AMFE
AUTOMATIC MINIATURE FIRE EXTINGUISHER
JOB's AMFE (Automatic Miniature Fire Extinguisher) reliably protects devices and equipment in industry, household and consumer electronics such as cabinets, home appliances, televisions, etc. against the dangers of fires. The AMFE detects and extinguishes a fire inside devices, preventing the spread of a fire.

**THE ADVANTAGES AT A GLANCE:**

- Easy to use
- Maintenance-free
- Easy to install (retrofittable)
- Variety of customer specific operating & releasing temperatures available
- No water being used (gas)
- Scalable
- Robust and shock tolerant
- 3M™ NOVEC™ or CO₂ as extinguishing agent
- Usable in various applications (home, industry, automotive, etc.)
- Mechanical release; no electric power supply required
- Release mechanism: qualified in the automotive and sprinkler industry
In control cabinets, fire can quickly lead to a disaster. The AMFE extinguishes reliably and precisely.

S-AMFE
AMFE with sensor connections

The AMFE not only releases the extinguishing gas but also signals that it has. In installations where accessibility is limited, the AMFE can be connected to a monitoring system by two connectors for reading a signal. Permanently controlling if the AMFE has been initiated (e.g. line control through a PLC or monitoring device) allows for precise knowledge about the status of whether and where a fire might have started in an otherwise hard to reach installation. The S-AMFE is rated for typical PLC signals of 24V/48V and 1000mA. The connectors are standardized (6.3mm blade terminals), but customizations are possible.

I-AMFE
Two simultaneously triggering connections

I-AMFE provides redundant provision of the extinguishing agent with simultaneous triggering of two connected cylinders. Alternatively, increasing the protected volume acc. to NFPA 12/NFPA 2001 is possible by installing the I-AMFE with two cylinders. It is also possible to connect two cylinders with different extinguishing agents for applications with other, very specific, fire extinguishing requirements. In certain countries, the largest possible CO₂ cylinder size which can be used without a special authorization is limited; cases where I-AMFE can still be used for maximizing the possible protected volume.

R-AMFE
AMFE which can additionally be triggered remotely

The R-AMFE works like a conventional AMFE, releasing the extinguishing gas when the thermobulb bursts after the activation temperature has been reached by heat (as in a sprinkler). Additionally, the R-AMFE can be remotely triggered by activating a current signal into the R-AMFE causing a fast and precise increase of the heat at the bulb, ultimately resulting in a burst of the thermobulb assembled and release of the extinguishing gas. R-AMFE can also work much faster than a traditional AMFE if controlled by a monitoring device which also reads e.g. smoke detector signals and, upon the early detection of smoke, initiates the signal to release the R-AMFE even before significant enough heat buildup. The applied current defines the time until the R-AMFE is initiated. As application requirements for the R-AMFE are customer specific, consulting the manufacturer is required to define electrical and mechanical details to guaranty reliable and sufficient operation.
THE CHALLENGE

Washing machines, televisions or industrial power supplies – fires in electric devices are a continuously increasing serious threat. And not only at homes damages caused by fires are increasing. There is also a significant risk of fire in the industry and automotive sector. Another example are highly valued collections which are subject to persistent fire hazard. The challenge is to automatically, energy-supply independently, detect and to extinguishing fires already in the early stage, consequently providing more safety. A system is needed, that can extinguish these fires reliably, fast and easily at any time and without external resources inside a housing.

THE FUNCTION

Due to rising heat in a fire scenario the pressure inside the glass bulb increases. After the predetermined operating temperature of the heat sensitive glass bulb is reached, the glass bulb bursts into small fragments and triggers a mechanism that releases the gas from the cylinder. The extinguishing medium is released through the holes in the outlet body and extinguishes the fire when the fire is still in an early stage. The quick operation and the effective extinguishing of the fire prevents further expansion of the fire and helps keeping damage small.

APPLICATION VARIETY

The application spectrum of the AMFE is diverse: It ranges from technical household appliances, exhibits and collections to solutions in a vast variety of applications, both at home and in the industry.
TECHNICAL SPECIFICATIONS

Design Help / Configuration

Sizing the AMFE, (the necessary quantity of extinguishing agent) has to be carried out in accordance with locally relevant standards (e.g. NFPA 12, NFPA 2001, VdS 2093, EN 15004)

- Dimensions (without cylinder):
  ø 16 mm x 84 mm/0,63” x 2,52”
- Minimum installation depth: 20 mm/0,79” (w/o cylinders)
- Activation temperature: 57°C – 260°C/134,6° F - 500° F
- Extinguishing agents: 3M™ NOVEC™, CO₂
- Lifetime: 9 years + (for the cylinders)
- Maintenance free
- Lifetime: ∞ for release mechanism (see manual for details)

Marking / Traceability

Each AMFE is marked with a label which, in addition to the type, production date and article number, also includes a batch number. This batch number guarantees a 100% traceability of all used components. Thus, not only information about the components being used can be retrieved, but also details about the executed quality tests during production.

3M™ NOVEC™ cylinders

- AMFE & S-AMFE are also available in stainless design

For R & I-AMFE, please contact JOB.

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CO₂ Cylinders

- 3D-model available

Parts

The parts below are available as standard. Other sizes and temperatures are available upon request.

AMFE

<table>
<thead>
<tr>
<th>Part</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10898</td>
<td>AMFE SR3 68</td>
<td>AMFE, with JOB 68°C/155°F bulb</td>
</tr>
<tr>
<td>10899</td>
<td>AMFE SR3 79</td>
<td>AMFE, with JOB 79°C/175°F bulb</td>
</tr>
<tr>
<td>10900</td>
<td>AMFE SR3 93</td>
<td>AMFE, with JOB 93°C/200°F bulb</td>
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</table>

S-AMFE

<table>
<thead>
<tr>
<th>Part</th>
<th>Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>11043</td>
<td>S-AMFE SR3 68</td>
<td>AMFE, with JOB 68°C/155°F bulb and sensor connection</td>
</tr>
<tr>
<td>11044</td>
<td>S-AMFE SR3 79</td>
<td>AMFE, with JOB 79°C/175°F bulb and sensor connection</td>
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<tr>
<td>11045</td>
<td>S-AMFE SR3 93</td>
<td>AMFE, with JOB 93°C/200°F bulb and sensor connection</td>
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</tbody>
</table>

AMFE & S-AMFE are also available in stainless design

CO₂ cylinders

- AMFE SR3 79°C
  PIN: 10900
  Date: 16 JAN 2017
  Batch No: AMFE: D46809

Name plate Example AMFE with batch number

Physical Dimensions Cylinder

<table>
<thead>
<tr>
<th>Size</th>
<th>Diameter x Length [mm]</th>
<th>Size</th>
<th>Diameter x Length [inch]</th>
<th>Volume [Liter]</th>
<th>Volume [fL]</th>
<th>Recommended brackets [DIN 3018-1]</th>
<th>NOVEC™ Content</th>
<th>Protected volume [m³]* with NOVEC™</th>
<th>CO₂ Weight [kg]</th>
<th>Protected free volume [m³]** with CO₂ (NFPA 12, class A fire)</th>
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<tbody>
<tr>
<td>#0</td>
<td>22x128</td>
<td>⅞ x 5.04</td>
<td>0.026</td>
<td>0.81</td>
<td>RGSS 22</td>
<td>24</td>
<td>0.06</td>
<td>0.04</td>
<td>0.035</td>
<td>0.037</td>
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<tr>
<td>#1</td>
<td>35x154</td>
<td>1⅜ x 6.06</td>
<td>0.080</td>
<td>2.70</td>
<td>RGSS 35</td>
<td>72</td>
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<td>0.14</td>
<td>0.060</td>
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<td>#2</td>
<td>40x186</td>
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<td>0.133</td>
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<td>0.23</td>
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<td>0.267</td>
<td>9.00</td>
<td>2x RSGU 56</td>
<td>241</td>
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<td>2x RSGU 63</td>
<td>603</td>
<td>1.61</td>
<td>1.15</td>
<td>603</td>
<td>1.15</td>
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</tbody>
</table>

* Only for reference. The actual sizing is the responsibility of the customer.

** Protected volumes are estimates. NFPA2001 (2012) standard formulas have been applied. JOB Thermo Bulbs GmbH is not responsible for sizing.

3M™ NOVEC™ Cylinders

<table>
<thead>
<tr>
<th>Size</th>
<th>Part</th>
<th>Name</th>
<th>3M™ NOVEC™ Cylinders</th>
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<tbody>
<tr>
<td>#0</td>
<td>11100</td>
<td>Cylinder NOVEC™ 26ml</td>
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<tr>
<td>#1</td>
<td>11101</td>
<td>Cylinder NOVEC™ 72ml</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>11102</td>
<td>Cylinder NOVEC™ 120ml</td>
<td></td>
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<tr>
<td>#3</td>
<td>11103</td>
<td>Cylinder NOVEC™ 241ml</td>
<td></td>
</tr>
<tr>
<td>#4</td>
<td>11104</td>
<td>Cylinder NOVEC™ 360ml</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>11105</td>
<td>Cylinder NOVEC™ 603ml</td>
<td></td>
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</table>