**Tamb: -40°C to +60°C Ex II2 GD Exdb IIC Gb, Extb IIIC Db T95**
**IP66, 67 & DTS01 deluge protected**
**Certificate No's Baseefa12ATEX0014X & IECEx BAS 12.0006X.**

Connector Plug-CP

Bulkhead-BR

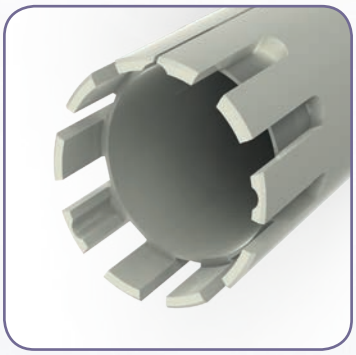
Connector Receptacle - CR

## ① Easy Fieldwireable

Pin and socket inserts are numbered front and back to assist wiring and avoid termination errors. Crimp and solder inserts available.

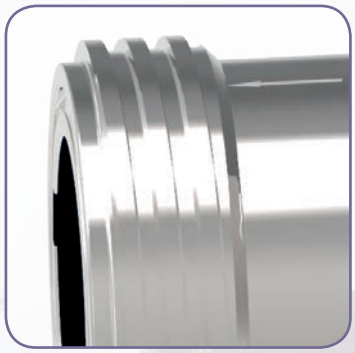
## ⑤ Running Coupler

Allows the connector to be installed onto a pre-assembled cable gland. Connector is rear loading and includes locking engaging nut.



## ② Internal Keyway Spacer

Eases accessibility for termination as tube fitted after termination complete, along with allowing easy installation into the required keyed position (See ④)



## ⑥ Acme Thread at Mating Interface

Unique ACME thread offers a smooth and quick fully mating action.

## ③ Locking Pin

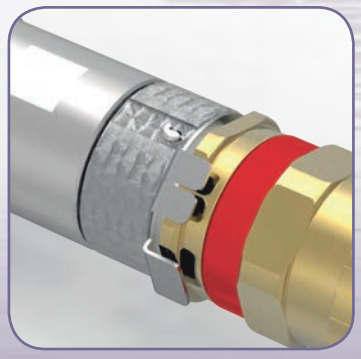
Optional locking pin provides the facility for mated connectors to be permanently locked, via the use of a padlock, ensuring they cannot be separated under load. *(Padlock not supplied)*

## ⑦ Fully Inspectable Flameproof Barrier

Provides direct inspection of the flameproof seal and offers users the peace of mind that the connector is safe for installation.

## ④ Keying Position

The unique visual 5 position insert keying system (3 on Ex16) along with the integral machined keyways prevent contact damage and ensures safe use by eliminating the possibility of misconnection of adjacent circuits.



## ⑧ Anti-Rotation Device

Connector plugs and receptacles come complete with anti-rotation ring, which when fitted between the connector and gland, helps to eliminate the possibility of the gland loosening, locking this in position.


Ex16 - 3 x 1.5


Ex16 - 4 x 1.5


Ex25 - 4 x 1.5


Ex25 - 9 x 1.5


Ex25 - 12 x 1.5


Ex25 - 4 x 2.5


Ex25 - 7 x 2.5


Ex25 - 4 x 6
Soldered Only


Ex32 - 12 x 1.5


Ex32 - 19 x 1.5


Ex32 - 10 x 2.5


Ex32 - 12 x 2.5


Ex32 - 4 x 6

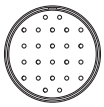

Ex32 - 6 x 6


Ex32 - 3 x 10

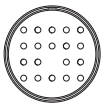

Ex32 - 4 x 10

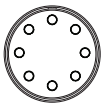

Ex32 - 3 x 16

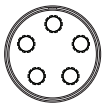

Ex32 - 4 x 16

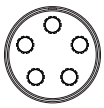

Ex40 - 24 x 1.5

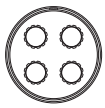

Ex40 - 30 x 1.5

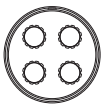

Ex40 - 19 x 2.5

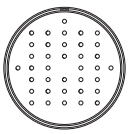

Ex40 - 8 x 6

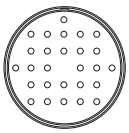

Ex40 - 5 x 10

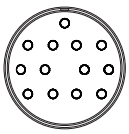

Ex40 - 5 x 16

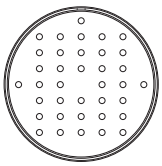

Ex40 - 4 x 25

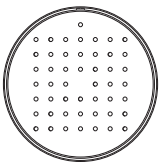

Ex40 - 4 x 35

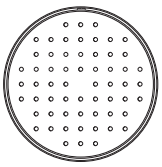

Ex50 - 37 x 1.5


Ex50 - 27 x 2.5


Ex50 - 13 x 6


Ex63 - 37 x 2.5


Ex63 - 49 x 1.5


Ex63 - 60 x 1.5

| TABLE | | |
|---|---|---|
| Insert Size | Internal Diameter of cup (mm) Nominal | |
| | Soldered | Crimped |
| 1.5mm² | 2 | 2 |
| 2.5mm² | 3 | 3 |
| 6mm² | 3.5 | 3.2 |
| 10mm² | 7 | 4 |
| 16mm² | 7 | 5 |
| 25mm² | 8 | 6.5 |
| 35mm² | 8 | 8.3 |

**INSERT SELECTION TABLE**

| Configuration | | | | | |
|---|---|---|---|---|---|
| Shell size 16 | Shell Size 25 | Shell Size 32 | Shell Size 40 | Shell Size 50 | Shell Size 63 |
| 3 x 1.5mm² + Earth | 4 x 1.5mm² + Earth | 12 x 1.5mm² + Earth | 24 x 1.5mm² + Earth | 37 x 1.5mm² + Earth | 49 x 1.5mm² + Earth |
| 4 x 1.5mm² + Earth | 9 x 1.5mm² + Earth | 19 x 1.5mm² + Earth | 30 x 1.5mm² + Earth | 27 x 2.5mm² + Earth | 60 x 1.5mm² + Earth |
| - | 12 x 1.5mm² + Earth | 10 x 2.5mm² + Earth | 19 x 2.5mm² + Earth | 13 x 6mm² + Earth | 37 x 2.5mm² + Earth |
| - | 4 x 2.5mm² + Earth | 12 x 2.5mm² + Earth | 4 x 25mm² + Earth | - | - |
| - | 7 x 2.5mm² + Earth | 4 x 6mm² + Earth | 4 x 35mm² + Earth | - | - |
| - | 4 x 6mm² + Earth | 6 x 6mm² + Earth | - | - | - |
| - | - | 3 x 10mm² + Earth | - | - | - |
| - | - | 4 x 10mm² + Earth | - | - | - |
| - | - | 3 x 16mm² + Earth | - | - | - |
| - | - | 4 x 16mm² + Earth | - | - | - |

*Note: Inserts for use in bulkhead receptacles are solder termination only for contact sizes of 6mm² and above.*

Hawke Control Ex connectors have a maximum working voltage of 750V DC (750V AC) as standard.
3rd & 4th generation Control Ex connectors can be connected together within certification.
Other voltages available on special request.

# Hazardous Area Connectors

Certified ATEX / IECEx / EAC / INMETRO / cCSAus

## Control Ex Code

***Hawke International does not recommend the use of their ControlEx Connectors in applications where rigid PVC/SWA/PVC power cabling (typically to BS 6346 standards or equivalnts) is used in portable/semi-portable applications.***

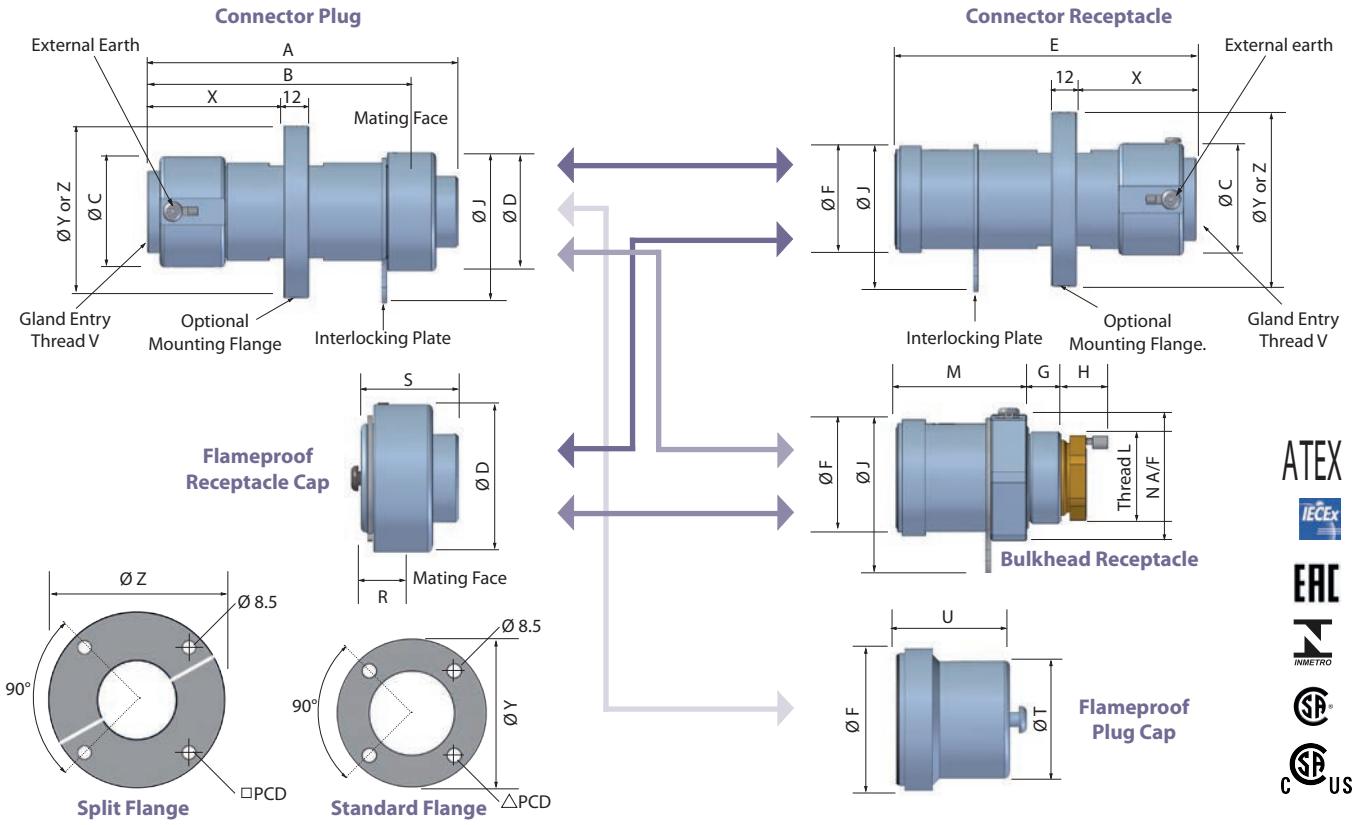
When ordering, select relevant code from each block as shown in the example below:

**Control Ex**/ Exd-32-S-CP-V-19 x 1.5-S-C-FL-FPC-P-R25-A-1-T

| Control Ex | SELECT CODE | DESCRIPTION | EXAMPLE CODE |
|---|---|---|---|
| **PROTECTION** | Exd | Flameproof | **Exd** |
| **SHELL SIZE** | 16 | 16 | **32** |
| | 25 | 25 | |
| | 32 | 32 | |
| | 40 | 40 | |
| | 50 | 50 | |
| | 63 | 63 | |
| **MATERIAL** | S | Stainless Steel | **S** |
| **CONNECTOR STYLE** | CP | Connector Plug | **CP** |
| | CR | Connector Receptacle | |
| | BR | Bulkhead Receptacle | |
| **KEYING SYSTEM** | V | Variable Keyway (All) | **V** |
| | F | Fixed Keyway *(only available if purchasing terminated)* | |
| **NUMBER OF CONTACTS** | | See Insert Selection Chart | **19** |
| | X | No Insert | |
| **CONTACT SIZE** | | See Insert Selection Chart | **1.5** |
| **INSERT TYPE** | P | Pin | **S** |
| | S | Socket | |
| | X | No Insert | |
| **TERMINATION STYLE** | S | Solder* | **C** |
| ** Note: Inserts for use in Bulkhead receptacles are solder termination only for contact sizes of 6mm² and above.* | C | Crimp* | |
| | X | No Insert | |
| **FLANGE TYPE** ♦ | FL | Mounting Flange | **FL** |
| *Note: CP or CR only - one per mating pair.* | SF | Split Flange *(can be retro fitted after termination)* | |
| **CAP TYPE** | FRC | Flameproof Receptacle Cap | **FPC** |
| | FPC | Flameproof Plug Cap | |
| | PRC | Plastic Receptacle Cap | |
| | PPC | Plastic Plug Cap | |
| **LOCKING PIN** ♦ | P | Locking Pin *(only one required per mating pair)* | **P** |
| **ALTERNATIVE CABLE GLAND ENTRY** ♦ | R20 | Reduced Cable Gland Entry M20 *(Ex 25 only)* | **R25** |
| | R25 | Reduced Cable Gland Entry M25 *(Ex 40 & Ex 32 only)* | |
| | R32 | Reduced Cable Gland Entry M32 *(Ex 50 & Ex 40 only)* | |
| | R40 | Reduced Cable Gland Entry M40 *(Ex 63 & Ex 50 only)* | |
| | R50 | Reduced Cable Gland Entry M50 *(Ex 63 only)* | |
| **CERTIFICATION** | A | ATEX/IECEx/EAC/INMETRO | **A** |
| | N | ATEX/IECEx/EAC/INMETRO /cCSAus Voltage reduced to 600V | |
| **AMBIENT RATING AND TEMPERATURE CLASS** | 1 | T5 +40°C Standard | **1** |
| *T5 +40°C will be supplied as standard if alternative not specified.* | 2 | T5 +50°C | |
| | 3 | T5 +60°C | |
| | 4 | T6 +40°C | |
| | 5 | T6 +50°C | |
| | 6 | T6 +60°C | |
| **TERMINATION** ♦ | T | Termination Required | **T** |

♦ ***If not required, omit selection character from order code.***

♦ ****suitable for use in Zone 1 and Class I Div 2 areas in accordance with NEC***




*The flameproof cap must be fitted to the connector before the power is restored to the disconnected circuit. The receptacle cap and plug cap are available in acetal and provide an IP rating of IP66/67. They may only be used when the socket or plug is not re-energised following disconnection.*
*For connector plugs and connector receptacles cable glands are required to terminate incoming cables. Hawke recommend the ICG 653/UNIV cable gland is used.*

**HAWKE Ex SERIES DIMENSIONS (MM)**

| Dimension | Ex16 | Ex25 | Ex32 | Ex40 | Ex50 | Ex63 |
|---|---|---|---|---|---|---|
| A | 127 | 152 | 152 | 152 | 152 | 148 |
| B | 105 | 128 | 129 | 129 | 129 | 126 |
| Ø C | 36 | 46 | 53 | 60 | 66 | 83 |
| Ø D | 37 | 49 | 57 | 65 | 76 | 90 |
| E | 128 | 152 | 152 | 152 | 152 | 152 |
| Ø F | 32 | 45 | 51 | 59 | 70 | 83 |
| G | 15 | 15 | 15 | 15 | 15 | 15 |
| H (nominal) | 20 | 20 | 20 | 20 | 20 | 20 |
| J (Aperture Clearance Hole) | 55 | 65 | 75 | 85 | 95 | 115 |
| *Thread L (1.5mm Pitch) | M25 | M32 | M40 | M50 | M63 | M75 |
| M | 54 | 54 | 56 | 56 | 56 | 56 |
| N A/F | 36 | 46 | 55 | 65 | 80 | 95 |
| R | 15 | 15 | 15 | 16 | 16 | 17 |
| S | 38 | 38 | 38 | 39 | 39 | 40 |
| Ø T | 28 | 34 | 42 | 51 | 60 | 73 |
| U | 40 | 40 | 40 | 40 | 40 | 40 |
| Thread V (1.5mm Pitch) | M20 | M25 | M32 | M40 | M50 | M63 |
| X (nominal) | 54 | 70 | 70 | 70 | 70 | 67 |
| Ø Y | 66 | 76 | 83 | 91 | 102 | 117 |
| △ | 49 | 59 | 66 | 74 | 85 | 100 |
| Ø Z | 87 | 99 | 105 | 117 | 129 | 147 |
| □ | 70 | 82 | 88 | 100 | 112 | 130 |

*Bulkhead entry thread L can be adapted to other sizes. This may affect the overall length of unit.

# Control Ex Calculations

To select the shell size of the connector, it is essential that you calculate the dissipated wattage of the arrangement. This ensures that the arrangement does not exceed the maximum permitted temperature classification with regard to the upper ambient temperature for the area of installation. (please refer to table 1 for the maximum allowable dissipated wattage per connector size).

**TABLE 1**

| Connector Size | Upper ambient Temperature of +40°C | | Upper ambient Temperature of +50°C | | Upper ambient Temperature of +60°C | |
|---|---|---|---|---|---|---|
| | Temperature Class | | Temperature Class | | Temperature Class | |
| | T6 | T5 | T6 | T5 | T6 | T5 |
| Ex16 | 5W | 7W | 4W | 6W | 2.6W | 4.6W |
| Ex25 | 8W | 11W | 6W | 10W | 4W | 7W |
| Ex32 | 10.5W | 14.5W | 8W | 12W | 5.4W | 9W |
| Ex40 | 12W | 17W | 9W | 14W | 5.5W | 10.5W |
| Ex50 | 13W | 20W | 10W | 17W | 6.5W | 12.5W |
| Ex63 | 17W | 29W | 13W | 24W | 8.5W | 17W |
| | **Maximum allowable dissipated wattage** | | | | | |

Other ambient temperature options can be extrapolated from Table 1 above, or contact Hawke International for more information.

**TABLE 2**

| Contact Size | Combined Cable and Contact Resistance (Ohms) | | Contact Current Rating |
|---|---|---|---|
| | Soldered | Crimped | |
| 1.5mm² | 0.0166 Ω | 0.0173 Ω | 10 amps |
| 2.5mm² | 0.0102 Ω | 0.0109 Ω | 17 amps |
| 6mm² | 0.0047 Ω | 0.0054 Ω | 30 amps |
| 10mm² | 0.0027 Ω | 0.0033 Ω | 78 amps |
| 16mm² | 0.0018 Ω | 0.0024 Ω | 78 amps |
| 25mm² | 0.0012 Ω | 0.0018 Ω | 125 amps |
| 35mm² | 0.0009 Ω | 0.0015 Ω | 125 amps |

## Dissipated wattage calculation

**Equation Definitions**

W = Dissipated wattage factor of the connector

N = The number of conductors to be terminated/number of contacts required.
(Note: A contact comprises of a pin and socket).

I = The current requirement per contact.
(Note: This must be equal to or less than the maximum current rating of the contact, as shown in table 2).

R = The combined cable and contact resistance (see table 2)

Values pertinent to these definitions must then be input into the following equation to calculate the dissipated wattage (w) of your chosen arrangement:

$$W = N \times I^2 \times R$$

*(Note: The results must be lower than the maximum figure shown in table 1 for the appropriate temperature class and ambient temperature).*

e.g. T6 40°C ambient application with 9 x 1.5mm² conductors, running at 7 amps.

N = 9 contacts  I = 7 amps  R = 0.0166Ω  (1.5mm² soldered combined cable and contact resistance)

**Therefore W = 9 x 49 x 0.0166Ω = 7.32 watts.**

Therefore, an Ex25 Connector should be specified for this application as the shell size can accommodate the required 9 x 1.5mm² pin/socket inserts (SEE PAGE 56 - Insert Selection Table) and the resultant dissipated wattage (7.32 watts) is below the maximum permitted 8 watts (See Table 1).

This equation can also be transposed to facilitate the calculation of the maximum number of conductors permitted in your selected connector ① and the maximum allowable current within the upper ambient temperature of our location ②.

① $$N = \frac{W}{R \times I^2}$$

② $$I = \sqrt{\frac{W}{N \times R}}$$

*(Note: The result of equation ② must not exceed the maximum current rating of contacts (see table 2).*
*Note: Unless otherwise requested, connectors will be marked as T5 with an upper ambient temperature of +40°C.*