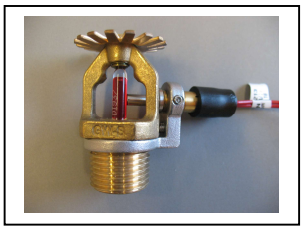
GW–S Automatic Sprinkler
SSP, SSU, CUP, WUP, HSW, WHEC
Heat & Electrically actuated (by Metron Actuator ®)

GW SPRINKLER A/S



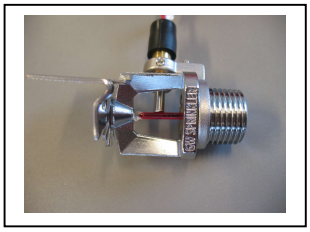
SSP
(pendent)

SSU
(upright)

CUP
(conventional)

WUP
(wall U/P)

HSW
(window)



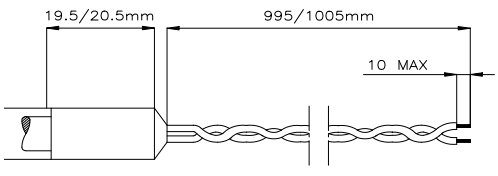
WHEC
(horizontal ext. cov.)

DESCRIPTION
The GW-S sprinkler series offers high quality, European manufactured, modern compact design, that meet the rigid test requirements set out by the world leading approval authorities. The unique GW PTFE / double groove seal in combination with high end heat responsive frangible glass bulbs guarantee durable operation and reliable performance. All manufacturing and testing processes are performed strictly in compliance with our quality management system, certified to ISO 9001.The use of precisely CNC-machined hot forged frames eliminates the risk of porosity.
The heat & electrically operated sprinkler is fitted with an electrically operated Metron Actuator that enables instant and remote actuation of the sprinkler – typically in combination with a detection system and/or a manually operated switch box.

APPLICATION
GW-S heat & electrically actuated sprinklers are used in fixed fire protection systems. Care must be exercised that RTI, orifice size, temperature rating, deflector style and sprinkler type is in accordance with the latest published sprinkler installation standards i.e. EN12845, CEA4001 or NFPA13.
The GW-S heat & electrically actuated sprinklers are ideal for applications where instant and fully controllable actuation of single or multiple heads is called for – e.g. applications involving protection of explosive components/environments.

OPERATION (Metron Actuator)
The Metron Actuator is a highly reliable, compact single shot device which can push with a power to weight ratio in excess of 10,000:1. It operates within milliseconds of receiving the appropriate electrical impulse, a rate which is almost impossible to achieve with a mechanical source of energy. The short reaction times and high power to weight ratios are achieved by sophisticated pyrotechnique. Within the metal body of each device, rapid expansion of hot combustion products generates very high pressures which are used to do mechanical work, in this case to drive a piston forward to shatter the sprinkler glass bulb.
Its ability to rapidly convert small electric signals into high mechanical work output, its compact size, high reliability and good environmental resistance makes the Metron Actuator ideal for automatic or remote controlled fire protection applications.

TECHNICAL SPECIFICATION (Metron Actuator)



Nominal Energy (Type 1)	6 millijoules
Resistance Range (ohms) **(1)**	0.9 - 1.6
Max. No-Fire Current D.C. **(2)**	
30 sec Pulse	0.15 amp
0.050 sec. Pulse	0.3 amp
Min. Single Firing Current D.C. **(3)**	0.6 amp
10 ms Pulse	0.9 amp
Recommended ***Single*** Firing Current **(4)**	1.0 amp
Recommended min. ***Series*** Firing Current **(5)**	3.0 amp
Max. Monitoring *) Current (continuous)	0.01 amp

See **( )** notes on next page.
*) possibility of the actuator circuit remaining intact after firing must be borne in mind.

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NOTES:
(1) The complete device resistance depends on the cable type.
(2) The fusehead may be desensitised when subjected to currents between the max. Monitoring Current and the max. No-Fire Current (inclusive), and is not guaranteed to fire afterwards.
(3) This is the nominal minimum current to initiate one (1) actuator in the circuit.
(4) This is the recommended minimum current to initiate one (1) actuator in the circuit.
(5) This is the recommended minimum current to initiate more than one (2+) actuator in series in a circuit. It should be applied for a minimum of 10ms.

SINGLE ACTUATOR FIRING:
The required battery or power supply voltage (AC or DC) may be calculated from the product of the recommended firing current (I) for the device in question and the total circuit resistance (R) i.e. V = IR.
The Metron Actuator is not polarity sensitive.

MULTIPLE ACTUATOR FIRING:
When more than one actuator is to be fired in a circuit, series firing is recommended as being the simplest method. If actuators are wired in series it is essential that the minimum series firing current stated in the table above (3.0 amp) is provided for a minimum of 10ms. In multiple firing circuits all actuators must be of the same electrical sensitivity (e.g. Type 1). On no account must devices of different manufacture or electrical sensitivity be mixed in the same circuit. Where parallel firing is considered necessary, extreme care must be taken to ensure balanced resistances and the *) possibility of the actuator circuit remaining intact after firing must be borne in mind.

DEVICE FUNCTION TIME:
Depends on load and electrical current applied, but is typically 10 to 20ms.

RELIABILITY:
0.999 at 95% confidence level.

ENVIRONMENTAL:
Working Temperature –40°C to + 100°C (for up to 20 hours provided any temperature greater than +70°C occurs immediately prior to firing). Storage Temperature: –30°C to +70°C.

LIFETIME:
Life at ambient temperature is max. 10 years.

CLASSIFICATION:
Excluded from UN Class 1. The pyrotechnic reaction is fully contained within the metal body and the device is therefore classed as non-explosive. Metron Actuators can be shipped by any means of transport including post or air with no special precautions.

APPROVALS:
A range of *Metron Actuators* (pyro-electric firing unit, **only**) have been approved by the LPCB (Loss Prevention Certification Board).

MATERIAL:
Piston - machined stainless steel; Case - brass, threaded over part of its length. Environmental resistance is achieved by the use of a soldered glass/metal seal header and an integral brass septum.

WIRE / CORD:
The standard wire is twisted pair (colour = red),1m length. For applications where electromagnetic fields exist it is recommended to use special shielded (braided) wires. This must be specified when ordering the sprinkler.

INSULATION:
Before firing, an insulation of no less than 100 megaohms at 100V DC exists between the shunted leads and the body of the device.

ELECTROSTATIC SENSITIVITY:
Metron Actuators will withstand a discharge of 300 pf at 5 kV minimum between the shunted leads at the body of the device.

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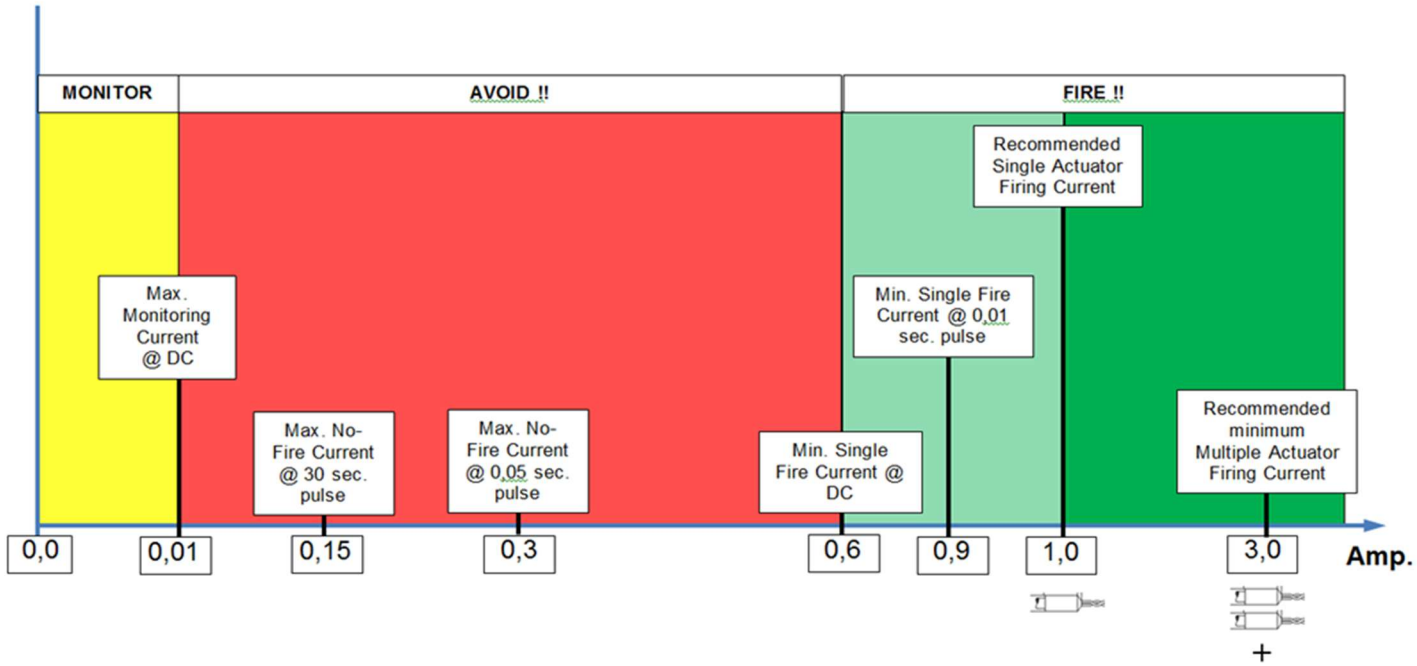
Important electrical current data to be observed when designing electrical circuits incorporating Metron Actuators:



SPRINKLER RANGE
All sprinkler types with 15mm (1/2”) male thread (including 15mm K57 and 15mm K115) can be fitted and supplied with a Metron Actuator for electrical activation. The bracket that holds the Metron Actuator and the fixing screws are made of SS304 stainless steel.

OPTIONS
For improved corrosion resistance the GW-S series can be supplied (on request) in superior materials, such as: stainless steel SS316 or 254SMO, Nickel Aluminium Bronze and even in Titanium. Also available with ENP plating (electroless nickel plating).

SERVICE LIFE
The service life of electrically actuated sprinklers is limited by the Metron Actuator to a recommended maximum of 10 years. The year of expire is labeled on the Metron Actuator wire. When expired the complete sprinkler shall be replaced with a new product. It is not possible to replace only the Metron Actuator.

APPROVAL
Electrically operated sprinklers hold no approvals.

INSTALLATION
Install sprinklers in accordance with the latest published sprinkler installation standards i.e. EN12845, CEA4001 or NFPA13.
Modern sprinklers incorporate highly sensitive and fragile glass bulbs and the utmost care must be taken during handling and installation not to damage the glass bulb in any way! NEVER install sprinklers that have been dropped, damaged or fully or partly lacks glass bulb fluid. Install only sprinklers in pipework that is in its final place to prevent mechanical damage of the sprinklers. Special care shall be exercised to avoid any damage to the Metron Actuator and the electrical wire.
ALWAYS use the **special box-spanner** (part no. **BE48000**) for installation of electrical sprinklers. This spanner is specially developed to safely grip and capture the complex and fragile geometry of the electrical sprinkler, and applying torque directly on the sprinkler flats, thus minimizing the risk of wrench slippage, and subsequent damage to the sprinkler components.

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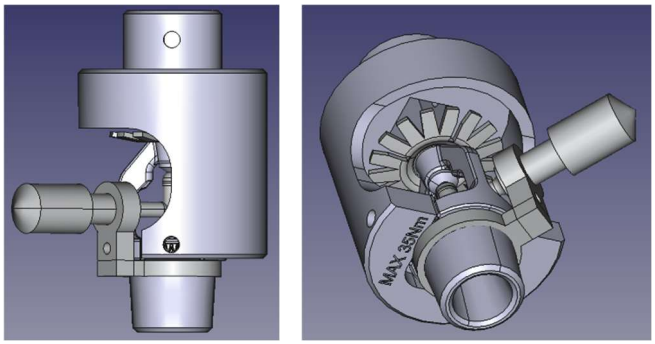

Box Spanner for electrical sprinklers (Part No. BE48000)

Any product warranty of electrical sprinklers is conditional to the use of box spanner BE48000 for installation !!

NEVER use the Metron Actuator, actuator bracket or sprinkler frame arms for screwing the sprinkler head into the pipe joint. The recommended torque to obtain leak tight joint is: 10 – 20 Nm.
Brass sprinklers should only be installed in non-corrosive environments and environments free of ammonia, chloride vapors and cleaning solutions.
The Metron Actuator is a highly sensitive pyro-electrical device and shall only be connected to a suitable power source by a professional installer qualified for such electrical installation work. The actuator leads should be encased in a flexible conduit for attachment to an electrical junction box. Suitable control equipment must be selected based on the Metron Actuator electrical ratings (see page 1). When considering the power supply for operating the Metron Actuator, be aware that the Metron Actuator after firing may be an open circuit, short circuit or connected to earth. Therefore it is essential that the power supply be suitably protected.
Electrical test meters must be limited to 0.01 amps short circuit current to prevent inadvertent operation of the actuator. This monitoring current must not be exceeded.

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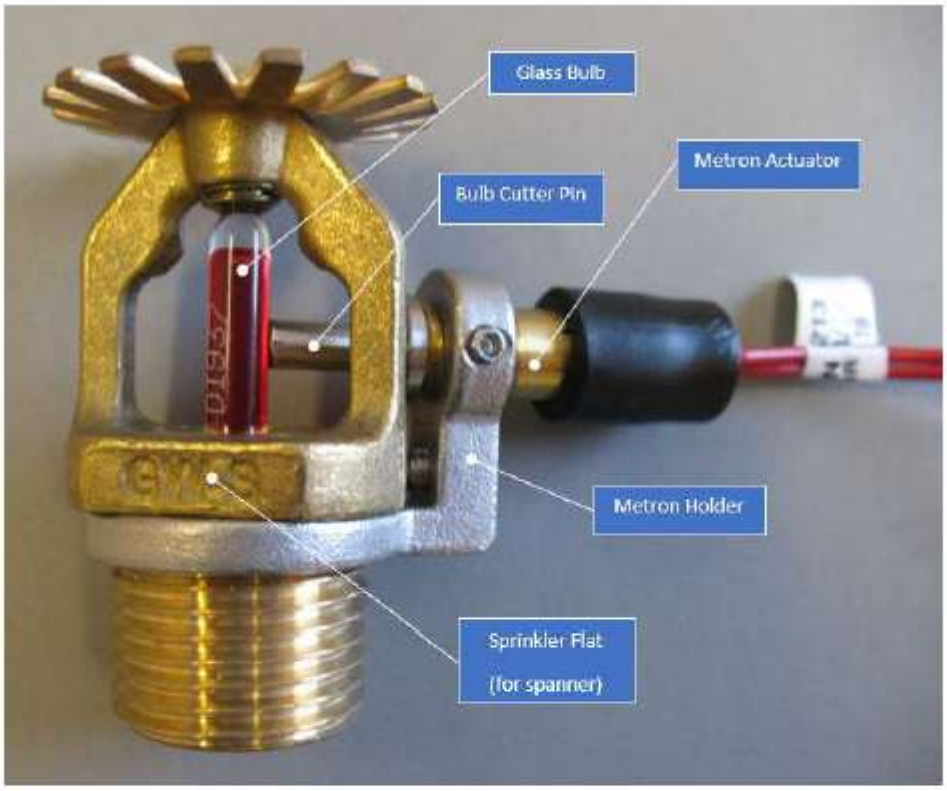

Instructions for installation of electrical sprinklers

Any handling of electrical sprinklers shall be conducted with utmost care, to avoid any damage or displacement of components.

The sprinkler shall always be fitted into the pipework, as the last operation, after pipework has been firmly installed.

Carefully, fit the electrical sprinkler in the Box Spanner, and apply sealant to the thread. **Hand fit** the sprinkler into the female joint. Be careful NOT to touch the Metron Actuator, Metron Holder, Bulb Cutter Pin and Glass Bulb when handling the sprinkler. Avoid to bend, twist or stretch the Metron cable.

Final fitment (applying torque: 10-20Nm) using the box spanner, shall be executed with **utmost care** !

Any contact/impact on, or displacement of, the Metron Actuator parts can adversely affect the integrity and performance of the electrical sprinkler unit, and may cause immediate or delayed malfunction.

The Bulb-cutter Pin is factory adjusted to be in close contact with the Glass Bulb, so it can slightly move up and down, without detachment. This free movement of the Bulb-cutter Pin shall be retained after installation.

Complete electrical connection of Metron Actuator wire to energy source as the very last operation – i.e. after firm installation of the sprinkler into pipe work, in accordance with electrical specifications, see page 3.

During installation, avoid any physical overload (stretch, bend, twist etc.) on the electrical wire.

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MAINTENANCE

The sprinkler system should be inspected and maintained according to e.g. NFPA 25 and EN12845.
Sprinkler heads should be inspected on an annular basis. Ensure that the sprinklers are not used for hanging any objects, and do not show signs of leakage or corrosion. Sprinklers found to be painted, coated or otherwise altered after leaving the factory must be replaced. Also replace any sprinkler that has a cracked bulb or has lost liquid from its bulb.
Dusty sprinklers can be gently cleaned using a feather duster – or similar gentle method/tool.
Automatic sprinklers are recommended to be inspected, tested and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.
GW-S sprinklers are supplied in special purpose built styrofoam boxes for maximum protection – and spare sprinklers should always be stored / kept in the original packaging until installation.

The heat & electrically operated sprinkler head is a one shot device, and cannot be functionally tested. The Metron Actuator can be supervised using a monitoring current of max. 0,01 amps.

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