

## Maintain and repair cycle hydraulic brake systems

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### Overview

This standard is about maintaining and repairing cycle hydraulic brake systems and faults. It is also about carrying out a quality check on the completed work before returning the cycle to the customer.

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 hydraulic brake system maintenance and repair activities

P2 ensure the cycle and the work area is safe prior to work commencing

P3 support your maintenance and repair activities by reviewing:

P3.1 cycle technical data

P3.2 maintenance and repair procedures

P3.3 legal requirements

P4 identify **components** relevant to a cycle hydraulic brake system

P5 prepare, check and use all the **tools and equipment** required following manufacturer's instructions

P6 carry out all cycle hydraulic brake system maintenance, repair and **adjustment** activities following:

P6.1 manufacturer's instructions

P6.2 industry recognised repair 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 environment

P7.3 injury to self and others

P8 use suitable testing methods to accurately evaluate the performance of the reassembled system

P9 ensure the reassembled system performs to the cycle operating specification and meets any legal requirements prior to return to the customer

P10 promptly report any problems or issues relating to the cycle's **condition** or conformity to the relevant person(s)

P11 ensure your records are accurate, complete and promptly passed to the relevant person(s) in the format required

P12 complete all cycle hydraulic brake maintenance and repair activities within the agreed timescale

P13 promptly report any anticipated delays in completion to the relevant persons(s)

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### Knowledge and understanding

You need to know and understand:

#### **Legislative and organisational requirements and procedures**

- K1 the legal requirements relating to the cycle (including road safety requirements)
- K2 the health and safety legislation, environmental requirements, British Standards and workplace procedures relevant to cycle hydraulic brake system maintenance and repair activities and personal and cycle protection
- K3 your workplace procedures for:

- K3.1 recording maintenance and repair information
  - K3.2 the referral of problems
  - K3.3 reporting delays to the completion of work
- 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 hydraulic brake system maintenance and repair 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 applicable to cycle hydraulic brake systems
- K10 the importance of using the appropriate sources of technical information

#### **Tools and equipment**

- K11 how to select, prepare, check and use all the maintenance and repair **tools and equipment** required

#### **Cycle hydraulic brake system maintenance and repair**

- K12 how to identify the **components** in a cycle hydraulic brake assembly
- K13 the purpose and operation of each **component** of a cycle hydraulic brake system
- K14 the advantages and disadvantages of various cycle hydraulic brake designs

- K15 the difference between mineral oil and DOT systems and why they are incompatible
- K16 the effect of air in a cycle hydraulic brake system
- K17 how to inspect a cycle hydraulic braking system
- K18 how to remove and assess the serviceability of cycle hydraulic brake system **components** \*

***K19 the quality check process and how to report any faults highlighted during the quality check***

***K20 how to identify and rectify \*faults*** presented on cycle hydraulic brake systems

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K21 how to refit or replace cycle hydraulic brake system **components**

K22 how to **adjust** hydraulic brake system **components**

K23 how to carry out a cycle hydraulic brake system function test prior to and following work

K24 how to assess the **condition** of the cycle hydraulic brake system following maintenance and repair activity, ensuring the cycle is returned to the customer in a roadworthy condition prior to returning the cycle to the customer.

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### Scope/range

#### 1. **Tools and equipment** include:

- 1.1 hand tools
- 1.2 electrical tools
- 1.3 measuring equipment
- 1.4 bench mounted equipment
- 1.5 power tools
- 1.6 brake bleeding equipment
- 1.7 cleaning and degreasing equipment

#### 2. **Components** are:

- 2.1 brake master cylinder
- 2.2 hydraulic brake fluid lines
- 2.3 hydraulic oil reservoir
- 2.4 hydraulic brake calipers
- 2.5 brake pads
- 2.6 brake discs

#### 3. **Adjustments** include:

- 3.1 brake operating lever
- 3.2 brake hose
- 3.3 fluid level
- 3.4 calliper alignment
- 3.5 brake pad balancing
- 3.6 brake bleeding

#### 4. **Faults** include:

- 4.1 fluid leaks
- 4.2 excessive travel
- 4.3 noises
- 4.4 poor braking efficiency
- 4.5 seizure
- 4.6 runout
- 4.7 air in system

#### 5. **Condition** assessments include:

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- 5.1 cleanliness
- 5.2 security
- 5.3 adjustment
- 5.4 fluid leaks
- 5.5 function test

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## Glossary

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

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**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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## Maintain and repair cycle hydraulic brake systems

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