HexSizer® Heavy Hex Gauge™

Instructor Guide

Training Curriculum

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Course Overview

Title: HexSizer® Heavy Hex Gauge™ – Accurate Nut and Bolt Sizing for Industrial Bolting

Duration: 3–4 hours (can be scaled to half-day or 2-hour workshop)

Audience: Millwrights, pipefitters, steamfitters, maintenance technicians, apprentices, inspectors, and contractors

Delivery:
Classroom instruction + hands-on exercises + practical assessment

Learning Objectives

By the end of this training, participants will be able to:

1. Explain the challenges of sizing heavy hex fasteners using traditional tools
2. Accurately identify heavy hex nut and stud sizes using the HexSizer®
3. Differentiate between nominal, minimum, and actual ASME sizes.
4. Apply the HexSizer® during job walks, maintenance, shutdowns, and outages
5. Prevent downtime, costs, and safety risks caused by incorrect sizing

Course Breakdown

Module 1 – Introduction to Heavy Hex Fasteners (30 min)

Purpose: Establish context for why the HexSizer® exists.

Trainer Notes:

- Explain ASME 18.2.2 heavy hex standard (inch and metric).
- Show examples of heavy hex nuts (loose samples if possible).
- Explain “A/F” (across flats) measurement.
- Introduce the problem: installed studs block traditional measurements.
- Discuss tolerance ranges (e.g., a 2” nut may measure 1.938”).

Interactive Activity:

- Pass around loose nuts and bolts. Ask participants to measure with calipers/tape.
- Compare their results against actual ASME standard values.
- Debrief: highlight confusion caused by undersized measurements.

Module 2 – The Problem with Traditional Measurement

(20 min)

Purpose: Show why old methods fail in the field.

Trainer Notes:

- Reiterate stud interference problem. On installed nuts, the stud gets in the way.
- Show photos or demo board with installed studs.
- Discuss downtime costs (e.g., 30 min lost = $24,000 in

Activity:

- Have participants attempt to measure nuts on mounted studs with a tape or calipers.
- Ask: “How confident are you in this size? What wrench would you pull?”
- Capture uncertainty → pivot to HexSizer®

Module 3 – Introducing the HexSizer® (30 min)

Purpose: Familiarize participants with the tool.

Trainer Notes:

- Pass out HexSizer® units (wallet and lanyard versions).
- Point out features.

- Standard size marks only.
- Stud size and nut size pairings.
- Anodized aluminum durability (1000°F resistant).

Customer Voice Insert:

"Well made, light, pocket sized, convenient. Tried it out on various nuts and bolts—makes sizing your wrench and socket sizes easy."

Module 4 – Using the HexSizer® in Practice (60 min)

Purpose: Build confidence in hands-on measurement.

Trainer Notes:

- Demonstrate: measure nut from one flat, read size.
- Show how to size studs with gauge.

Exercises:

1. **Loose Hardware Drill:** Each trainee measures a set of nuts/bolts and records sizes.
2. **Installed Hardware Drill:** Use demo board or plant samples; measure installed nuts.
3. **Job Walk Simulation:** Assign a mock work order (e.g., open inspection plate). Trainees walk through sizing required nuts/bolts and create a tool list using the HexSizer®.

Customer Voice Insert:

“I keep this on my lanyard at work and it saves me a lot of running around at the job-site.”

Module 5 – Common Mistakes and Troubleshooting

(20 min)

Purpose: Prevent misuse.

Trainer Notes:

Common errors:

- Going to the larger size when the nut corner is between tick lines lines and the tech is not sure which to choose (Answer: Choose the smaller size)
- Misreading undersized nuts as metric or off-sized.
- Using a worn and dirty HexSizer that is hard to read.
- Assuming all nuts are their “true” nominal size.
- Best practices: Before the job starts, perform a job walk and fit-test the nut with the actual wrench or socket that you intend to use.

Discussion

- Ask participants to share times they guessed wrong and what happened.

Module 6 – Safety, Efficiency, and Cost Impact (20 min)

Purpose: Connect tool use to real-world outcomes.

Trainer Notes:

- Explain ripple effect of wrong size: Going back to the shop, idle crews, inspectors, crane ops, welders.
- Emphasize contractor credibility: delays = lost contracts.
- Show refinery downtime math example.

Customer Voice Insert:

“This is a game changer in the field!! I kept it on me at all times.”

Module 7 – Assessment and Certification (30 min)

Purpose: Confirm competency.

Trainer Notes:

- Written Quiz (10 questions): ASME sizing, A/F vs one-flat, nominal vs actual.
- Practical Test: Each participant measures 5 loose nuts, 3 installed nuts, and matches stud/nut size.
- Criteria: 100% accuracy in practical; 80% minimum on quiz.

Certification:

Issue “HexSizer® Competency Certificate” signed by trainer.

Trainer Resources

To make this program easy for your bolting trainers to roll out, I'd recommend preparing:

- **Instructor Guide** – scripted notes with key talking points
- **Slide Deck** – visuals of problems/solutions, ASME tables, case studies
- **Hands-On Kit** – demo board with mounted studs/nuts of varying sizes
- **Assessment Materials** – quizzes, practical exam checklists

Optional Add-ons

- **Video Demonstrations** for e-learning or hybrid delivery
  YouTube: https://youtu.be/9oQHd8SGpYg?si=ctNi60QyrSU4rbd1
  OR
  https://youtu.be/MwexczBl3io?si=iHmHuqOMA8d3861m
- **Pocket Reference Guides** (laminated cards or digital PDFs)
- **Case Studies/Testimonial Inserts** – using customer stories (like *"This is a game changer in the field—I kept it on me at all times"*)

Trainer Notes:

- **Demo Board or Mock-up flange:** Mounted studs/nuts for hands-on drills
- **Sample Nuts/Bolts:** Range of inch and metric heavy hex sizes.

Trainer Resources (continued)

- **Slide Deck (optional):** ASME standards, tolerance ranges, downtime case study.
- **Reference Cards:** ASME size tables for reinforcement.
- **Customer Testimonials (select quotes):** Use during modules for credibility.
- **Job Walk Simulation Worksheet** – scenario-based exercise where participants plan tooling needs using HexSizer®

Follow-Up and Ongoing Use

- Encourage participants to keep HexSizer® on lanyard or in wallet.
- Trainers should check for tool wear in future refresher sessions.
- Recommend refresher workshops during plant outage prep.

Quiz Answer Key

1. b
2. b
3. b
4. b
5. b
6. b
7. False
8. True
9. False
10. True