

Overview

This standard is about maintaining cycle wheel and tyre systems, including building a wheel, identifying tyre wear/defects, tyre sizing and tread patterns, repairing a puncture and removing and replacing tyres, so that the cycle is reinstated to a safe and roadworthy condition.

In this standard the term 'cycle' includes pedal-propelled vehicles with two, three or four wheels. It may also include pedal-assisted e-bikes:

- Road legal up to 15.5 mph with a motor with an output of up to 250w
- E-cycles used for other purposes

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Performance criteria

- You must be able to:
- P1 use suitable personal protective equipment throughout all cycle wheel and tyre maintenance activities
 - P2 ensure the cycle and the work area are safe prior to work commencing
 - P3 support your removal and replacement activities by reviewing:
 - P3.1 cycle technical data
 - P3.2 cycle tyre maintenance procedures
 - P3.3 legal requirements
 - P4 identify components relevant to cycle wheels
 - P5 prepare, check and use all the equipment required following manufacturer's instructions
 - P6 carry out all cycle wheel and tyre maintenance activities following:
 - P6.1 manufacturer's instructions
 - P6.2 industry recognised methods
 - P6.3 your workplace procedures
 - P6.4 health, safety and environmental requirements
 - P7 work in a way which minimises the risk of:
 - P7.1 damage to the cycle, its systems and components
 - P7.2 damage to your working premises or the environment
 - P7.3 injury to self and others
 - P8 identify punctures, defects and sizing of cycle tyres
 - P9 identify valve types, correct use and pressures
 - P10 remove and replace cycle tyres, valves and associated components
 - P11 use suitable testing methods to accurately evaluate the performance of the wheel and tyre
 - P12 ensure the reassembled system performs to the cycle operating specification and meets any legal requirements prior to return to the customer
 - P13 promptly report any problems or issues relating to the cycle's condition or conformity to the relevant person(s)
 - P14 ensure your records are accurate, complete and promptly passed to the relevant person(s) in the format required
 - P15 complete all cycle maintenance activities within the agreed timescale
 - P16 promptly report any anticipated delays in completion to the relevant persons(s)

Knowledge and understanding

You need to know and understand:

Legislative and organisational requirements and procedures

- K1 the health and safety legislation, environmental requirements and workplace procedures relevant to cycle wheel and tyre maintenance activities and personal and cycle protection
- K2 your workplace procedures for:
 - K2.1 recording cycle wheel and tyre maintenance information
 - K2.2 the referral of problems
 - K2.3 reporting delays to the completion of work
 - K2.4 personal protection
- K3 how to isolate scrapped tyres and dispose of waste materials in your workplace following environmental requirements
- K4 how to work safely avoiding damage to other cycle systems, components and units and injury to self and others
- K5 the importance of documenting cycle wheel and tyre maintenance information
- K6 the importance of working to agreed timescales and keeping others informed of progress
- K7 the relationship between time and cost
- K8 the importance of promptly reporting anticipated delays to the relevant person(s)

Use of technical information

- K9 how to find, interpret and use sources of current technical information for cycle wheel and tyre maintenance activities
- K10 the importance of using the appropriate sources of technical information

Tools and equipment

- K11 how to select, prepare, check and use all the cycle wheel and tyre maintenance tools and equipment required

Cycle wheel building and hub maintenance

- K12 how to identify the components in cycle wheels
- K13 how to determine correct spoke lengths in cycle wheels
- K14 how to lace and tension a cycle wheel

- K15 the features of stress relieving spokes
- K16 how to compare spoke tension against recommendations
- K17 how to remove and replace cycle hub bearing components for the types of cycle on which you work
- K18 how to test and evaluate the performance of the wheel against the cycle operating specifications and any legal requirements
- K19 the manufacturer's specification for the type and quality of components to be used

Cycle tyre maintenance

- K20 how to identify the major components relevant to the removal and replacement of cycle wheels, tyres and inner tubes and the repair of punctures.
- K21 the common sizes of relevant components
- K22 the function of relevant components
- K23 how to locate a puncture and identify its cause
- K24 the advantages and disadvantages of different cycle tyre systems
- K25 how to remove and replace cycle tyres for the types of tyre systems on which you work
- K26 how the rim type affects the tyre fitting method
- K27 how to test and evaluate the performance of replacement cycle tyre system components and the reassembled system against the cycle operating specifications and any legal requirements
- K28 the manufacturer's specification for the type and quality of components to be used
- K29 the relationship between rims, tyres and associated inflation pressures
- K30 cycle manufacturer's data regarding maximum tyre size
- K31 the manufacturer's specification for the type and quality of components to be used
- K32 the relationship between rims, tyres and associated inflation pressures
- K33 cycle manufacturer's data regarding maximum tyre size

Scope/range

1. Testing methods are:

- 1.1 sensory
- 1.2 functional
- 1.3 measurement

2. Components are:

- 2.1 wheels
- 2.2 tyres
- 2.3 inner tubes
- 2.4 fasteners
- 2.5 repair patches
- 2.6 valves

3. Wheel building tools and equipment include:

- 3.1 wheel jig
- 3.2 dial test indicators
- 3.3 wheel building tools
- 3.4 spoke calculation software
- 3.5 measuring equipment
- 3.6 bearing pullers
- 3.7 bearing presses
- 3.8 hand tools

4. Tyre repair tools and equipment include:

- 4.1 cycle stand
- 4.2 inflation equipment
- 4.3 pressure gauge
- 4.4 wheel removal equipment
- 4.5 tyre removal equipment
- 4.6 puncture repair equipment
- 4.7 sealants

5. Hub assessments for:

- 5.1 seal damage
- 5.2 bearing wear and faults
- 5.3 axle trueness
- 5.4 free hub body

6. Cycle tyre systems are:

- 6.1 clincher and inner tube
- 6.2 tubular
- 6.3 tubeless

7. Rim types are:

- 7.1 aluminium
- 7.2 carbon fibre
- 7.3 steel

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Additional information

Glossary

This section contains examples and explanations of some of the terms used but does not form part of the standard.

Agreed timescales

Examples include industry recommended work times, job times set by your company or a job time agreed with a specific customer

Conformity

Examples include conformity to approvals and specifications, UK and European legal requirements where applicable

Cycles

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- Road legal up to 15.5 mph with a motor with an output of up to 250w
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Fasteners

To include, nuts, bolts, locking devices, clips, quick release skewers, thru-axle types

Sizing

To include European Tyre Rim Technical Organisation (ETRTO)

Sources of technical information

Manufacturer manuals and data

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