION COUPON.
Performance Accreditation Tasks (PATs) provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for students.

The following tasks are designed to evaluate your ability to run open-root V-groove welds with GTAW equipment in four standard test positions using carbon steel filler rod of the appropriate diameter and argon shielding gas. Perform each task when you are instructed to do so by your instructor. As you complete each task, show it to your instructor for evaluation. Do not proceed to the next task until told to do so. For AWS 2G and 5G certifications, refer to *AWS EG3.0-96 Guide for the Training and Qualification of Welding Personnel; Level II – Advanced Welder* for bend test requirements. For AWS 6G certifications, refer to *AWS EG4.0-96 Guide for the Training and Qualification of Welding Personnel; Level III – Expert Welder* for bend test requirements.

PATs 2 and 3 correspond to *AWS EG3.0-96, Section 3.3.6.4, Unit #4, GTAW, Learning Objective #14*. PAT 4 corresponds to *AWS EG4.0-96, Section 3.3.6.5, Unit #5, GTAW, Learning Objective #10*. PAT 1 has no AWS correlation.
OPEN-ROOT V-GROOVE PIPE WELD IN THE 1G-ROTATED POSITION

Using GTAW equipment and carbon steel filler rod of the appropriate diameter, argon shielding gas, and stringer beads, make open-root V-groove welds on carbon steel pipe in the 1G-ROTATED position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of \( \frac{1}{8} \)" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion

NOTE: THE ACTUAL NUMBER OF WELD BEADS WILL VARY DEPENDING ON THE WALL THICKNESS.
GTAW OPEN-ROOT V-GROOVE PIPE WELD IN THE 2G POSITION

Using GTAW equipment and carbon steel filler rod of the appropriate diameter, argon shielding gas, and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 2G position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of \( \frac{1}{8} \)" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
Using GTAW equipment and carbon steel filler rod of the appropriate diameter, argon shielding gas, and stringer or weave beads, make an open-root V-groove weld on carbon steel pipe in the 5G position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum of \( \frac{1}{8} \)" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
GTAW OPEN-ROOT V-GROOVE PIPE WELD IN THE 6G (OR 6GR) POSITION

Using GTAW equipment and carbon steel filler rod of the appropriate diameter, argon shielding gas, and stringer beads, make an open-root V-groove weld on carbon steel pipe in the 6G (or 6GR) position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum of 1/8” (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion

NOTE:
IF REQUIRED FOR QUALIFICATION PURPOSES, A RESTRICTING RING MAY BE ADDED TO THE 6G POSITION COUPON TO FORM A 6GR POSITION COUPON.
Performance Accreditation Tasks

Performance Accreditation Tasks (PATs) provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for students.

The following tasks are designed to evaluate your ability to run open-root V-groove welds with GTAW equipment in three standard test positions using stainless and/or low-alloy steel filler rod of the appropriate diameter and argon shielding gas. Perform each task when you are instructed to do so by your instructor. As you complete each task, show it to your instructor for evaluation. Do not proceed to the next task until told to do so. For AWS 2G and 5G certifications, refer to AWS EG3.0-96 Guide for the Training and Qualification of Welding Personnel; Level II – Advanced Welder for bend test requirements. For AWS 6G certifications, refer to AWS EG4.0-96 Guide for the Training and Qualification of Welding Personnel; Level III – Expert Welder for bend test requirements.

PATs 1 and 2 correspond to AWS EG3.0-96, Section 3.3.6.4, Unit #4 GTAW, Learning Objective #15. PAT 3 corresponds to AWS EG4.0-96, Section 3.3.6.5, Unit #5 GTAW, Learning Objective #15 (partial).
GTAW OPEN-ROOT V-GROOVE
PIPE WELD IN THE 2G POSITION

Using GTAW equipment and stainless and/or low-alloy steel filler rod of the appropriate diameter, argon shielding and backing gas, and stringer beads, make an open-root V-groove weld on stainless steel or carbon steel pipe in the 2G position.

Criteria for Acceptance:

• Uniform appearance on the bead face
• Craters and restarts filled to the full cross section of the weld
• Acceptable weld profile in accordance with the applicable codes and standards
• Smooth transition with complete fusion at the toes of the weld
• Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1⁄8” (3 mm)
• No porosity
• No undercut
• No cracks
• No overlap
• No incomplete fusion
Using GTAW equipment and stainless and/or low-alloy steel filler rod of the appropriate diameter, argon shielding and backing gas, and stringer beads, make an open-root V-groove weld on stainless steel or carbon steel pipe in the 5G position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion
GTAW OPEN-ROOT V-GROOVE PIPE WELD IN THE 6G (OR 6GR) POSITION

Using GTAW equipment and stainless and/or low-alloy steel filler rod of the appropriate diameter, argon shielding and backing gas, and stringer beads, make an open-root V-groove weld on stainless steel or carbon steel pipe in the 6G (or 6GR) position.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum of 1/8" (3 mm)
- No porosity
- No undercut
- No cracks
- No overlap
- No incomplete fusion

NOTE:
IF REQUIRED FOR QUALIFICATION PURPOSES, A RESTRICTING RING MAY BE ADDED TO THE 6G POSITION COUPON TO FORM A 6GR POSITION COUPON.
PERFORMANCE ACCREDITATION TASKS

Performance Accreditation Tasks (PATs) provide specific acceptable criteria for performance and help to ensure a true competency-based welding program for students.

The following tasks are designed to evaluate your ability to run open-root V-groove welds on both plate and pipe in all positions using stainless-steel electrodes and SMAW equipment. Perform each task when you are instructed to do so by your instructor. As you complete each task, take it to your instructor for evaluation. Do not proceed to the next task until told to do so.


PATs 1 through 4 correspond to AWS EG3.0-96, Section 3.3.6.1, Unit #1 SMAW, Learning Objective #7. PAT 8 corresponds to AWS EG4.0-96, Section 3.3.6.2, Unit #2 SMAW, Learning Objective #8 (with backing).
OPEN-ROOT V-GROOVE WELDS ON STAINLESS STEEL PLATE JOINTS IN THE FLAT (1G) POSITION

Note: It is preferable to use stainless steel base metal. However, substituting carbon steel is permitted by the codes.

Using stainless steel electrodes, make an open-root V-groove weld on plate in the flat (1G) position, as shown.

Criteria for Acceptance:

• Uniform appearance on the bead face

• Craters and restarts filled to the full cross section of the weld

• Acceptable weld profile in accordance with the applicable codes and standards

• Smooth transition with complete fusion at the toes of the weld

• Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ⅛” (3 mm)

• No porosity

• No overlap

• No undercut

• No inclusions

• No cracks

• No pinholes

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OPEN-ROOT V-GROOVE WELDS ON STAINLESS STEEL PLATE JOINTS IN THE HORIZONTAL (2G) POSITION

Using stainless steel electrodes, make an open-root V-groove weld on plate in the horizontal (2G) position, as shown.

Criteria for Acceptance:

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No overlap
- No undercut
- No inclusions
- No cracks
- No pinholes
OPEN-ROOT V-GROOVE WELDS ON STAINLESS STEEL PLATE JOINTS IN THE VERTICAL (3G) POSITION

Using stainless steel electrodes, make an open-root V-groove weld on plate in the vertical (3G) position, as shown.

Criteria for Acceptance:
- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1⁄8" (3 mm)
- No porosity
- No overlap
- No undercut
- No inclusions
- No cracks
- No pinholes

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OPEN-ROOT V-GROOVE WELDS ON STAINLESS STEEL PLATE JOINTS IN THE OVERHEAD (4G) POSITION

Using stainless steel electrodes, make an open-root V-groove weld on plate in the overhead (4G) position, as shown.

**Criteria for Acceptance:**

- Uniform appearance on the bead face
- Craters and restarts filled to the full cross section of the weld
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of ⅛" (3 mm)
- No porosity
- No overlap
- No undercut
- No inclusions
- No cracks
- No pinholes

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OPEN-ROOT V-GROOVE STAINLESS STEEL PIPE WELD IN THE 1G-ROTATED POSITION

Using stainless steel electrodes, make an open-root V-groove weld on stainless steel pipe in the 1G-ROTATED position, as shown.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of \( \frac{3}{8}'' \) (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
- No pinholes

NOTE: THE ACTUAL NUMBER OF WELD BEADS WILL VARY DEPENDING ON THE WALL THICKNESS.
OPEN-ROOT V-GROOVE STAINLESS STEEL PIPE WELD IN THE 2G POSITION

Using stainless steel electrodes, make an open-root V-groove weld on stainless steel pipe in the 2G position, as shown.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
- No pinholes
OPEN-ROOT V-GROOVE STAINLESS STEEL PIPE WELD IN THE 5G POSITION

Using stainless steel electrodes, make an open-root V-groove weld on stainless steel pipe in the 5G position, as shown.

Criteria for Acceptance:

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of \( \frac{1}{8} \)" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
- No pinholes
Using stainless steel electrodes, make an open-root V-groove weld on pipe in the multiple inclined (6G) position, as shown. If required, a restricting ring may be added to the 6G position to form a 6GR position coupon.

**Criteria for Acceptance:**

- Uniform rippled appearance on the weld face
- Craters and restarts filled to the full cross section of the weld
- Uniform weld size
- Acceptable weld profile in accordance with the applicable codes and standards
- Smooth transition with complete fusion at the toes of the weld
- Complete joint penetration and face reinforcement with the root reinforcement at least flush with the inside of the pipe, to a maximum buildup of 1/8" (3 mm)
- No porosity
- No undercut
- No inclusions
- No cracks
- No pinholes

**NOTE:** BASE METAL, STAINLESS (OR CARBON) STEEL SCHEDULE 40 OR 80 PIPE AT LEAST 3" (76 MM) IN DIAMETER (DN80)