

# APPLICATION MANUAL

Flameproof

Gas/Vapor: Ex d

Dust: Ex t

Connection Head Enclosure

Model 5A, 5E, 3A, and 3E

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## NOTES OF SAFETY

The Model 5/Model 3 Enclosures are designed to accommodate various terminal blocks or transmitters. If used incorrectly it is possible that application-related dangers may arise.

The Model 5/Model 3 connection head may be used by qualified and authorized company and people only, under strict compliance of this application manual and relevant standards, legal requirements, and, where appropriate the certificate.

The Model 5 is an aluminum alloy (A356.0-T6) housing, base and cover that incorporates a safety chain between the cover and base and a cover sealing gasket/o-ring to achieve the IP degree.

The Model 3 enclosure is the Model 5 supplied with an internally applied sealing kit of silicone to protect any internal connections or electrical devices from moisture in high humidity/high moisture environments.

### 1. APPLICATION

Connection head enclosure Model #5/#3 is designed to accommodate different terminal blocks or temperature transmitters operating in hazardous environments:

- surface equipment ( non mining )      - II
- gas group                                      - C
- equipment category                         - 2
- type of flammable substance              - G, D

- Type of protection :
  - Ex db IIC
  - Ex tb IIIC

- Marking to 94/9/EC :  II 2 GD

- Standards :
  - ATEX 94/9/EC
  - EN/IEC 60079-0
  - EN/IEC 60079-1
  - EN/IEC 60079-31
  - EN/IEC 60529

- Ex Test Reports:
  - ATEX: FM15ATEX0007U
  - IECEX: US/FMG/ExTR15.0005/00

- Ambient Temperature:  
5A, 5E, 3A, 3E: -40°C to 100°C

- Typical Zone of Application

Zone	Protection Code
Zone 1, Zone 21	Ex db
Zone 2, Zone 22	Ex db

## 2. Flameproof joints, process openings, conduit openings: (See Fig. A)

There are three flameproof joints in #5 / #3 Connection Head :

1. on the cover thread M104x2 6g/6h, Class 2A/2B fit, 7.5 minimum threads
  - a. The cover to body flame path also incorporates an o-ring seal.
2. on the instrument connection opening:
  - a. Threaded opening, ½ NPT, Deep Tapped
3. on the Conduit opening:
  - a. Threaded opening, ¾ NPT, Deep Tapped

All three flameproof joints are designed for :

Enclosure Volume of 440cm<sup>3</sup> Maximum  
Group IIC enclosures

Conduit openings can be used with various certificated Ex d flameproof cable glands, fill sealing fittings, flexible couplings or other conduit appropriate for the Hazardous rating.

Regarding the instrument opening, the user must ensure proper flame path control by solid blockage of the instrument connection or other approved Flame Path device. (See Fig. B)

## 3. Type Tests: Test in explosive mixtures:

Test for non transmission of an internal ignition were performed in accordance with EN/IEC 60079-1. The enclosure passed the test.

The instrument connection and conduit connection threads with installed threaded male components must create flameproof joint. Apparatus assembler is responsible to ensure flame proof joints are maintained. Additional testing may be necessary and the owner/assembler should contact the approval body.

## 4. Temperature Classes, Ambient temperature:

The ambient temperature range for explosive atmospheres is: -40°C to +100°C

## 5. Earth / Protection: (See Fig. A)

Internal: the enclosure incorporates an internal protection ground location that accommodates a 6-32 UNC-2A x .25 fastener. The supplied screw is steel with Zinc Green Plating.

External: The external earth grounding location is marked by an earth ground symbol and accommodates a 6-32 UNC-2A x .25 fastener. The supplied screw is steel with Zinc Green Plating.

Appropriately sized wire should be used earth and protection grounding according to the screw size.

## 6. Protection Degree, Cover Locking:

To maintain the IP degree, IP66, The enclosure must be installed properly.

The instrument port and conduit port must be assembled with an appropriate NPT threaded device per section 2.

The cover must utilize the supplied o-ring seated on the base and the cover threaded into place firmly.

The cover locking device, located on the outer circumference of the cover, incorporates a M3 x 0.5 threaded set screw with a 1.5 mm hex socket which must be turned using a HEX tool – 1.5 mm across the flats, such that the set screw engages with the sealing surface of the enclosure base.

## 7. Schedule of Limitations: (See Fig. A and B)

1. Where necessary for safety, the contents of the enclosure shall comply with the appropriate requirements of relevant standards for electrical equipment.
2. Consult the manufacturer if dimensional information on the flameproof joints is necessary.
3. Consult the manufacturer's instructions for the specific information regarding wiring entry number, sizes, position and thread type.
4. The surfaces of the Series 5A and 5E Connection Head may store electrostatic charge and become a source of ignition in applications with a low relative humidity <~30% relative humidity where the painted surface is relatively free of surface contamination such as dirt, dust, or oil. Guidance on protection against the risk of ignition due to electrostatic discharge can be found in IEC TR60079-32 (in preparation). Cleaning of the painted/unpainted surface should only be done with a damp cloth.

5. For Group IIC enclosures, the content of the enclosure apparatus may be placed in any arrangement provided that an area of at least 40 % of each cross-sectional area remains free to permit unimpeded gas flow and, therefore, unrestricted development of an explosion.
6. All entry or closure devices when fitted shall satisfy the requirements of Clause 5 of IEC 60079-1, or be specifically evaluated with the apparatus and be suitable for the conditions of use. Threads interrupted by the set screw shall not be counted in satisfying the requirements of Clause 5 of IEC 60079-1. A thread of engagement of 5 threads is required and depth of engagement  $\geq 8\text{mm}$  is required.
7. Rotating machines, or other devices which create turbulence, shall not be incorporated.
8. The ambient temperature range and applicable temperature class of the Series 5A and 5E Connection Head enclosure is  $-40^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$ .

## 8. Product Labeling:

Labeling can be achieved by applying a conical shaped aluminum label attached with drives screws in the provided holes on the cover. Or any other acceptable labeling approach.

## 9. Marking:

According to the ATEX / IECEx standards:

- ATEX 94/9/EC
- EN/IEC 60079-0
- EN/IEC 60079-1

Marking of the #5 / #3 enclosure is:

BURNS ENG. INC. MINNETONKA MN U.S.A.  
ENCLOSURE ONLY PART 23190

FLAME PROOF AND DUST  
Ex db IIC Gb IP66  
Ex tb IIIC Db  
FM15ATEX0007U IECEx FMG 15.0003U

The user should apply their own label with all other pertinent information regarding the complete assembly supplied.

Figure A

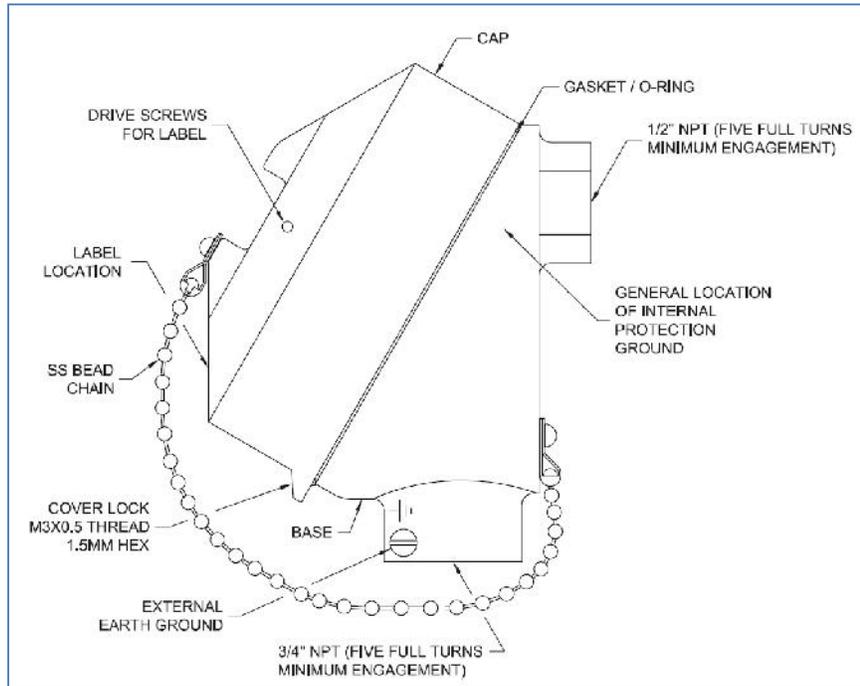


Figure B

