SCHNIEWINDT

Document	:	LD112502.DOC
Title	:	List of documents
Date	:	2011-04-07

Object	:	**HV Filter-Damping Resistor**
Type	:	**G-OO**
Manufacturing No.	:	**A11-112502**
Customer	:	**HMP-Capacitor GmbH, Rottenburg**
Order No.	:	**BH-1171-11-R dated 21.03.2011**

1. Technical Data Sheet	TD112502
2. Dimension Drawing	108210 Variation 1-10-1000
3. Transport Instruction	F9501_1.doc
4. Storage Instruction	F9431_20.doc
5. Table of Torque's	F9431_19.doc
6. Installation Instruction	II112502
7. Operation Instruction	F9443_2.doc
8. Maintenance Instruction	F9547_1.doc
9. Inspection Certificate	AP112502.1.1-6

			Issued by Dept.	T1 / Holzkamp	07.04.2011	Page : 1
			Design checked	T1 / Böhnisch	07.04.2011	
			Quality Management			Cont. : -
No. of Revision / Modification		Date		Name	Date	

Document	:	**TD112502**
Title	:	**Technical Data Sheet**
Date	:	**2011-04-07**

HV-Damping Resistor

for indoor use

1. Rated resistance	100 Ω
2. Manufacturing tolerance	± 5 %
3. Rated continious current	3,16 A
4. Rated continuous load	1000W
5. Inductance	< 10 µH
6. Insulation level (HV-LV)	200 kV_{BIL}
7. Protection class	IP00

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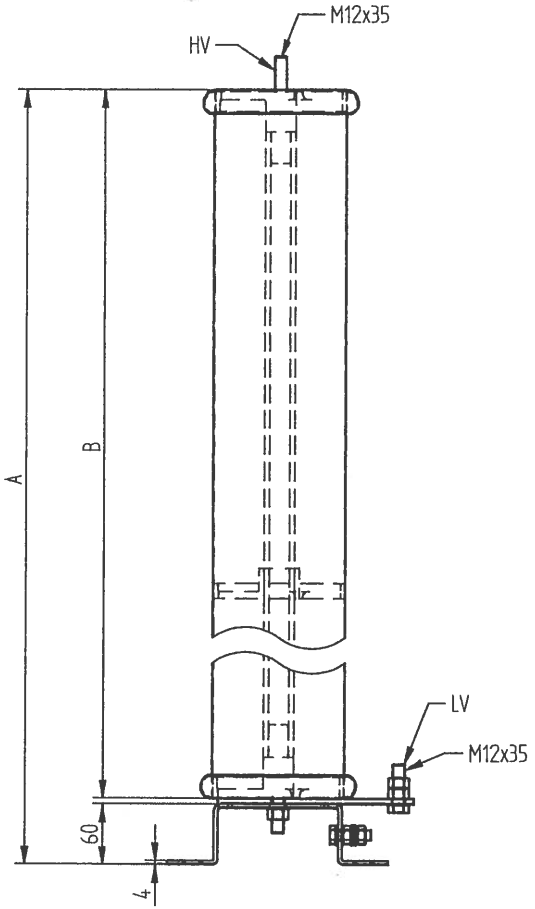
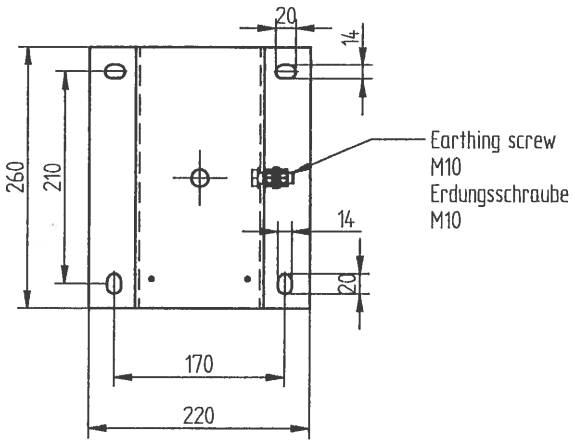
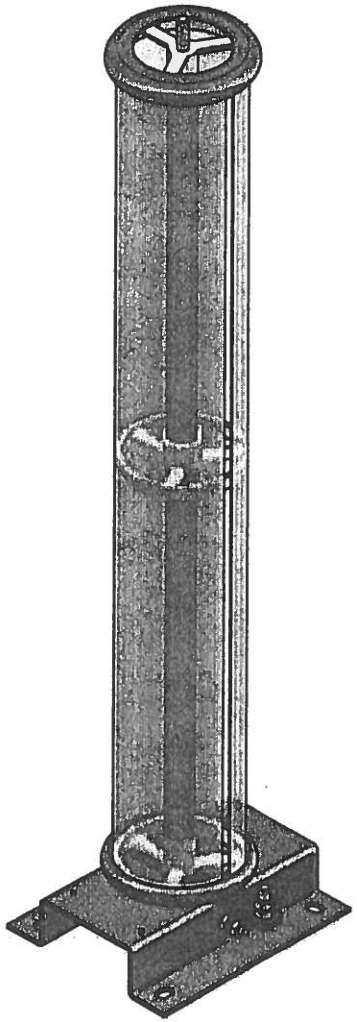
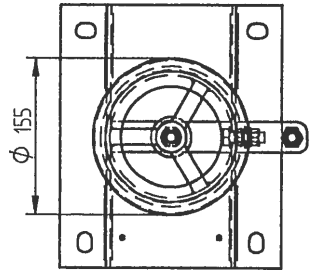
			Design checked	T1 / Böhnisch	07.04.2011		
			Quality Management	Name	Date	Cont. : -	
No. of Revision / Modification		Date					



Foundationplate
Fundamentplatte







Zulässige Abweichungen für Maße ohne Toleranzangabe: DIN ISO 2768 -v	Permissible variations in untoleranced dimension DIN ISO 2768 -v	Scale 1:5 at size A DIN A3
		.

	Date	Name
Drawn	04.06.2008	J-Wördemann
Checked	04.06.2008	Streit
Norm		
Act. release checked		Streit

Rel.	Revision	Date	Nam.
a	Erdungsschraube M10	16.07.08	Pri.

SCHNEEWINDT
58809 Neuenrade

Filter Damping Resistor
Filter Dämpfungs Widerstand

108210°

Sheet 1
of 1

SCHNIEWINDT

Document / *Dokument*	:	**ZSO155**
Title / *Titel*	:	**Type of Filter Resistor / Typentabelle Filterwiderstand**
Date / *Datum*	:	**2008-06-12**

Table of technical data for Filter Resistors with open cylindrical design.
Technisches Datenblatt für Filterwiderstände in offener zylindrischer Ausführung.
Drawing no. / *Zeichnungsnr.:* **108210**

Variation *Variante*	**Length B (±10)** *Länge B (± 10)* **mm**	**Length A (±15)** *Länge A(± 15)* **mm**	**Insulation level** *Isolationspegel* **kV_{BIL}**	**Weight** *Gewicht* **kg**
1-10-420	420	485	≤ 75	≤ 7
1-10-500	500	565	≤ 125	≤ 9
1-10-600	600	665	≤ 125	≤ 9
1-10-700	700	765	≤ 125	≤ 9
1-10-800	800	865	≤ 170	≤ 10
1-10-900	900	965	≤ 170	≤ 10
1-10-1000	1000	1065	≤ 250	≤ 11
1-10-1100	1100	1165	≤ 250	≤ 11

SCHNIEWINDT

Document	:	**F9501_1.DOC**
Title	:	**Transport Instructions for not seaworthy packed units**
Date	:	**1999-12-16**

Equipment and its accessories are packed by manufacturer.

- Before loading and after unloading inspect for transport damage.

- Lifting and transport handling shall be done either by fork lift trucks of proper size or by crane using ropes having sufficient length.

- Dismantling shall be done when equipment has reached its final location.

			Issued by Dept.	T1 / M. Streit	16.12.1999	Page : 1
			Design checked			
1	Design changed	16.12.1999				Cont. : -
No. of Revision / Modification		Date	Quality Management	Name	Date	

SCHNIEWINDT

Document	:	**F9431_20.DOC**
Title	:	**Storage Instructions**
Date	:	**1999-12-23**

For storage the following instructions shall be considered:

- To keep all dry they shall be stored either under tarpaulines or in storehouses.

- Storage temperature should be constant to minimize condensed water accumulation.

- In case of storage periods longer than 3 months, packing shall be opened to allow ventilation.
  The maximum allowed storage period in packed state is 4 months after packing.

			Issued by Dept.	T1 / M. Streit	23.12.1999	Page : 1
			Design checked			
1	Design changed	23.12.1999				Cont. : -
No. of Revision / Modification		Date	Quality Management	Name	Date	

SCHNIEWINDT

Document	:	**F9431_19.DOC**
Title	:	**Table of Torque's**
Date	:	**2009-01-09**

For installation the following torque's have to be applied to the screws, bolts and nuts:

	bolts, screws, nuts of					
threaded size	**galvanised steel/Nm**	**stainless steel/Nm**	**Aluminium Nm**	**Brass Nm**	**Copper E-Cu F25 HH/Nm**	**Copper CuteP/Nm 2.1546**
M 6	10	10	2	7	---	
M 8	18	20	5	18	30*	
M10	35	40	10	30	---	
M12	60	70	15	50	50*	40
M16	150	170	35	120	65*	
M18	200	235	50	120	---	

In case of different materials in combination, the lowest value of used material is valid!

For screws the torque values are only valid in material with appropriate thickness.

*This torque values refer to a drilling hole depth of 30 mm and to bushing bolts.

5	Torque's for copper corrected	09.01.2009				
4	Torque's for copper corrected	27.11.2008	Issued by Dept.	T1 / M. Streit	09.01.2009	Page : 1
3	Torque's for copper added	19.08.98				
2	Torque's for copper added	05.03.98	Design checked	QS/ K. Büser	09.01.2009	
1	Torque's for brass changed	20.06.98	Quality Management	Dr. Kaluza	09.01.2009	Cont. : -
No. of Revision / Modification		Date		Name	Date	

Document	:	**II112502**
Title	:	**Installation Instruction**
Date	:	**2011-04-07**

HV-Damping Resistors for indoor use

1. General

Each resistor consists of a single unit.

The final outline is shown in the dimension drawing no.:

108210 Variation 1-10-1000

The resistors are numbered as follows :

112502.1.1-6

2. Installation

2.1 Unpacking and Inspection

The packed completely assembled resistors should be transported to their final locations.
Unpack the resistors carefully and check whether there are any damages due to transport. Defective spots of the surface of galvanised parts have to be retouched with zinc paint.
Inspect visually the resistor webs due to any damages.

Document	:	**II112502**
Title	:	**Installation Instruction**
Date	:	**2011-04-07**

2.2 Measurement of resistance

Check the resistance of the resistors by measurement. If there is a difference of more than 5 % there may be a loose connection caused by transport vibration or a non fixed connection. If necessary fix any loose connection.

2.3 Cleaning of the resistor web

The resistor webs can be cleaned by dry compressed air if necessary.

Attention, don't damage anything during these actions !

2.4 Mounting of the resistor

For fixing the resistor on the foundation use the holes (14 x 20 mm) in the foundation plate.

3. Electrical connection

For electrical connection use the M12 x 35 mm bolts, for earthing use the earth screw (M10) in the foundation plate.
When tightening the upper nut the lower nut must be held against.

Attention:
The bolt for the HV-connection may be tightened with a max. torque of 40Nm!

Now the resistor is ready for taking into operation.

Document	:	F9443_2.DOC
Title	:	Operation Instruction for Web Type Resistors
Date	:	2010-09-02

SAFETY ADVISE

During erection, installation, commissioning, operation and maintenance of this equipment, all adequate national safety regulations have to be followed (e.g. IEC, VDE 0100)!

Any work carried out on this equipment is allowed in de-energised, earthed and short-circuited condition only!
Observe the Five Safety Rules!

- **Disconnecting**
- **Securing against reclosing**
- **Checking safe insulation from supply**
- **Earthing and short-circuiting**
- **Covering or providing barriers to adjacent live parts**

Ignoring of adequate safety regulations may result in death, grievous bodily harm and/or property damage.

<u>Any work on this equipment to be carried out by qualified personnel only!</u>

Document	:	**F9443_2.DOC**
Title	:	**Operation Instruction for Web Type Resistors**
Date	:	**2010-09-02**

C A U T I O N

- Before first operation or after longer shutdown check whether the resistors are free of dust and particles
  (e.g. animals, insects etc.).

- Important:
  When taking the resistor into first operation a transitory development of smoke will become visible due to the escape of impregnation (varnish) on webs by heating up. (15 to 30 min. duration).
  This formation of smoke may occur again until the resistor has been loaded up to several times in service.
  If possible load should be switched on in form of short impulses (1 to 5 minutes operation) or with decreased power.

- Adequate room ventilation has to be ensured at any time!
  (only for indoor resistors).

- At smaller load the time of smoke emission will increase.

- Please note:
  The smoke emission is a normal process which does not affect quality and safety of the resistor.

Document	:	F9547_1.DOC
Title	:	Maintenance Instruction for Web Resistor Type G-OO
Date	:	2008-12-11

SAFETY ADVISE

During installation, commissioning, operation and maintenance of this equipment, all adequate national safety regulations have to be followed (e.g. IEC, VDE 0100)!

Any work carried out on this equipment is allowed in de-energised, earthed and short-circuited condition only!
Observe the Five Safety Rules!

- **Disconnecting**
- **Securing against reclosing**
- **Checking safe insulation from supply**
- **Earthing and short-circuiting**
- **Covering or providing barriers to adjacent live parts**

Ignoring of adequate safety regulations may result in death, grievous bodily harm and/or property damage.

Any work on this equipment to be carried out by qualified personnel only!

Document	:	**F9547_1.DOC**
Title	:	**Maintenance Instruction for Web Resistor Type G-OO**
Date	:	**2008-12-11**

- Approximately biannual, in case after every short circuit operation, you have to check, that all connections of the resistor webs to their busbars are well connected.

- In locations with heavy pollution the bushings, insulators and the other electrical equipment inside the resistor housing have to be cleaned biannually.

- You can use dust exhaust by compressed air. The insulators can also be cleaned by clean dry piece of cloth.

- Check the enclosures surfaces inside and outside. This has to be done especially after every short circuit operation. Small damages have to be retouched.

Abnahmeprüfzeugnis „3.1“ gemäß DIN EN 10 204
Inspection Certificate „3.1“ according to DIN EN 10 204

Gerätebezeichnung Test Object	HS Dämpfungs-Widerstand HV-Damping Resistor
Auftrag-Nr. Order No.	A11-112502
Kunde Customer	HMP-Capacitor GmbH, Rottenburg
Ihre Auftrag-Nr. Your Order No.	BH-1171-11-R dated 21.03.2011
Technische Daten Technical Main Data	112502.1.1-6
Nennwiderstand Nominal resistance	100 Ω ± 5 %
Zeichnungs-Nr. Drawing No.	108210 VARIATION 1-10-1000

1 Widerstandsmessung / resistance measurement

Serien-Nr.	Widerstand in Ω bei 20 °C	Min. / Max. Widerstand in Ω	Gemessener Widerstand in Ω, gemessen mit DC
Serial No.	**No Load Resistance in Ω at 20 °C**	**Min. / Max. Resistance / Ω**	**Measured Resistance / Ω at DC**
112502.1.1	100	95 / 105	**100,2**
112502.1.2	100	95 / 105	**99,1**
112502.1.3	100	95 / 105	**100,3**
112502.1.4	100	95 / 105	**100,0**
112502.1.5	100	95 / 105	**99,4**
112502.1.6	100	95 / 105	**100,1**

Fehlergrenze der Messeinrichtung: *0,05 % (Fluke 187)*
Limit of error of the measuring equipment: *0,05 % (Fluke 187)*

Abnahmeprüfzeugnis „3.1“ gemäß DIN EN 10 204
Inspection Certificate „3.1“ according to DIN EN 10 204

2 Sichtprüfung / Visual inspection

Die Hauptabmessungen des Widerstandes wurden überprüft.
The main dimensions of the resistor were checked.

Hiermit bestätigen wir, dass alle Prüfungen erfolgreich bestanden wurden.
The objects have withstood all tests satisfactorily.

Das Zeugnis wurde maschinell erstellt und ist gemäss EN 10204 ohne Unterschrift gültig.
This certificate has been issued mechanically and is – according to EN 10204 – valid without signature.

Neuenrade, 02. Mai 2011

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