8.1 Brake and clutch failures

Some of the more common brake and clutch troubles are pictorially presented in subsequent sections; although these faults can affect performance and shorten the life of the components, only in exceptional circumstances do they result in complete failure.

BRAKING TROUBLES

**Metal Surface**

**Heat Spotting**

*Characteristics*
Small isolated discoloured regions on the friction surface. Often cracks are formed in these regions owing to structural changes in the metal, and may penetrate into the component.

*Causes*
Friction material not sufficiently conformable to the metal member; or latter is distorted so that contact occurs only at small heavily loaded areas.

**Crazing**

*Characteristics*
Randomly orientated cracks on the rubbing surface of a mating component, with main cracks approximately perpendicular to the direction of rubbing. These can cause severe lining wear.

*Causes*
Overheating and repeated stress-cycling from compression to tension of the metal component as it is continually heated and cooled.

**Scoring**

*Characteristics*
Scratches on the rubbing path in the line of movement.

*Causes*
Metal too soft for the friction material; abrasive debris embedded in the lining material.

**Friction material surface**

**Heat Spotting**

*Characteristics*
Heavy gouging caused by hard proud spots on drum resulting in high localised work rates giving rise to rapid lining wear.

*Causes*
Material rubbing against a heat-spotted metal member.

**Crazing**

*Characteristics*
Randomly orientated cracks on the friction material, resulting in a high rate of wear.

*Causes*
Overheating of the braking surface from overloading or by the brakes dragging.

**Scoring**

*Characteristics*
Grooves formed on the friction material in the line of movement, resulting in a reduction of life.

*Causes*
As for metal surface or using new friction material against metal member which needs regrinding.