

# Tentec

— Part of the Atlas Copco Group

## ECITB Training Course Mechanical Joint Integrity Standards

“Competence related failures during the construction, maintenance and disassembly of mechanical joints are one of the main causes of loss of containment incidents and may lead to major accidents”  
Step Change in Safety.

“All personnel carrying out work on bolted joints should be trained and competent to a level appropriate to the required technical skills and failure risk of the joint involved”  
UK Oil & Gas



Preferred supplier to the

**career transition partnership**

The Ministry of Defence  
working with  
Right Management

**ecITB**

Engineering Construction Industry Training Board

**APPROVED PROVIDER**

# Tentec Training



Engineering Construction Industry Training Board

APPROVED PROVIDER

Tentec are a specialist provider of training and competence assurance programmes in the assembly and tightening of bolted connections to industries as diverse as oil & gas (onshore and offshore), power generation, construction, defence and renewable energy.

Tentec delivers training in controlled bolting in accordance with "Mechanical Joint Integrity Standards" document published by the Engineering Construction Industry Training Board (ECITB). The training standards available are MJ10 hand torque, MJ18 hydraulic tensioning and MJ19 hydraulic torque wrenches. Additional Tentec derived courses include TE12 Hydraulic Nuts and TE13 BTS-Bolt Tightening Software.

These standards are recognised by industry and recommended as the benchmark qualification for bolting personnel by The Energy Institute and other influential authorities.

Tentec offer a mobile training service as well as our own comprehensive certified training school within the Tentec facility. This gives our clients the option of either using Tentec equipment in our training school or on site at our client's facility giving the trainee's the benefit of learning on the actual equipment they will be using on the job.

- ECITB defined training course "Mechanical Joint Integrity Standards"
- Training is given by fully certified ECITB Licensed trainers.

- Successful trainees are issued the globally recognised ECITB Certificate of Technical Competence. "Management of Joint Integrity"

- Employer's can selectively choose training content from a selection of disciplines:-

MJ10 Hand Torque Bolted Connections

MJ18 Hydraulic Tensioned Bolted Connections

MJ19 Hydraulic Torqued Bolted Connections

TE12 Hydraulic Nuts\*

TE13 BTS-Bolt Tightening Software\*

- A preferred Learner/Trainer ratio of 4:1 is available.

\*Optional Tentec derived training courses.

## ECITB - Mechanical Joint Integrity Standards

### Stage 1 - Training



### Stage 2 - Workplace Task Assignments

Each learner after attending an approved training course from stage 1 and attaining the training certificate requires a period of workplace experience to practise new skills and knowledge. This period allows for the consolidation of skills and knowledge against work based tasks.

### Stage 3 - Test Centre Assessment

Requires each individual to complete a formal assessment of their job knowledge, skills and ability in each Mechanical Joint Integrity subject.

### Stage 4 - Technical Competence Validation

To confirm the individual's current skills, knowledge and ability the ECITB technical competence validation test is undertaken every 3 years to prove ongoing performance development.

### Stage 1 - Training

- Hand Torque Bolted Connection Techniques (MJ10) – 1 day duration
- Hydraulically Torque Bolted Connection Techniques (MJ10 & 19) – 1.5 days duration
- Hydraulically Tension Bolted Connection Techniques (MJ18) – 1 day duration
- Hydraulically Torque and Tension Bolted Connection Techniques (MJ10, 18, 19) – 2.5 days duration

#### Unit: MJ10: Hand Torque Bolted Connection Techniques

##### Learning Outcomes

- Explain how to ensure intended task conforms to related specification, methods, process, techniques and procedure.
- Dismantle hand torque bolted connection systems.
- Remove components from hand torque bolted connection systems.
- Replace components in hand torque bolted connection systems.
- Assemble, secure and hand torque bolted connections
- Verify the integrity of the assembled joint.

*Notes: Minimum estimated instructor to learner contact time 6 hours, minimum of 3 practical exercises.*

#### Unit: MJ18: Hydraulically Tensioned Bolted Connections

##### Learning Outcomes

- Explain how to ensure intended task conforms to intended specification, methods, process, techniques and procedure
- Dismantle hydraulically tensioned bolted connection systems
- Remove components from hydraulically tensioned bolted connection systems
- Replace components in hydraulically tensioned bolted connection systems
- Assemble, secure and hydraulically tension bolted connections
- Verify the integrity of the assembled joint.

*Notes: Must be delivered to learners who have previous torque training (Endorsed course or MJ10/19)*

*Minimum estimated instructor to learner contact time 6 hours minimum of 3 practical exercises*



## Unit: MJ1 19: Hydraulically Torqued Connection Techniques

### Learning Outcomes

- Explain how to ensure intended task conforms to intended specification, methods, process, techniques and procedure
- Dismantle hydraulically torqued bolted connection systems
- Remove components from hydraulically torqued bolted connection systems
- Replace components in hydraulically torqued bolted connection systems
- Assemble, secure and hydraulically torqued bolted connections
- Verify the integrity of the assembled joint

*Notes: Must be delivered in conjunction with MJ110*

*Minimum estimated instructor to learner contact time 9 hours, minimum of 6 practical exercises*

## Unit: TE12: Hydraulic Nut Connection Techniques

### Learning Outcomes

- Explain how to ensure intended task conforms to intended specification, methods, process, techniques and procedure
- Dismantle hydraulic nut bolted connection systems
- Remove components from hydraulic nut bolted connection systems
- Replace components in hydraulic nut bolted connection systems
- Assemble, secure and an hydraulic nut bolted connection
- Verify the integrity of the assembled joint

## Unit: TE13: Tentec BTS - Bolt Tightening Software.

### Learning Outcomes

- Demonstrate BTS system for standard flanges
- Demonstrate BTS system for non standard flanges
- Demonstrate building a bolting project using BTS software.
- Demonstrate document creator using BTS software.

## Stage 2 - Workplace Task Assignments

Each learner after attending an approved training course from stage 1 and attaining the training certificate requires a period of workplace experience to practise new skills and knowledge. This period allows for the consolidation of skills and knowledge against work based tasks.

Each learner after attending an approved training course and attaining the training certificate requires a period of workplace experience to practise new skills and knowledge. This period allows for the consolidation of skills and knowledge against work based tasks. The learner is issued with a Work Based Task Assignment specifying the range of tasks and complex jobs required before the learner can move on to Stage 3. A workplace consolidation period of 3 to 12 months is recommended to give the person the opportunity to complete the Work Based Task Assignment. The individual must satisfactorily demonstrate that they have carried out each of the steps indicated in the Work Based Task Assignment on a minimum of three occasions. This may mean in practice that they complete more than three task assignment records as they may not carry out every step on each occasion.

The Work Based Task Assignment record may be verified by any person with overall responsibility for the correct, safe and accurate completion of the task. This could be:

- A supervisor or team leader
- A line manager
- Any other person with responsibility for the final approval and quality assurance for the relevant task, for example a QC Inspector or permit authority

When the person has achieved satisfactory completion of the Work Based Task Assignment and signed off by their employer they can then move onto Stage 3.

The Training Provider will issue the relevant Work Based Task Assignment/s to each learner at the end of each approved training course and explain to the learners the Work Based Task Assignment purpose and use.



## Stage 3 - Test Centre Assessment

Requires each individual to complete a formal assessment of their job knowledge, skills and ability in each Mechanical Joint Integrity subject.

Stage 3 requires each individual to complete a formal assessment of their job knowledge, skills and ability in each Mechanical Joint Integrity subject. The ECITB technical competence validation tests are standards consisting of a bank of online knowledge questions and a practical task to validate the learner's skills, knowledge and ability. Successful candidates attain the ECITB certificate of achievement which is valid for a period of 3 years. Unsuccessful candidates must wait a minimum period of 4 weeks between the unsuccessful test session and next test session to allow for a period of training to address any skills or knowledge gaps.

Tentec will confirm the following information with the employer/candidate before arranging the test session:

### New Workers

the Test Centre must ensure the new worker has successfully completed Stages 1 and 2. A record of the Approved Course certificate serial number will be recorded on the completed Work Based Task Assignment. The completed Work Based Task Assignment will be stored along with the completed paper Examiner's Results sheet for audit purposes.

### Existing Workers/Private Individuals

- Existing Workers will require a company letter of endorsement confirming attendance of previous bolting training in NSDS, TECSkills or ECITB Endorsed Course attendance and that the individual has experience in the subject area they are being tested in.
- Private individuals will be required to submit a detailed CV and copies of ECITB certificates (where applicable) to the Test Centre before the test session which will indicate that the individual has previous bolting training in NSDS, TECSkills or on ECITB endorsed course and has experience demonstrated on the CV in the subject area to be tested.

The company endorsement letter or individual's CV/certificates must be stored along with the completed paper Examiner's Results sheet for audit purposes.

Referred Candidates – the Test Centre must advise candidates on the criteria not achieved and areas requiring further training, a minimum period of 4 weeks must lapse before the candidate can undertake a new testing session to allow for a period of training or practice.

## Stage 4 - Technical Competence Validation

Stage 4 - Technical Competence Validation

To confirm the individual's current skills, knowledge and ability the ECITB technical competence validation test is undertaken every 3 years to prove ongoing performance development. If required the individual can undertake a short computer based training module to refresh their job knowledge before attempting the technical test.

Tentec will confirm the following information with the employer/candidate before arranging the test session:

- Previous Certificate of Achievement – the Test Centre must carry out a check to confirm the certificate is genuine before arranging the test session.

Successful candidates achieve the certificate of achievement which is valid for a period of 3 years. Unsuccessful candidates must wait a minimum period of 4 weeks between the unsuccessful test session and next test session to allow a period of training to address any skills or knowledge gaps.

Referred Candidates – the Test Centre must advise candidates on the criteria not achieved and areas requiring further training, a minimum period of 4 weeks lapse before the candidate can undertake a new testing session to allow for a period of training or practice.

Tentec products are subject to continual development and we reserve the right to make changes in the specification and design of products without prior notice.



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