STM 16
Stepped grommet for knockouts M 16
- sealing range: Ø 3.5-12 mm
- bore-hole: Ø 16.5 mm
- wall thickness 1.5-4 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

STM 20
Stepped grommet for knockouts M 20
- sealing range: Ø 5-16 mm
- bore-hole: Ø 20.5 mm
- wall thickness 1.5-4 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

STM 25
Stepped grommet for knockouts M 25
- sealing range: Ø 5-21 mm
- bore-hole: Ø 25.5 mm
- wall thickness 1.5-4 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

STM 32
Stepped grommet for knockouts M 32
- sealing range: Ø 13-26.5 mm
- bore-hole: Ø 32.5 mm
- wall thickness 1.5-4 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

STM 40
Stepped grommet for knockouts M 40
- sealing range: Ø 13-34 mm
- bore-hole: Ø 40.5 mm
- wall thickness 1.5-4 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C
**LES Cable Entry Systems**

**Grommets**

**EDK 16**
Grommets for knockouts M 16
- sealing range: Ø 5-10 mm
- bore-hole: Ø 16.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to +35° C
- glow wire test IEC 60 695-2-11: 750° C

**EDK 20**
Grommets for knockouts M 20
- sealing range: Ø 6-13 mm
- bore-hole: Ø 20.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to +35° C
- glow wire test IEC 60 695-2-11: 750° C

**EDK 25**
Grommets for knockouts M 25
- sealing range: Ø 9-17 mm
- bore-hole: Ø 25.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to +35° C
- glow wire test IEC 60 695-2-11: 750° C

**EDK 32**
Grommets for knockouts M 32
- sealing range: Ø 8-23 mm
- bore-hole: Ø 32.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to +35° C
- glow wire test IEC 60 695-2-11: 750° C

**EDK 40**
Grommets for knockouts M 40
- sealing range: Ø 11-30 mm
- bore-hole: Ø 40.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to +35° C
- glow wire test IEC 60 695-2-11: 750° C

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Order from MARYLAND METRICS  
P.O. Box 261  
Owings Mills, MD 21117 USA  
phone: (410)358-3130  
(800)638-1830  
Fax: (410)358-3142  
(800)872-9329  
web: http://mdmetric.com  
email: sales@mdmetric.com  
RFQ form: http://mdmetric.com/rfq.htm

How to order: Please preface each HENSEL part number with 'R955N-' Example (using the part number): R955N-KC 9045
EDR 16
Grommets for conduits for knockouts M 16
- conduit connection M 16
- bore-hole: Ø 16.5 mm
- wall thickness 1.5-3.2 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

EDR 20
Grommets for conduits for knockouts M 20
- conduit connection M 20
- bore-hole: Ø 20.5 mm
- wall thickness 1.5-3.2 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

EDR 25
Grommets for conduits for knockouts M 25
- Rohranschluss M 25
- bore-hole: Ø 25.5 mm
- wall thickness 1.5-3.2 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

EDR 32
Grommets for conduits for knockouts M 32
- conduit connection M 32
- bore-hole: Ø 32.5 mm
- wall thickness 1.5-3.2 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

EDR 40
Grommets for conduits for knockouts M 40
- conduit connection M 40
- bore-hole: Ø 40.5 mm
- wall thickness 1.5-3.2 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C
AKM 12
Cable glands for knockouts M 12
- sealing range: Ø 4-6 mm
- ISO thread M 12 x 1.5
- bore-hole: Ø 12.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| Tightening torque | 0.9 Nm |

AKM 16
Cable glands for knockouts M 16
- sealing range: Ø 5-10 mm
- ISO thread M 16 x 1.5
- bore-hole: Ø 16.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| Tightening torque | 3.0 Nm |

AKM 20
Cable glands for knockouts M 20
- sealing range: Ø 6.5-13.5 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| Tightening torque | 4.0 Nm |

AKM 25
Cable glands for knockouts M 25
- sealing range: Ø 11-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| Tightening torque | 7.5 Nm |
AKM 32
Cable glands for knockouts M 32
- sealing range Ø 15-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| tightening torque | 10,0 Nm |

AKM 40
Cable glands for knockouts M 40
- sealing range: Ø 19-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| tightening torque | 10,0 Nm |

AKM 50
Cable glands for knockouts M 50
- sealing range: Ø 27-35 mm
- ISO thread M 50 x 1.5
- bore-hole: Ø 50.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| tightening torque | 10,0 Nm |

AKM 63
Cable glands for knockouts M 63
- sealing range: Ø 35-48 mm
- ISO thread M 63 x 1.5
- bore-hole: Ø 63.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 750° C

| tightening torque | 10,0 Nm |
### ASM 12

**Cable glands for knockouts M 12**
- Sealing range: Ø 4-6 mm
- ISO thread M 12 x 1.5
- Bore-hole: Ø 12.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25°C to +55°C
- Glow wire test: IEC 60 695-2-11: 960°C

**Tightening torque**: 0.7 Nm

### ASM 16

**Cable glands for knockouts M 16**
- Sealing range: Ø 5-10 mm
- ISO thread M 16 x 1.5
- Bore-hole: Ø 16.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25°C to +55°C
- Glow wire test: IEC 60 695-2-11: 960°C

**Tightening torque**: 2.0 Nm

### ASM 20

**Cable glands for knockouts M 20**
- Sealing range: Ø 6.5-13.5 mm
- ISO thread M 20 x 1.5
- Bore-hole: Ø 20.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25°C to +55°C
- Glow wire test: IEC 60 695-2-11: 960°C

**Tightening torque**: 2.7 Nm

### ASM 25

**Cable glands for knockouts M 25**
- Sealing range: Ø 11-17 mm
- ISO thread M 25 x 1.5
- Bore-hole: Ø 25.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25°C to +55°C
- Glow wire test: IEC 60 695-2-11: 960°C

**Tightening torque**: 5.0 Nm
### ASM 32
**cable glands**
for knockouts M 32
- sealing range: Ø 15-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature: -25°C to +55°C
- glow wire test IEC 60 695-2-11: 960°C

**tightening torque:** 7.5 Nm

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### ASM 40
**cable glands**
for knockouts M 40
- sealing range: Ø 19-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature: -25°C to +55°C
- glow wire test IEC 60 695-2-11: 960°C

**tightening torque:** 10 Nm

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### ASM 50
**cable glands**
for knockouts M 50
- sealing range: Ø 27-35 mm
- ISO thread M 50 x 1.5
- bore-hole: Ø 50.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature: -25°C to +55°C
- glow wire test IEC 60 695-2-11: 960°C

**tightening torque:** 7.5 Nm

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### ASM 63
**cable glands**
for knockouts M 63
- sealing range: Ø 35-48 mm
- ISO thread M 63 x 1.5
- bore-hole: Ø 63.3 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature: -25°C to +55°C
- glow wire test IEC 60 695-2-11: 960°C

**tightening torque:** 7.5 Nm
**AFM 16**  
**Cable glands for knockouts M 16**
- sealing range: Ø 5-10 mm
- bore-hole: Ø 16.3 mm
- wall thickness 1-4 mm
- the cable gland can be mounted without locknut
- Especially useful when it is difficult to mount a lock nut in boxes.
- with strain relief
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 20 °C up to + 55 °C
- glow wire test IEC 60 695-2-11: 750° C

<table>
<thead>
<tr>
<th>Tightening torque</th>
<th>2.0 Nm</th>
</tr>
</thead>
</table>

**AFM 20**  
**Cable glands for knockouts M 20**
- sealing range: Ø 8-13 mm
- bore-hole: Ø 20.3 mm
- wall thickness 1-4 mm
- the cable gland can be mounted without locknut
- Especially useful when it is difficult to mount a lock nut in boxes.
- with strain relief
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 20 °C up to + 55 °C
- glow wire test IEC 60 695-2-11: 750° C

<table>
<thead>
<tr>
<th>Tightening torque</th>
<th>2.7 Nm</th>
</tr>
</thead>
</table>

**AFM 25**  
**Cable glands for knockouts M 25**
- sealing range Ø 11-17 mm
- bore-hole: Ø 25.3 mm
- wall thickness 1-4 mm
- the cable gland can be mounted without locknut
- Especially useful when it is difficult to mount a lock nut in boxes.
- with strain relief
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 20 °C up to + 55 °C
- glow wire test IEC 60 695-2-11: 750° C

<table>
<thead>
<tr>
<th>Tightening torque</th>
<th>5.0 Nm</th>
</tr>
</thead>
</table>

**AFM 32**  
**Cable glands for knockouts M 32**
- sealing range Ø 15-21 mm
- bore-hole: Ø 32.3 mm
- wall thickness 1-4 mm
- the cable gland can be mounted without locknut
- Especially useful when it is difficult to mount a lock nut in boxes.
- with strain relief
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 20 °C up to + 55 °C
- glow wire test IEC 60 695-2-11: 750° C

| Tightening torque | 7.5 Nm |
**ASS 12**

Cable glands for knockouts M 12

- Sealing range: Ø 2-5 mm
- ISO thread M 12 x 1.5
- Bore-hole: Ø 12.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 0.9 Nm |

**ASS 16**

Cable glands for knockouts M 16

- Sealing range: Ø 3-10 mm
- ISO thread M 16 x 1.5
- Bore-hole: Ø 16.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 3.0 Nm |

**ASS 20**

Cable glands for knockouts M 20

- Sealing range: Ø 5-13.5 mm
- ISO thread M 20 x 1.5
- Bore-hole: Ø 20.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 4.0 Nm |

**ASS 25**

Cable glands for knockouts M 25

- Sealing range: Ø 8-17 mm
- ISO thread M 25 x 1.5
- Bore-hole: Ø 25.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 7.5 Nm |
### ASS 32
**Cable glands for knockouts M 32**
- Sealing range: Ø 12-21 mm
- ISO thread M 32 x 1.5
- Bore-hole: Ø 32.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 10.0 Nm |

### ASS 40
**Cable glands for knockouts M 40**
- Sealing range: Ø 16-28.5 mm
- ISO thread M 40 x 1.5
- Bore-hole: Ø 40.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 10.0 Nm |

### ASS 50
**Cable glands for knockouts M 50**
- Sealing range: Ø 21-35 mm
- ISO thread M 50 x 1.5
- Bore-hole: Ø 50.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 10.0 Nm |

### ASS 63
**Cable glands for knockouts M 63**
- Sealing range: Ø 27-48 mm
- ISO thread M 63 x 1.5
- Bore-hole: Ø 63.3 mm
- Wall thickness up to 3 mm
- With strain relief and locknut
- For indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- Ambient temperature: -25° to +55° C
- Glow wire test IEC 60 695-2-11: 960°C

| Tightening torque | 10.0 Nm |
New product of Hensel: Ventilation and cable entry in one!
In general the formation of water in case of condensation in closed enclosures cannot be prevented in installation areas with high temperature differences!

For adherence to the requested degree of protection the ventilation of the enclosure is effected via a special combi climate gland.
Via an inserted, breathable membrane combi climate glands ensure pressure compensation between enclosure interior and ambient air.

The combi climate gland allows the cable entry and pressure compensation additionally.

Combi climate glands prevent accumulations of condensation, which can form among others by large temperature fluctuations, like changing weather, intensive solar irradiation etc., in enclosures with high degree of protection.

The ingress of humidity from outside is prevented by this membrane.

In the consequence accumulated water dries by air exchange away or reduces itself in the course of time.
At the same time the degree of protection of the enclosure is obtained (up to IP 67)!

Your advantages with combi climate glands:
- Cable entry and ventilation in one!
- Degree of protection of enclosure is obtained
**KBM 20**

**Combi climate gland for knockouts M 20**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 6-13 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M20 must be used per 6 litres (6000 cm³) of enclosure volume.
  - Example:
    - enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.
    - Number of necessary combi climate glands M20 ≥ 3 pieces.
  - When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
  - If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands für cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 3.0 Nm |

**KBM 25**

**Combi climate gland for knockouts M 25**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 9-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M25 must be used per 10 litres (10000 cm³) of enclosure volume.
  - Example:
    - enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.
    - Number of necessary combi climate glands M25 ≥ 2 pieces
  - When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
  - If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands für cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 4.0 Nm |
## KBM 32

**Combi climate gland for knockouts M 32**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 13-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M32 must be used per 12 litres (12000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.
Number of necessary combi climate glands M32 ≥ 2 piece.

- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands für cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 4.0 Nm |

## KBM 40

**Combi climate gland for knockouts M 40**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 16-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.5 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M40 must be used per 16 litres (16000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.
Number of necessary KB. 40 (M40) ≥ 1 piece.

- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands für cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 6.0 Nm |
**KBS 20**

**Combi climate gland for knockouts M 20**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 6-13 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M20 must be used per 6 litres (6000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.

Number of necessary combi climate glands M20 ≥ 3 pieces.

When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.

If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 3.0 Nm |

**KBS 25**

**Combi climate gland for knockouts M 25**

- for the reduction of condensation by pressure compensation
- sealing range: Ø 9-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M25 must be used per 10 litres (10000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.

Number of necessary combi climate glands M25 ≥ 2 pieces

When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.

If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 4.0 Nm |
LES Cable Entry Systems

Combi Climate Glands

**KBS 32**

Combi climate gland for knockouts M 32

- for the reduction of condensation by pressure compensation
- sealing range: Ø 13-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.5 mm
- wall thickness up to 3.5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C

In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M32 must be used per 12 litres (12000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres.

Number of necessary combi climate glands M32 ≥ 2 piece.

When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.

If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 4.0 Nm |

**KBS 40**

Combi climate gland for knockouts M 40

- for the reduction of condensation by pressure compensation
- sealing range: Ø 16-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.5 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- glow wire test IEC 60 695-2-11: 960°C

In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M40 must be used per 16 litres (16000 cm³) of enclosure volume.

**Example:**

enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12.393 litres.

Number of necessary KB 40 (M40) ≥ 1 piece.

When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.

If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.

| tightening torque | 6.0 Nm |
### VSB 13
Sealing plug
diameter 13 mm
- for sealing combi climate glands M20 or M25, which are not used for cable entry
- ambient temperature - 25° to + 55° C

### VSB 21
Sealing plug
diameter 21 mm
- for sealing combi climate glands M32 and M40, which are not used for cable entry
- ambient temperature - 25° to + 55° C

### BM 32
Pressure compensation element for M 32 knockouts
- for the reduction of condensation by pressure compensation in power distribution systems
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.3 mm
- wall thickness of up to 8 mm
- with counter nut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
- in order not to exceed leakage limit of 0.07 bar with pressure compensation, one pressure compensation element BM 32 must be used per 42 litres (42000 cm³) of enclosure volume.
- Example:
  - enclosure size 30 cm x 60 cm x 17 cm = 30600 cm³ = 30.6 litres.
  - Number of necessary BM 32 (M32) = 1 piece.
LES Cable Entry Systems

KST 70
Stepped grommet
- sealing range: Ø 30-72 mm
- bore-hole: Ø 83 mm
- wall thickness 1.5-3 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25° to + 35° C
- glow wire test IEC 60 695-2-11: 750° C

MV FP 66
Flange
- with cable entry glands and screws
- sealing range: Ø 30-72 mm
- wall thickness of at least 1.5 mm

KHR 01
Cable retention
for cable diameter 6,5 - 14 mm
- set with 10 x 6 cable retention rings
- 30 pieces for cable diameter 6,5 - 10 mm
- 30 pieces for cable diameter 10 - 14 mm

KHR 02
Cable retention
for cable diameter 10 - 16 mm
- set with 10 x 6 cable retention rings
- 30 pieces for cable diameter 10 - 14 mm
- 30 pieces for cable diameter 13 - 16 mm
LES Cable Entry Systems

AKS 9
for knockouts Pg 9
- sealing range: Ø 4-8 mm
- for bore-hole Pg 9, Ø 15.5 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 11
for knockouts Pg 11
- sealing range: Ø 5-10 mm
- for bore-hole Pg 11, Ø 19 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 13.5
for knockouts Pg 13.5
- sealing range: Ø 6-12 mm
- bore-hole Pg 13.5, Ø 21 mm
- Wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 16
for knockouts Pg 16
- sealing range: Ø 10-14 mm
- for bore-hole Pg 16, Ø 23 mm
- wall thickness up to 4 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 21
for knockouts Pg 21
- sealing range: Ø 13-18 mm
- for bore-hole Pg 21, Ø 29 mm
- wall thickness up to 4 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
LES Cable Entry Systems

Cable Glands

AKS 29
for knockouts Pg 29

- sealing range: Ø 18-25 mm
- for bore-hole Pg 29, Ø 37.5 mm
- wall thickness up to 4 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 36
for knockouts Pg 36

- sealing range: Ø 22-32 mm
- for bore-hole Pg 36, Ø 47.5 mm
- wall thickness of up to 5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 42
for knockouts Pg 42

- sealing range: Ø 30-38 mm
- for bore-hole Pg 42, Ø 54.5 mm
- wall thickness of up to 5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C

AKS 48
for knockouts Pg 48

- sealing range: Ø 34-44 mm
- bore-hole Pg 48, Ø 60 mm
- wall thickness of up to 6 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25° to + 55° C
How to order: Please preface each HENSEL part number with 'R955N-' Example (using the part number): R955N-KC 9045
### Technical Details

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside diameter of conventional cable cross sections</td>
<td>360</td>
</tr>
<tr>
<td>Assignment of cable outside diameters to cable entries</td>
<td>360</td>
</tr>
<tr>
<td>Dimensions</td>
<td>361</td>
</tr>
<tr>
<td>Operating and ambient conditions</td>
<td>362</td>
</tr>
</tbody>
</table>
### LES Cable Entry Systems

**Technical Details**

Cable cross section | NYM | NYY | NYCY | NYCWY
--- | --- | --- | --- | ---
1x4 mm² | Ø 8 mm | Ø 9 mm | — | —
1x6 mm² | Ø 8,5 mm | Ø 10 mm | — | —
1x10 mm² | Ø 9,5 mm | Ø 10,5 mm | — | —
1x16 mm² | Ø 11 mm | Ø 12 mm | — | —
1x25 mm² | — | Ø 14 mm | — | —
1x35 mm² | — | Ø 15 mm | — | —
1x50 mm² | — | Ø 16,5 mm | — | —
1x70 mm² | — | Ø 18 mm | — | —
1x95 mm² | — | Ø 20 mm | — | —
1x120 mm² | — | Ø 21 mm | — | —
1x150 mm² | — | Ø 23 mm | — | —
1x185 mm² | — | Ø 25 mm | — | —
1x240 mm² | — | Ø 28 mm | — | —
1x300 mm² | — | Ø 30 mm | — | —
2x1,5 mm² | Ø 10 mm | Ø 12 mm | — | —
2x2,5 mm² | Ø 11 mm | Ø 13 mm | — | —
2x4 mm² | — | Ø 15 mm | — | —
2x6 mm² | — | Ø 16 mm | — | —
2x10 mm² | — | Ø 18 mm | — | —
2x16 mm² | — | Ø 20 mm | — | —
2x25 mm² | — | — | — | —
2x35 mm² | — | — | — | —
3x1,5 mm² | Ø 10,5 mm | Ø 12,5 mm | Ø 13 mm | —
3x2,5 mm² | Ø 11 mm | Ø 13 mm | Ø 14 mm | —
3x4 mm² | — | Ø 16 mm | Ø 16 mm | —
3x6 mm² | — | Ø 17 mm | Ø 17 mm | —
3x10 mm² | — | Ø 19 mm | Ø 18 mm | —
3x16 mm² | Ø 20 mm | Ø 21 mm | Ø 21 mm | —
3x25 mm² | — | Ø 26 mm | — | —
3x35 mm² | — | — | — | —
3x50 mm² | — | — | — | —
3x70 mm² | — | — | — | —
3x95/50 mm² | — | — | — | —
3x120/70 mm² | — | — | — | —
3x150 mm² | — | — | — | —
3x185 mm² | — | — | — | —
3x240 mm² | — | — | — | —
3x25/16 mm² | — | Ø 27 mm | Ø 27 mm | —
3x35/18 mm² | — | Ø 28 mm | Ø 27 mm | —
3x50/25 mm² | — | Ø 32 mm | Ø 32 mm | —
3x70/35 mm² | — | Ø 32-36 mm | Ø 36 mm | —
3x95/50 mm² | — | Ø 37-41 mm | Ø 40 mm | —
3x100/70 mm² | — | Ø 42 mm | Ø 43 mm | —
3x120/70 mm² | — | Ø 47 mm | — | —
3x150/95 mm² | — | Ø 52 mm | Ø 48-54 mm | —
3x240/120 mm² | — | Ø 57-63 mm | Ø 60 mm | —
3x300/150 mm² | — | Ø 63-69 mm | — | —

### Outside diameter of conventional cable cross sections. The outside diameters are average values of different products.

<table>
<thead>
<tr>
<th>Outside diameters of cables</th>
<th>Ø min.</th>
<th>Ø max.</th>
<th>Cable entry metric</th>
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</thead>
<tbody>
<tr>
<td>3 mm</td>
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<td>ASM/AK/A 12</td>
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<tr>
<td>5 mm</td>
<td>10 mm</td>
<td>ASM/AK/A 16</td>
<td></td>
</tr>
<tr>
<td>6.5 mm</td>
<td>13.5 mm</td>
<td>ASM/AK/A 20</td>
<td></td>
</tr>
<tr>
<td>11 mm</td>
<td>17 mm</td>
<td>ASM/AK/A 25</td>
<td></td>
</tr>
<tr>
<td>15 mm</td>
<td>21 mm</td>
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<td>13 mm</td>
<td>ESM 20</td>
<td></td>
</tr>
<tr>
<td>9 mm</td>
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<td>ESM 25</td>
<td></td>
</tr>
<tr>
<td>9 mm</td>
<td>23 mm</td>
<td>ESM 32</td>
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<tr>
<td>17 mm</td>
<td>30 mm</td>
<td>ESM 40</td>
<td></td>
</tr>
<tr>
<td>3.5 mm</td>
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</tr>
<tr>
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<td>16 mm</td>
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<td></td>
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<tr>
<td>5 mm</td>
<td>21 mm</td>
<td>STM 25</td>
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<td>13 mm</td>
<td>26.5 mm</td>
<td>STM 32</td>
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<tr>
<td>13 mm</td>
<td>34 mm</td>
<td>STM 40</td>
<td></td>
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</table>

### Assignment of cable outside diameters to cable entries (glands, grommets etc.)

<table>
<thead>
<tr>
<th>Outside diameters of cables</th>
<th>Ø min.</th>
<th>Ø max.</th>
<th>Cable entry metric</th>
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<tbody>
<tr>
<td>5 mm</td>
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<td>EDR 16</td>
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<tr>
<td>6 mm</td>
<td>13 mm</td>
<td>EDR 20</td>
<td></td>
</tr>
<tr>
<td>9 mm</td>
<td>17 mm</td>
<td>EDR 25</td>
<td></td>
</tr>
<tr>
<td>8 mm</td>
<td>23 mm</td>
<td>EDR 32</td>
<td></td>
</tr>
<tr>
<td>11 mm</td>
<td>30 mm</td>
<td>EDR 40</td>
<td></td>
</tr>
</tbody>
</table>

---

Order from MARYLAND METRICS
P.O. Box 261
Owings Mills, MD 21117 USA
ph: (410)358-3130 (800)638-1830
fx: (410)358-3142 (800)872-9329
web: http://mdmetric.com
e-mail: sales@mdmetric.com
RFQ form: http://mdmetric.com/rfq.htm

How to order: Please preface each HENSEL part number with 'R955N-'. Example (using the part number): R955N-KC 9045
LES Cable Entry Systems
Technical Details
Dimensions

Grommets ESM
Degree of protection IP 55
Grommets ESM are inserted into knockouts. There is no counternut required!

<table>
<thead>
<tr>
<th>Grommets in mm</th>
<th>A</th>
<th>B</th>
<th>B1</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
<td>ESM 16</td>
<td>16.5</td>
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<tr>
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<td>42.5</td>
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<td>8.5</td>
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</tbody>
</table>

Stepped grommets STM
Degree of protection IP 55
Stepped glands STM are inserted into knockouts. There is no counternut required!

<table>
<thead>
<tr>
<th>Stepped grommet in mm</th>
<th>A</th>
<th>B</th>
<th>B1</th>
<th>C</th>
<th>D</th>
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<td>STM 25</td>
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Grommets ESM
Degree of protection IP 55
Grommets ESM are inserted into knockouts. There is no counternut required!

<table>
<thead>
<tr>
<th>Grommets in mm</th>
<th>A</th>
<th>B</th>
<th>B1</th>
<th>C</th>
<th>D</th>
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<tbody>
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<tr>
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Grommets EDK
Degree of protection IP 65
Grommets EDK are inserted into knockouts. There is no counternut required!

<table>
<thead>
<tr>
<th>Grommets in mm</th>
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<th>B</th>
<th>B1</th>
<th>C</th>
<th>D</th>
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<tbody>
<tr>
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<td>18.5</td>
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<td>8.5</td>
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<td>ESM 40</td>
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<td>19.5</td>
<td>8.5</td>
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Grommets for conduits STM
Degree of protection IP 55
Grommets for conduits STM are inserted into knockouts. There is no counternut required!

<table>
<thead>
<tr>
<th>Grommets for conduits in mm</th>
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Cable glands ASM/AKM/ASS
with strain relief counternut, degree of protection IP 65

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<tr>
<th>Cable glands ASM/AKM/ASS with strain relief counternut</th>
<th>ISO</th>
<th>SW1 across flats</th>
<th>EK1 across corners Ø</th>
<th>C max.</th>
<th>D</th>
<th>SW2 across flats</th>
<th>EKS across corners Ø</th>
<th>H</th>
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<tbody>
<tr>
<td>ASM/AKM/ASS 12</td>
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<td>M 16</td>
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Combi climate glands KBM / KBS
with strain relief counternut, degree of protection IP 66 / IP 67

<table>
<thead>
<tr>
<th>Combi climate glands KBM / KBS with strain relief counternut</th>
<th>ISO</th>
<th>SW1 across flats</th>
<th>EK1 across corners Ø</th>
<th>C max.</th>
<th>D</th>
<th>SW2 across flats</th>
<th>EK2 across corners Ø</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBM/KBS 20</td>
<td>M 20</td>
<td>24</td>
<td>27.0</td>
<td>42</td>
<td>8</td>
<td>27</td>
<td>29.0</td>
<td>5</td>
</tr>
<tr>
<td>KBM/KBS 25</td>
<td>M 25</td>
<td>29</td>
<td>32.0</td>
<td>45</td>
<td>8</td>
<td>32</td>
<td>35.5</td>
<td>5</td>
</tr>
<tr>
<td>KBM/KBS 32</td>
<td>M 32</td>
<td>36</td>
<td>40.0</td>
<td>47</td>
<td>10</td>
<td>40</td>
<td>44.5</td>
<td>6</td>
</tr>
<tr>
<td>KBM/KBS 40</td>
<td>M 40</td>
<td>46</td>
<td>50.5</td>
<td>59</td>
<td>10</td>
<td>50</td>
<td>54.1</td>
<td>7</td>
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Cable glands AFM
with strain relief

<table>
<thead>
<tr>
<th>Cable glands AFM with strain relief</th>
<th>ISO</th>
<th>SW1 across flats</th>
<th>SW2 across flats</th>
<th>EK2 across corners Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFM 16</td>
<td>20</td>
<td>24</td>
<td>26.5</td>
<td></td>
</tr>
<tr>
<td>AFM 20</td>
<td>24</td>
<td>26</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>AFM 25</td>
<td>29</td>
<td>32</td>
<td>36.0</td>
<td></td>
</tr>
<tr>
<td>AFM 32</td>
<td>36</td>
<td>42</td>
<td>46.0</td>
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</tr>
</tbody>
</table>

Flange MV FP 66
Degree of protection IP 55
for retrofitting onto boxes made of sheet steel material thickness ≥ 1.5 mm

<table>
<thead>
<tr>
<th>Flange MV FP 66</th>
<th>Diameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>R955N-KC</td>
<td>125,5</td>
</tr>
<tr>
<td>H911.5</td>
<td>120</td>
</tr>
<tr>
<td>B90X0.5</td>
<td>115.0</td>
</tr>
<tr>
<td>H115X0.5</td>
<td>110.5</td>
</tr>
<tr>
<td>H120X0.5</td>
<td>110.0</td>
</tr>
</tbody>
</table>

How to order: Please preface each HENSEL part number with ‘R955N-’ Example (using the part number): R955N-KC 9045
# LES Cable Entry Systems

## Technical Details

### Operating and Ambient Conditions

<table>
<thead>
<tr>
<th>Application area</th>
<th>Suitable for <strong>outdoor installation</strong> - harsh environment and / or outdoor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ESM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>STM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EDK</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EDR</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KST</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MV FP 66</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Ste</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ASM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>ASS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AFM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AKM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>AKS</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KBM</strong></td>
<td></td>
</tr>
<tr>
<td><strong>KBS</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ambient temperature</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average value over 24 hours</strong></td>
<td>+ 35° C + 40° C − 25° C</td>
</tr>
<tr>
<td><strong>Maximum value</strong></td>
<td>+ 35° C + 40° C − 25° C</td>
</tr>
<tr>
<td><strong>Minimum value</strong></td>
<td>+ 55° C + 70° C − 25° C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Fire protection</strong></th>
<th>Demands placed on electrical devices from standards and laws:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>in the event of internal faults</strong></td>
<td>Minimum requirements</td>
</tr>
<tr>
<td></td>
<td>- Glow wire test in accordance with IEC 60 695-2-11</td>
</tr>
<tr>
<td></td>
<td>- 650° C for boxes and cable glands</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Burning behaviour</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>- IEC 60 695-2-11</strong></td>
<td>750° C − flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>650° C − V-0 flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>960° C − V-2 flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>750° C − V-2 flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>960° C − V-2 flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>750° C − V-2 flame-retardant self-extinguishing</td>
</tr>
<tr>
<td></td>
<td>960° C − V-2 flame-retardant self-extinguishing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Toxic behaviour</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
<tr>
<td></td>
<td>halogen-free silicone-free</td>
</tr>
</tbody>
</table>

"Halogen-free" in accordance with IEC 754-2

"Common test methods for cables - Determination of the amount of halogen acid gas".

For material properties see technical data.
Technical Data

Material properties 364
Degrees of protection 366 - 367
Outside diameter of conventional cable cross-sections 368
Assignment of cable outside diameters to cable glands 369
Preparations of aluminium conductors 370
Types of conductors, IK Code 371
Rating of insulated conductors in switchgear assemblies, Overload and short-circuit protection 372
Rating of conductors, diversity factors 373
Formation of condensed water and retaliatory actions 374
Definition of terms 375
Copy template: Power dissipation calculation 376
Declaration of EC Conformity 377 - 382

How to order: Please preface each HENSEL part number with ‘R955N-‘ Example (using the part number): R955N-KC 9045
### Technical Data

#### Material Properties

<table>
<thead>
<tr>
<th>Products</th>
<th>Material used</th>
<th>Glow wire test</th>
<th>UL Subject 94</th>
<th>Chemical resistance 1)</th>
<th>Acid 10 %</th>
<th>Lye 10 %</th>
<th>Alcohol</th>
<th>Petrol (MAK) 2)</th>
<th>Benzene (MAK) 2)</th>
<th>Mineral oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>K 7... / K 12... / K 24...</td>
<td>PC (polycarbonate)</td>
<td>960° C</td>
<td>V-2</td>
<td>-40° C / +120° C</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>lid Mi...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>door and lid KV... / KV PC... / door FP...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hinged lid KG /KF 4... / KF 7... / KF 8...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>KF 5... / KF 9... / KF WP... bases of Mi... / FP...</td>
<td>PC-GFS (polycarbonate)</td>
<td>960° C</td>
<td>V-0</td>
<td>-40° C / +120° C</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>KD...</td>
<td>PC (polycarbonate) PC-5 impact resistant</td>
<td>960° C</td>
<td>5V</td>
<td>-40° C / +120° C</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>D... / DP... / DPC...</td>
<td>PS (Polystyrol)</td>
<td>750° C</td>
<td>V-2</td>
<td>-40° C / +70° C</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>DE... / K... / KC...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>RD... / RK...</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KV... / KG...</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>K... / KV... / KV PC... / Mi... / FP...</td>
<td>PUR (polyurethane)</td>
<td>—</td>
<td>—</td>
<td>-25° C / +80° C</td>
<td>0</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>+</td>
</tr>
<tr>
<td>D... / DP... / DPC...</td>
<td>TPE (thermoplastic elastomer)</td>
<td>750° C</td>
<td>—</td>
<td>-25° C / +100° C</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>DE... / K... / KC...</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>KD... / RD... / RK...</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>KV... / KV PC... / Mi FP... / FP FG...</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>ESM... / STM... / EDK...</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>EDR... / KST... / DPS...</td>
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<tr>
<td>ERA... / EKA... / EVS...</td>
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<td></td>
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</tr>
<tr>
<td>ASM... / AKM...</td>
<td>PA (polyamide)</td>
<td>960° C</td>
<td>V-0</td>
<td>-40° C / +100° C</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>ASS...</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KBM... / KBS...</td>
<td>PA (polyamide)</td>
<td>960° C</td>
<td>V-2</td>
<td>-40° C / +100° C</td>
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<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>A FM... / AKM... / AVS... / AKS...</td>
<td>PA (polyamide)</td>
<td>750° C</td>
<td>V-2</td>
<td>-40° C / +100° C</td>
<td>+</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>A FM... / AKM... / ASM... / ASS... / AKS...</td>
<td>CR/NBR (polychloroprene - nitrile rubber)</td>
<td>—</td>
<td>—</td>
<td>-20° C / +100° C</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>ASS...</td>
<td>TPE (Evoprene)</td>
<td>—</td>
<td>—</td>
<td>-20° C / +100° C</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ASS...</td>
<td>CR (chloroprene rubber)</td>
<td>—</td>
<td>—</td>
<td>-30° C / +100° C</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>KBM... / KBS...</td>
<td>EPDM ethylene propylene diene monomer rubber</td>
<td>—</td>
<td>—</td>
<td>-40° C / +130° C</td>
<td>+</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Ste...</td>
<td>PVC (polyvinyl chloride)</td>
<td>650° C</td>
<td>—</td>
<td>-20° C / +70° C</td>
<td>0</td>
<td>0</td>
<td>—</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

---

1) The specifications on chemical resistance are a general guide. In individual cases it may be necessary to check resistance in combination with other chemicals and ambient conditions (temperature, concentration, etc.).

2) (MAK) - Maximum allowable concentration (work place)

As at: July 2013

( + = resistance; 0 = partially resistance; — = not resistant)

How to order: Please preface each HENSEL part number with ‘R955N-’. Example (using the part number): R955N-KC 9045