



**Test Report No. 2104120**

**IP69K testing of Cable Glands Series HSK and Metrica-P,  
Adapters Series RSD, Blind Plugs Series V and Circular  
Connector Series 7.xx**

Laboratory: **KEMA Quality B.V.**  
**Utrechtseweg 310**  
**6812 AR Arnhem**  
**The Netherlands**

By order of: **Hummel Elektrotechnik GmbH**  
**Merklinstrasse 34**  
**79183 Waldkirch**  
**Germany**

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Author : H.J.G. de Wild 25.06.2007 Reviewer : E. ter Haar 26.06.2007  
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This Test Report contains the test results related to the sample(s) tested. The tests results cannot be used for any statement related to the quality of the equipment from running production.

## 1 Standards applied

Samples of the equipment as described under (2) below were subjected to the tests of the following standards:

DIN 40 050 Part 9 : 1993  
EN 60529 : 1991

The tests were conducted from 22 May 2007 to 5 June 2007.

## 2 Description of the equipment

IP69K testing of Cable Glands Series HSK and Metrica-P, Adapters Series RSD, Blind Plugs Series V and Circular Connector Series 7.xx

For simultaneous testing, up to 8 devices were mounted on a specially prepared housing.

The following samples were available for the tests:

### Cable gland

Model	Thread size
HSK-M	M12 and M63
HSK-M-EMV-D	M12 and M63
HSK-M-W	M20
HSK-M-PVDF	M12 and M40
HSK-M-Ex-d	M12 and M40
HSK-M-Flex	M12 and M25
HSK-MZ	M12 and M63
HSK-Flex	M12 and M25
HSK-INOX	M12, M40, PG7 and PG36
HSK-K	M12 and M63
HSK-K-MZ-Ex	M16
HSK-K-PVDF	M12 and M32
Metrica P	M63
7.8xx.xxxx	M16
7.xxxx.xxx (M23 Signal)	M20
7.xx6.xxxx (M23 Signal)	M20
7.5xx.xx / 7.6xx.xx (M23 Leistung)	M20
7.7xx.xx / 7.74x.xx	Thread size

Reducer

Model	Thread size
RSD (NBR)	M12, M20 and M40

Blind plug

Model	Thread size
V-MS (NBR)	M63
V (NBR)	M12 and M63

The cable glands were provided with a solid plastic rod equal to the smallest cable diameter allowed in the ring and specified by the manufacturer.

### 3 Test results

The detailed test results are laid down in confidential file no. 2104120. A summary is given in chapter 5 of this report. There were no deviations from, additions to or exclusions from the applicable test methods as described in the standards mentioned under (1) above. Where applicable, the estimated uncertainty of measurement meets the requirements of IECEx Operational Document OD012.

### 4 Conclusion

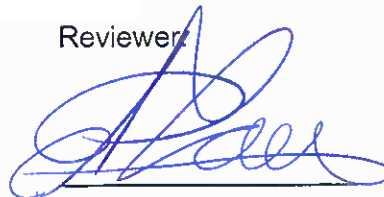
The tests for IP69K were all completed with positive result.

Author:



H.J.G. de Wild

Reviewer:



E. ter Haar

**END OF TEST REPORT**

## 5 Summary of test results

a) DIN 40 050, clause 7.3 / EN 60529, clause 13.4 and 13.6 - IP6X dust test

The test for degree of protection IP6X to EN 60529 was carried out on the following samples:

### Cable gland

Model	Thread size
HSK-Flex	M25
HSK-INOX	PG7
HSK-K	M63
HSK-K-PVDF	M32
HSK-M-PVDF	M12 + M40
HSK-M-W	M20
7.8xx.xxxx	M16

### Reducer

RSD	M20
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These samples were considered representative for the complete range of cable glands, reducers and blind plugs.

The test was made using the equipment shown in Figure 2 of EN 60529, consisting of a closed test chamber in which talcum powder was maintained in suspension by an air current. The talcum powder used passes a square-meshed sieve the nominal wire diameter of which is 50  $\mu\text{m}$  and the nominal width between wires 75  $\mu\text{m}$ .

The amount of talcum powder used was 2 kg per cubic metre of the test chamber. With the maximum depression of 20 mbar and during 8 hours, air was drawn, by means of depression, out of the enclosure.

**Result:** Positive, no dust was observed inside the enclosure after the test.

b) DIN 40 050, clause 7.4, IPX9K water test

The test for degree of protection IPX9K was carried out on all samples of cable gland, reducer and blind plug.

The test was made by spraying the samples from all practicable directions with a stream of water as shown in figure 8 of DIN 40 050.

The conditions observed were as follows:

- water flow: 14 to 16 l/min.
- water pressure: 10.000 kPa
- water temperature:  $80 \pm 5$  °C
- test duration: 30 seconds at each position (0°, 30°, 60° and 90°)
- distance of nozzle: 100 to 150 mm

Result: Positive, no water was observed inside the enclosure at the end of the test.

Type Scheme for IP-rating IP69K	Connecting thread available
HSK-M-EMV	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-Flex-EMV	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-EMV-D	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-Mz-EMV	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
Metrica-P	M12-M63
HSK-K	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-KE/KR	PG7-PG21
HSK-K-PVDF	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-PVDF	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-INOX	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-Mz	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-Flex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-Flex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-EMV/-PVDF-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M-EMV-D-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-Mz-EMV/-PVDF-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-K-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M/-PVDF-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-INOX/-PVDF-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-K-Mz-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-Mz/-PVDF-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-M/Mz/PVDF-Ex-d	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
HSK-INOX/-PVDF-Ex-d	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-Ms/INOX-Ex-d	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
RSD-Ms/INOX-Ex-d	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-Ms-/Ms-FPM-/Ms-VMQ-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
RSD-Ms-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-INOX-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
RSD-INOX-Ex	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-Ne	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-NE-Ms	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
V-INOX	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
RSD-Ms	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"
RSD-INOX	M12-M63 / PG7-PG48/ NPT3/8"-NPT1 1/2"