



# Rail Presentation - UIC Code

December 2002



## Section 2

## Portable fire extinguishers

- Various sizes available to comply with total capacity of 14kg per motive power unit
- All cylinders painted red with colour of writing determining type
  - Black = CO<sub>2</sub>
  - Cream = Foam
  - Blue = Dry Chemical
- All operate to -20°C
- All extinguishers have controlled discharge methods
- All extinguishers specified are approved for fighting fires in electrical installations





## Section 3

## Provisions peculiar to combustion - engined motive power

- Fire Alarm Device
  - Automatic detection

Linear Heat Detectors

Point Detectors





## Automatic detection - applications

- Voyager (Bombardier)
  - Under frame engine protected
  - Linear re-settable
- Tamping (Plasser)
  - Diesel engine protection
  - Linear non-re-settable
- Generators
  - Diesel engine protection
  - Linear re-settable
- Locomotive
  - Class 66
  - Re-settable point detection



## Sounders

- Variable tones
- Variable levels
- 9 - 28 vdc voltage range
- Sound output dBA @ 1m 105
- Combined visual / Audio if specified

## Fixed fire extinguishers

- Environmentally friendly agents
  - Foam
  - CO<sub>2</sub>
  - FE13
  - FM200
  - Inert Blends
- Various approvals
  - FM
  - UL
  - EN
  - BS
- Automatic operation
- Manual operation
- Remote operation





## Extinguishants inert blends

- Loss prevention certification board
- Lloyd register
- Work through oxygen depletion
- Safe in Occupied areas
- Relative low cost
- Readily available
- Environmentally friendly
- Total flood
- Engineered pipework

## Inert blends applications

- Locomotives
- Control cabinets
- Process industry control rooms
- Computer

## UIC code 642

- Special provides concerning fire precautions and fire fighting measures on motive power units and driving trailers in international traffic

## Gaseous extinguishants - FE13

- Factory mutual approved
- UL approved
- Fire fighting capabilities
- Operating range Low Temperature Applications
- Total flooding agent
- Suitable for occupied areas
- Purpose designed nozzles
- Hydraulically calculated pipework

## FE13 applications

- High speed locomotives - Amtrak Flyer
- Fossil fuel locomotives - FRA project
- Turbine protection
- Off-shore generators
- Communication container



## Gaseous extinguishants - FM-200

- Factory mutual approved
- UL approved
- Fire fighting capabilities
- Operating range
- Total flooding agent
- Suitable for occupied areas
- 1:1.5 halon equivalent

## FM-200 - applications

- Locomotives (Diesel) - Irish Rail
- Test coaches - Renfe
- Computer rooms
- Telecommunications

## Extinguishers - AFFF

- BS5306 PT
- Fire fighting capabilities
- Operating range
- Local application
- Total flooding
- Purpose designed nozzles
- Purpose designed distribution pipework
- Effective in cross winds <20 miles / hour

# Extinguishing applications

- Diesel Multiple Unit
  - Underfloor Engines
  - Auxiliary Heaters
  - AFFF
- Electric High Speed Locomotives
  - Traction Modules
  - Transformers
  - Compressors
    - FE13
    - FM-200®
    - CEA410
    - CO<sub>2</sub>
    - Inert Blends



## Extinguishing applications

- Diesel multiple unit
  - Engine rooms
  - Hydraulics
    - FM200
    - CO<sub>2</sub>
    - Inert blend
- Specialist / civil
  - Propulsion equipment
  - Generation sets
  - Hydraulics
    - Dry powder
    - FM-200
    - AFFF







## Section 6

## Provisions peculiar to electric motive power units

1. Point heat detection or smoke detection(early alarm)
2. Sounders / beacons
3. Control outputs
4. Sounders / beacons
5. Covered in extinguishing section
6. Slave & main locomotive protection
7. Manual / + auto systems available
8. Pull handles or pneumatic release devices
9. Control unit designed specifically
10. Extinguishing agents all environmentally friendly



## Quality assurance

- ISO 9001
- Factory mutual
- Underwriters laboratory
- AQAP 1
- Network Rail
- Bombardier
- Alstom
- LUL
- ATOC

# Design assessment

- Hazard analysis
- Operating environment
- Applicable standards

## Design assessment - hazard analysis

- Engine rooms
- Transformers & compressors
- Electronic equipment
- Hydraulics
- Under-floor engines
- Auxiliary heaters
- Passenger areas
- Bogie areas
- Exhaust stacks



## Design assessment - operating environment

- Temperature
- Shock
- Vibration
- EMC / RFI
- Humidity
- Contamination
- Elements

## Design assessment - applicable standards

- UL
- Factory mutual
- RIA approved
- IEC approved
- British standards
- National / local standards

## Referenced projects

- Class 14X - BREL - 1991
- Eurostar - Alstom - 1992
- Class 92 - Brush - 1993
- IC2 - Adtranz - 1995
- ETR500 -Breda - 1996
- Irish Rail DMU - Alstom Spain - 1997
- Class 66 - GM - 1997
- Amtrak Flyer - Alstom - 1997
- Turbostar - Adtranz - 1998
- First Group - Alstom UK -1998
- Virgin - Bombardier - 1999
- Class 91 - Bombardier - 2000
- Irish Rail - CAF Spain - 2001



# Testing

- Discharge tests
- Pan fires
- Compartment fire simulation
- Previous results / experience
- Support of Kidde Fire Science Research Centre
- **By:**
- LICO Electronics GmbH
- A-2320 Kledering
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