

MANGO 2 Welder Qualification – Steps to Qualify a Welder

(These instructions are meant as a guide and do not supersede API 1104 or other applicable codes)

1. The initial test consists of a 12.75" sleeve weld with groove and girth fillet weld. (See attached diagram). Initial qualification requires water to flow through 12" pipe to simulate that cooling of pipeline with product flowing through it. **This test is only required if it is the first time qualifying to MANGO Welding Procedure #2 or if qualification has lapsed.**
2. Fit up shall meet the following requirements (per MANGO Welding Procedure #2):
 - a. Groove weld bevel shall be $30^{\circ} + 7\ 1/2^{\circ} - 0^{\circ}$
 - b. Root face shall be $0 + 1/32"$
 - c. Root opening shall be $1/16 +/ - 1/32$
 - d. Material must be properly cleaned for welding.
 - e. Backing Strip will be install behind groove weld
3. Welding inspection shall be completed by a MANGO approved Welding Inspector.
 - a. Prior to welding, the inspector shall verify:
 - i. Proper fit up per MANGO Welding Procedure #2
 - ii. Correct welding electrodes (new or properly stored E7018)
 - iii. Weather conditions are to be adequate
 - iv. Machine polarity is set to DCEP
 - v. Cooling water flow rate
 - b. The following parameters shall be verified and recorded for a minimum of one bead on each pass (at minimum Root, Fill, Cover)(per MANGO Welding Procedure #2):
 - i. Welding voltage (average reading)
 - ii. Welding amperage (average reading)
 - iii. Direction of travel
 - iv. Travel speed
 - v. Heat input

4. Final weld inspection:

- a. The inspector shall inspect the weld in accordance with API 1104
 - b. If the weld is acceptable the welding test is complete and the weld shall be submitted for testing
 - c. If the weld is not acceptable the test will end.
5. After the weld passes visual inspection the MANGO approved Welding Inspector or test facility will destructively test welds per API 1104. The results of destructive testing shall be recorded on the MANGO 2 - Welder Qualification Form and a copy:
- a. Maintained at the testing facility
 - b. Provided to the welder
 - c. Submitted with Internet Permission Form to:

Chris Dixson
2001 Maguire Blvd.
Columbia, MO 65201
(573)289-4751
cdixson2@ameren.com

To remain qualified:

Note: The welder must have engaged in the process during the preceding 6 months and be prepared to provide documentation if requested by the operator, before starting the MANGO weld requalification process.

6. Six month requalification consists of 6" sleeve with groove and fillet girth weld. **This test is to maintain MANGO 2 Welder Qualification and shall be done every six month but longer than seven and one half months to keep qualification current.**
7. The welds shall be observed by a MANGO qualified Welding Inspector and tested by MANGO approved testing facility. This test does not require cooling water.
8. Fit up shall meet the following requirements (per MANGO Welding Procedure #2):
 - a. Plates bevel shall be $30^{\circ} + 7 \frac{1}{2}^{\circ} - 0^{\circ}$
 - b. Root face shall be $0 + 1/32''$
 - c. Root opening shall be $1/16 +/ - 1/32$
 - d. Material must be properly cleaned for welding.
 - e. Backing Strip shall be install behind groove weld

9. Welding inspection shall be completed by a MANGO approved Welding Inspector.

- a.** Prior to welding, the inspector shall verify:
 - i.** Proper fit up per MANGO Welding Procedure #2
 - ii.** Correct welding electrodes (new or properly stored E7018)
 - iii.** Weather conditions are adequate
 - iv.** Machine polarity is set to DCEP
 - v.** Cooling water flow rate

- b.** The following parameters shall be verified and recorded for a minimum of one bead on each pass (at minimum Root, Fill, Cover)(per MANGO Welding Procedure #2):
 - i.** Welding voltage (average reading)
 - ii.** Welding amperage (average reading)
 - iii.** Direction of travel
 - iv.** Travel speed
 - v.** Heat input

10. Final weld inspection:

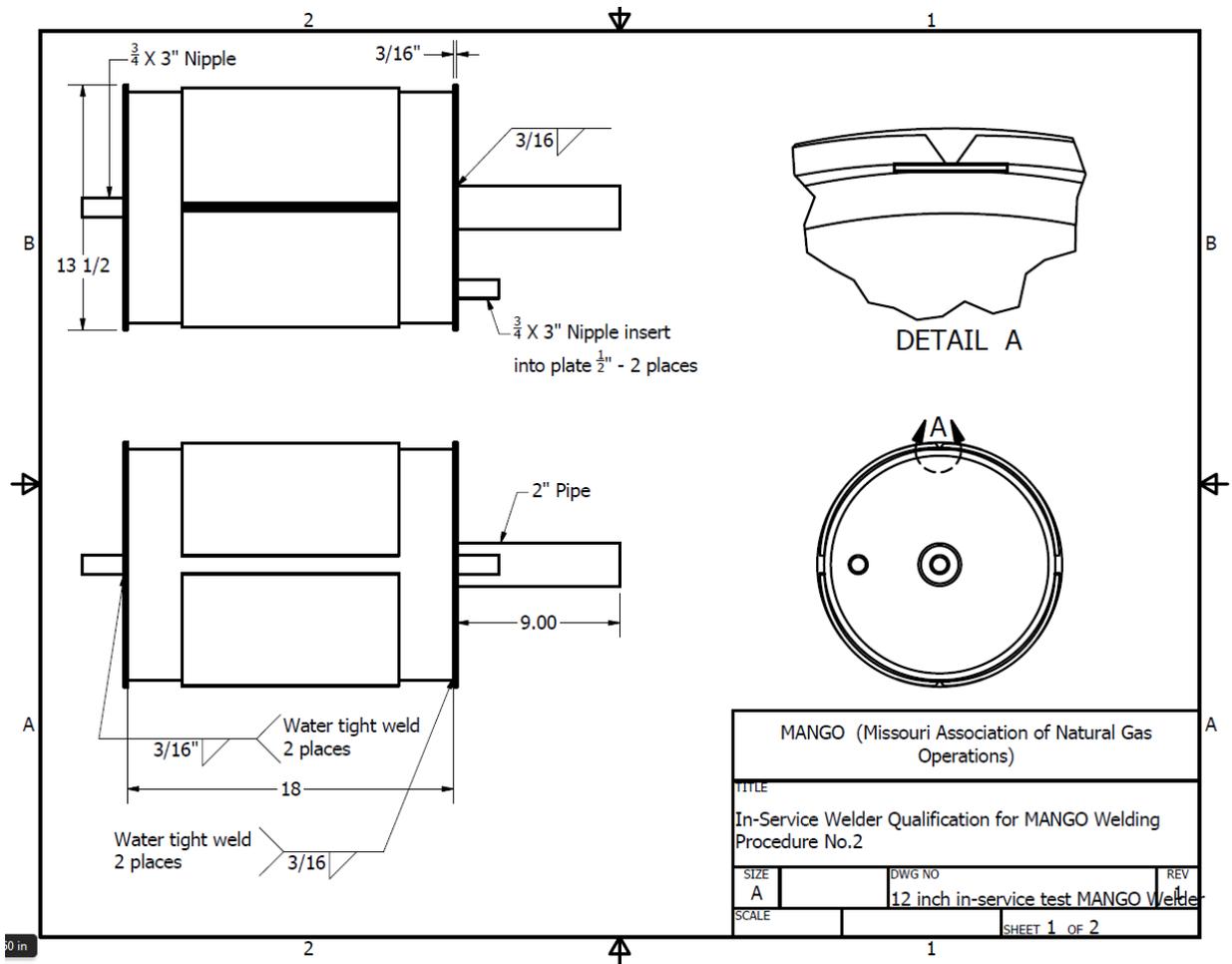
- a.** The inspector shall inspect the weld in accordance with API1104
- b.** If the weld is acceptable the welding test is complete and the weld shall be submitted for testing
- c.** If the weld is not acceptable the test will end.

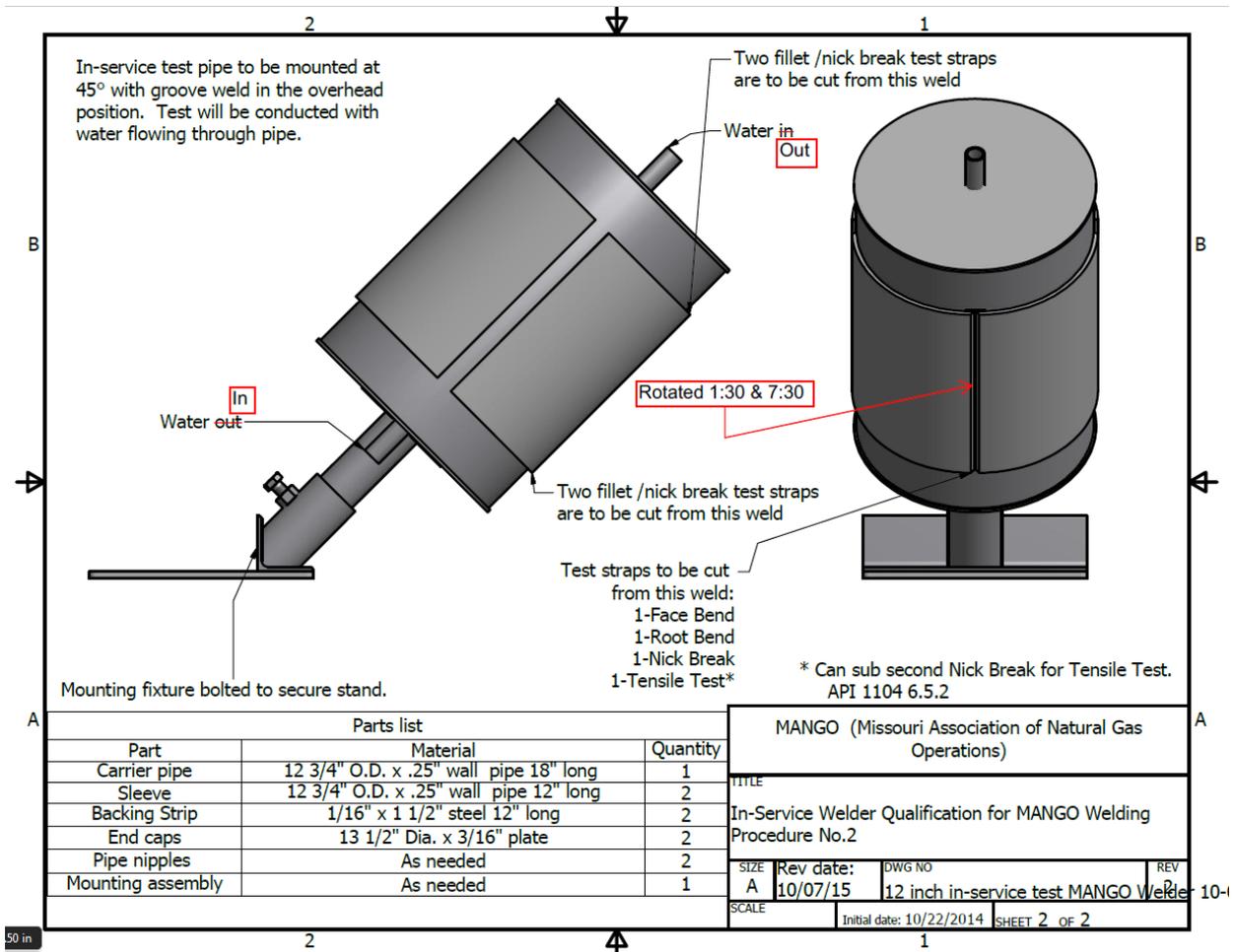
11. After the weld passes visual inspection the MANGO approved welding inspector or test facility will destructively test welds per API 1104. The results of destructive testing shall be recorded on the MANGO 2 - Welder Qualification Form and:

- a.** Maintained at the testing facility
- b.** Provided to the welder
- c.** Submitted with Internet Permission Form to:

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Feel free to contact Chris Dixon with any questions or concerns with this guide.





Note 12.75" initial test is only require the first time welder qualifies for the procedure. Welder is required to weld a 6" sleeve for re-qualification every six month not excessing 7 1/2 months to keep qualification current indefinitely. If qualification lapse the welder will be required to perform the initial 12.75" test with cooling water.

Note Six Month Re-qualification requires test identical to above drawing except 6" pipe is to be used and cooling water is not required.

Note Each welder must do Groove weld at the 7:30 position. Then weld the lower fillet overhead and then test piece can be rotated to the 1:30 position to weld top fillet weld.