



**COMEM**  
MONTEBELLO (VI)  
ITALY

ESSICCATORE  
D'ARIA **EV103**

COLORE BLEU = SECCO  
COLORE ROSA = UMIDO

PER RIGENERARE, ESSIC-  
CARE I SALI A 120 150  
FINO A COLORE BLEU.

COULEUR BLEU = SECCO  
COULEUR ROSA = UMIDO

POUR RIGENERER, ESSIC-  
CER LES SELS A 120 150  
JUSQU'A LA COULEUR BLEU.

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MONTEBELLO (VI)  
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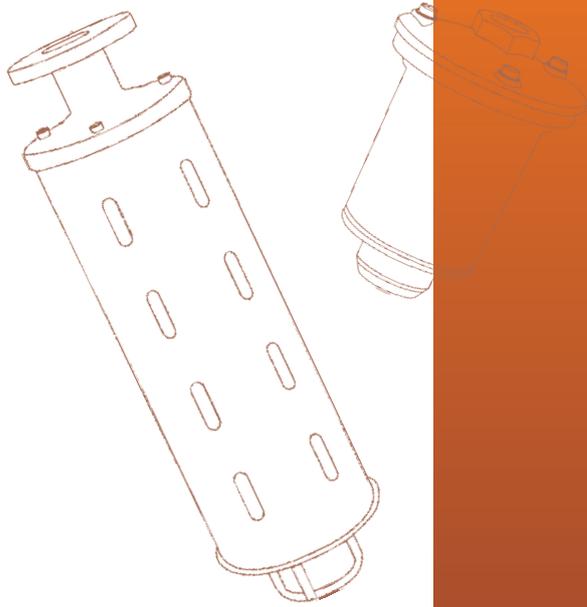
COULEUR BLEUE = SEC  
COULEUR ROSE = HUMIDE

POUR REGENERER, SECHEZ  
LES SELS A 120 150  
JUSQU'A LA COULEUR BLEUE.

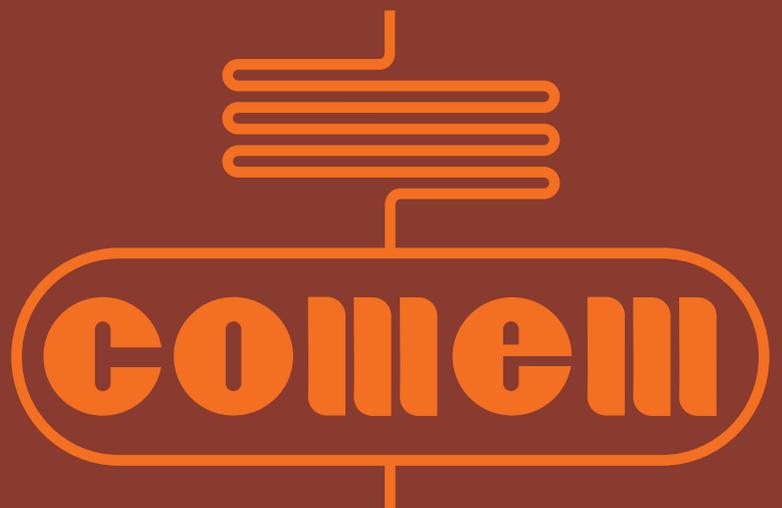
BLAUFARBE = TROCKEN  
ROSAFARBE = FEUCHT

UM DIE SALZE WIEDER  
HERSTELLEN AUSSTRICHEN  
120 150 BIS BLAUFARBE





## AIR DEHUMIDIFIERS



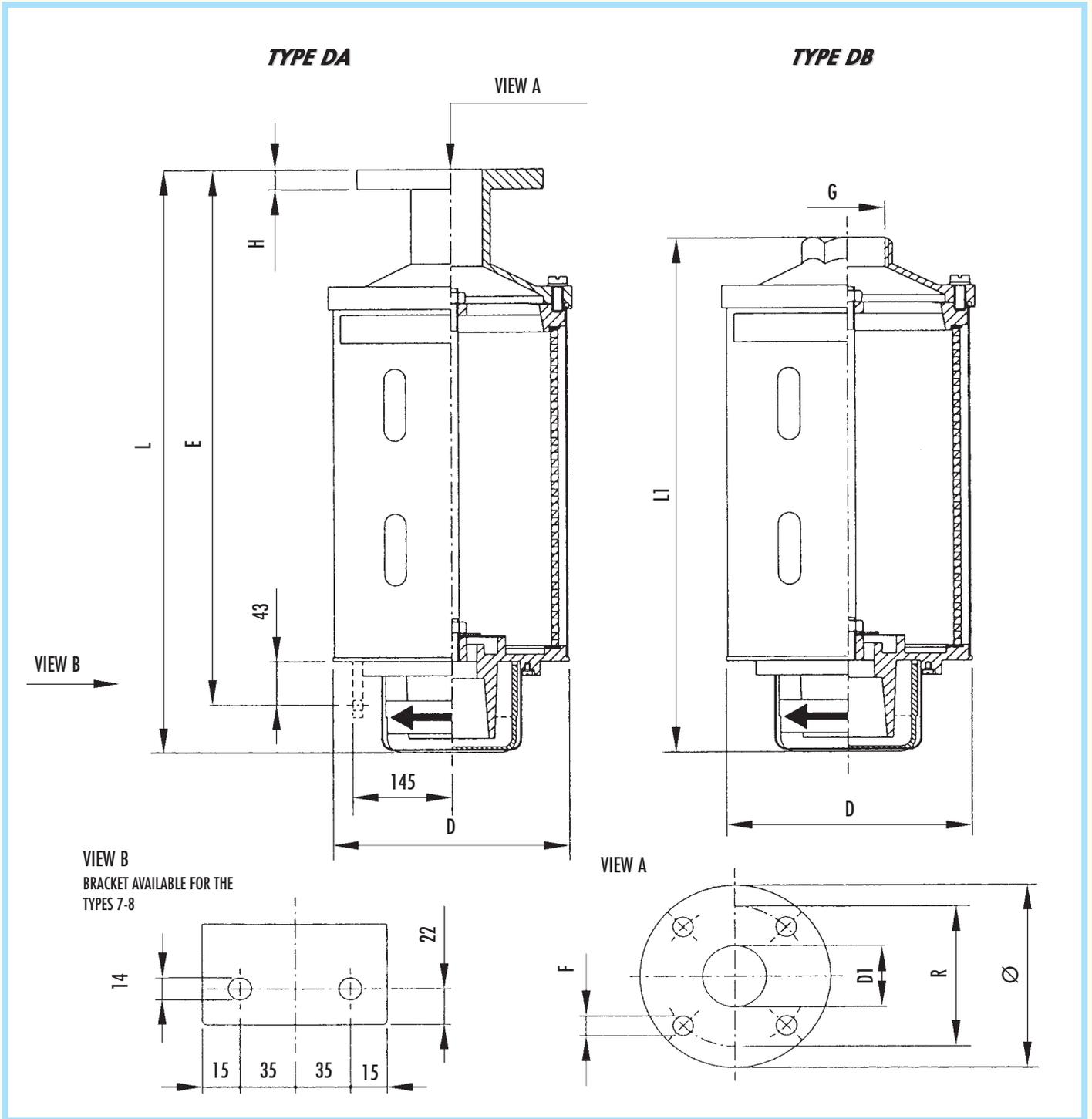
**HYDRAULIC DEHUMIDIFIERS WITH FLANGE  
ACCORDING TO EN 50216-5/A2**



**MECHANICAL DEHUMIDIFIER WITH FEMALE THREAD  
ACCORDING TO EN 50216-5/A2**

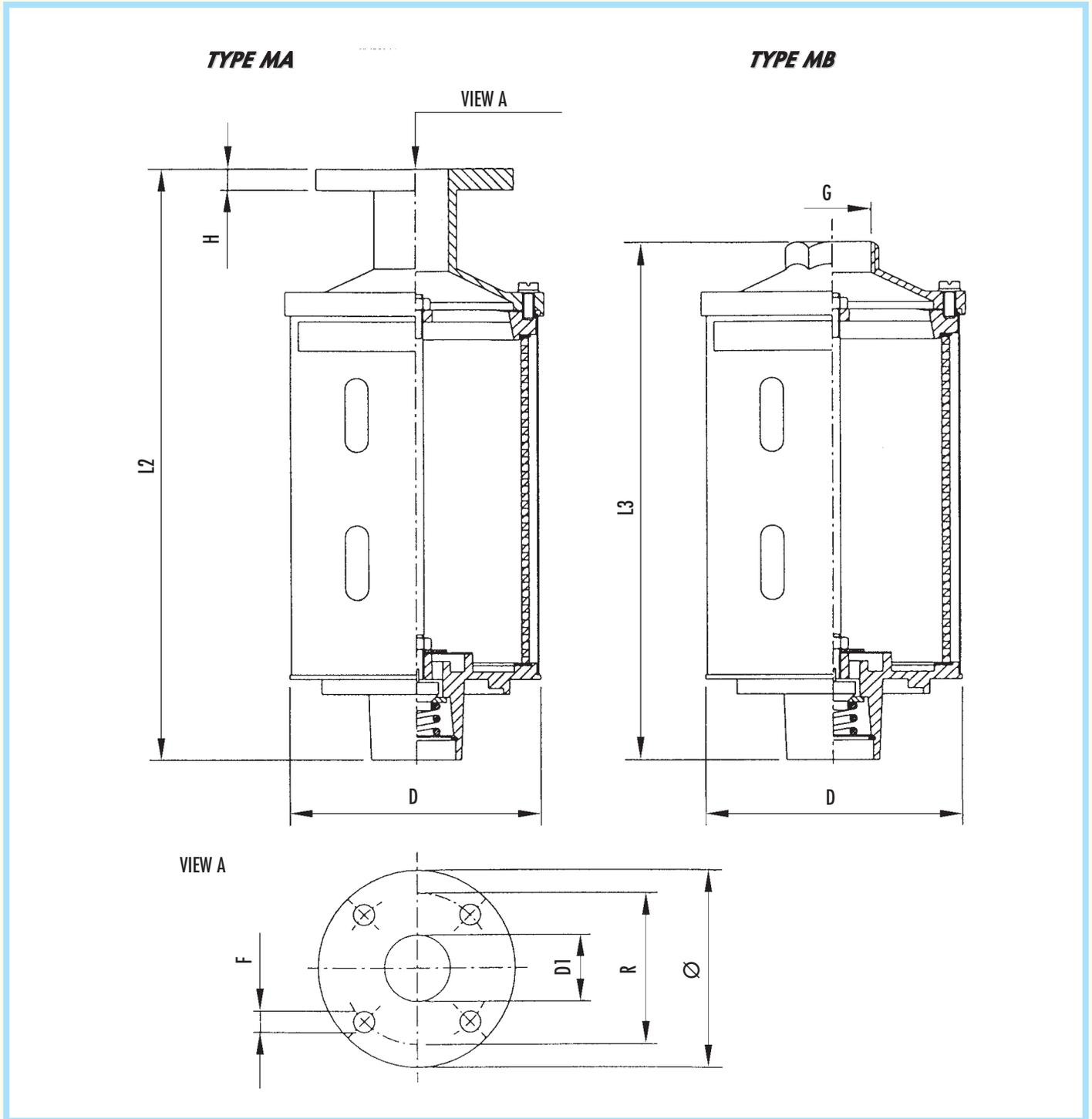


# SUMMARY TABLE FOR TYPE DA-DB DEHUMIDIFIERS



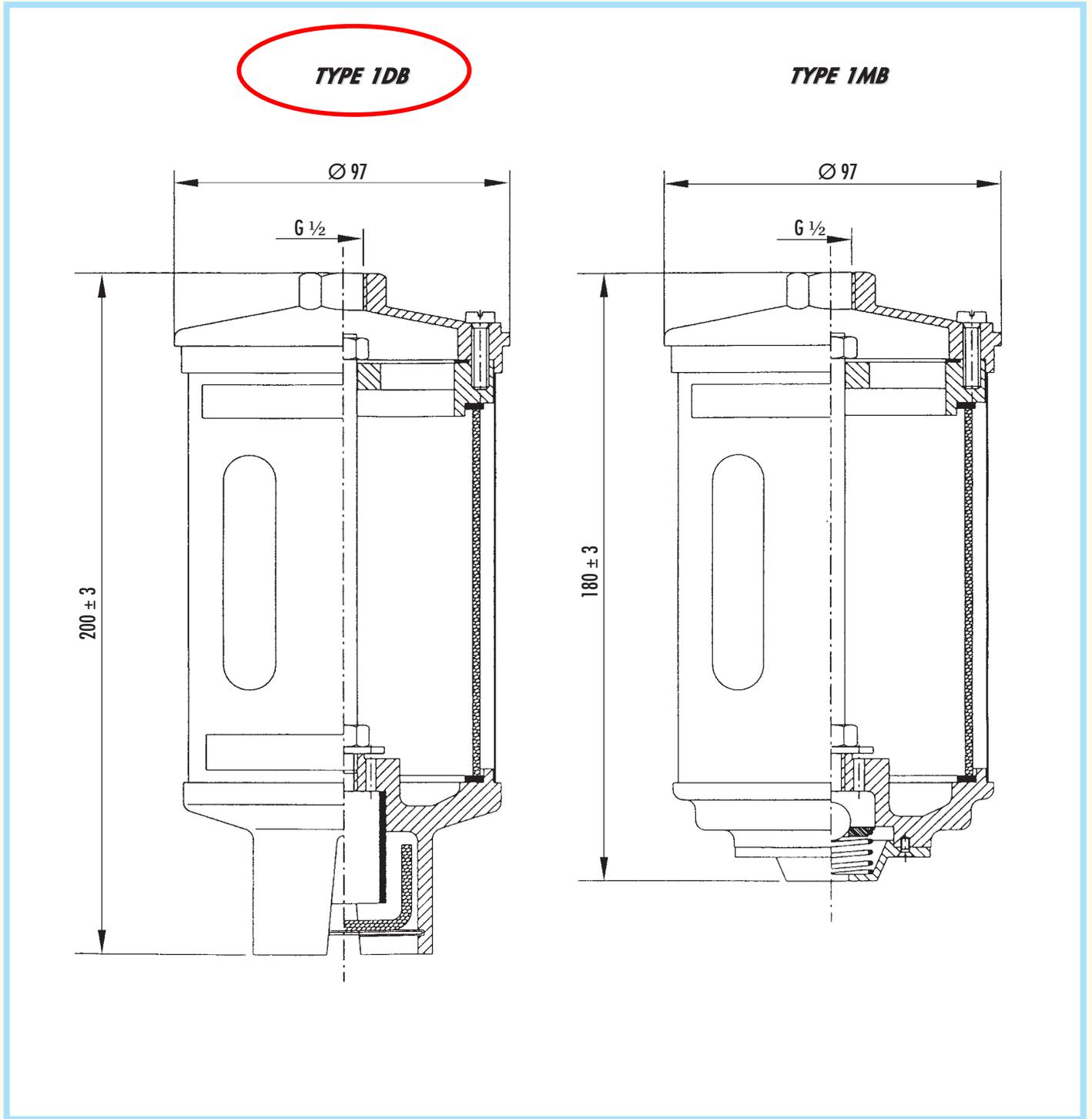
Type	L Toll. ± 5	L1 Toll. ± 5	D1	H	Ø	R	F	G UNI-ISO 228	E	D Toll. ± 5	Weight	
											Type DA kg	Type DB kg
2	265	210	30	12	100	75	12	G 1"	-	140	3	2.7
3	360	310	44	14	130	100	14	G 1 1/2"	-	175	5.4	4.95
4	610	560	44	14	130	100	14	G 1 1/2"	-	175	9.35	8.75
5	675	625	57	15	140	110	14	G 2"	-	220	16.7	16.5
6	895	845	57	15	140	110	14	G 2"	-	220	22.5	22.2
7	840	-	57	15	140	110	14	-	728	330	40,6	-
8	1225	-	57	15	140	110	14	-	1113	330	65,3	-

# SUMMARY TABLE FOR TYPE **MA-MB** DEHUMIDIFIERS



Type	L2 Toll. $\pm 5$	L3 Toll. $\pm 5$	D1	H	$\varnothing$	R	F	G UNI-ISO 228	D Toll. $\pm 5$	Weight	
										Type MA kg	Type MB kg
2	260	210	30	12	100	75	12	G 1"	140	2.7	2.5
3	350	300	44	14	130	100	14	G 1 1/2"	175	5.2	5
4	600	550	44	14	130	100	14	G 1 1/2"	175	8	7.8
5	660	615	57	15	140	110	14	G 2"	220	16.5	16.2
6	880	835	57	15	140	110	14	G 2"	220	22.5	22.2

# SUMMARY TABLE FOR TYPE 1 DB-MB DEHUMIDIFIERS



COD.	Type	SILICA GEL dm <sup>3</sup>	Weight kg
1EM01DB000	EM1DB	0.5	1.15
1EM01MB000	EM1MB	0.5	1.15
1EC01DB000	EC1DB	0.5	1.3
1EC01MB000	EC1MB	0.5	1.3

## AIR DEHUMIDIFIERS FOR TRANSFORMERS

Air dehumidifiers are transparent envelopes that contain salts of chemically pure silicon oxide (called silica gel) with coloured indicator.

The air sucked inside the transformer get through these envelopes, due to the thermal contraction of the oil mass.

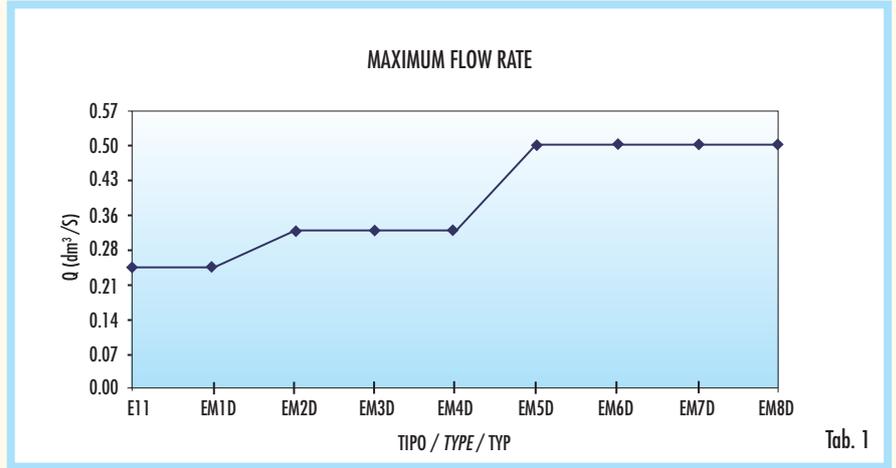
Silica gel absorbs the moisture and prevents oil contamination.

The colour variations are shown on the dehumidifier label.

At this point, the salt contained in the dehumidifier must be replaced with new salt or can be regenerated.

A special feature of silica gel is its capacity to absorb atmospheric humidity.

To choose the correct type of dehumidifier, refer to table 3 and 5.



Tab. 1

## TECHNICAL FEATURES

The upper (3) and lower (7) (see fig. 2) parts consist of compact, corrosion-proof aluminium alloy castings. The transparent tube (6) containing the salts (5) is made of polycarbonate that resists against transformer oils, UV light, slightly corrosive atmospheres and tropical and marine climates. On request this tube can be furnished in tempered glass that is particularly suited for desert-site installations (where sandstorms or strongly acid atmospheres may take place). This tube is protected by a stainless steel cylinder (4) against accidental blows, with opening to allow visual inspection of the salts.

A closing system in the lower part (7) prevents continued air contact with salts. This closing system can be mechanical (2) or hydraulic (7), and it allows air passage in both directions (inlet and outlet) only when there is a different pressure inside and outside the transformer. Pressure load loss values of the air when passing through dehumidifiers are as follows: 0,003 kg/cm<sup>2</sup> for inlet air, and 0,005 kg/cm<sup>2</sup> for outlet air.

Between the salts and the closing system there is a labyrinth system. This has the double purpose of diffusing inlet air uniformly, and to avoid that any salt dust may damage the closing system. Dehumidifiers in size from 1 up to 6 are available with mechanical and hydraulic closing whereas 7 and 8 are only available with hydraulic closing system.

The graph in fig. 1 shows the dehumidifier flow capacities in dm<sup>3</sup>/s (indicative).

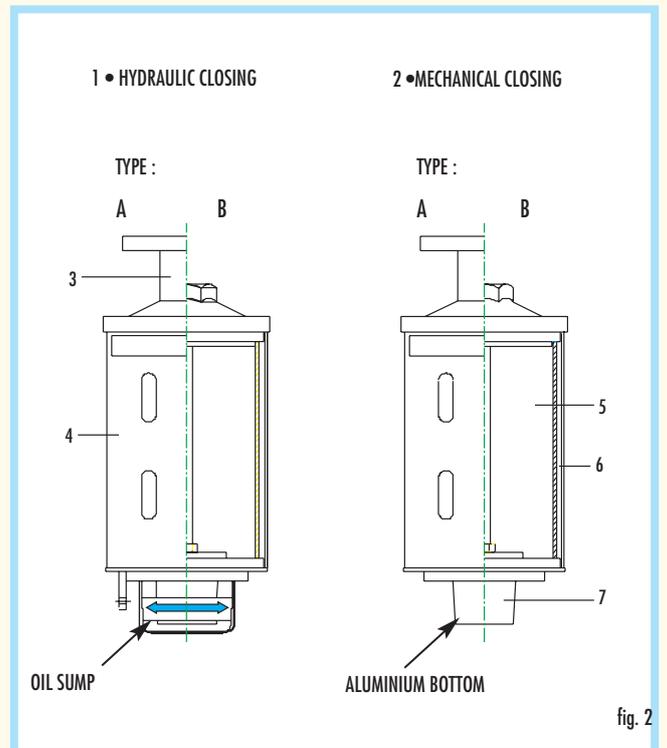


fig. 2

## ORDER CODE

Insert the appropriate letters to complete the code:

1 E 0 0 0 0 0 0

↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑

Type of assembling system: A = with flange  
B = with female thread assembling unit

Type of closing: D = hydraulic  
M = mechanical

Insert the number that identifies the size: from 1 to 8

Type of installation environment:

- desert climates or highly acid atmospheres: letter C  
- slightly corrosive atmospheres, tropical or marine climates: letter M  
(the letter M corresponds to the COMEM standard for normal installations).

## ASSEMBLING DIRECTIONS

The top of the units is made with two assembling systems:

- with PN 6 UNI 2276-67 flange, indicated by the letter A (version not available for sizes 1, E11);
- with female thread, indicated by the letter B (version not available for 7 and 8 sizes).

Table 4 shows the absorption characteristics of the salt which, together with the capacities given in table 1 and 5, make it possible to select the most suitable dehumidifier. When they are assembled, it is recommended to remove the plugs and the hydraulic seal must be activated pouring mineral oil in up to the mark on the jar (the oil level, once the sump is mounted on the bottom, must correspond with the mark in the sump). Install connection pipelines from the conservator to the dehumidifier with nominal air passage diameters that are the same as the size of the flange or threaded connection to avoid choking off the flow of inlet or outlet air).

## MAINTENANCE INSTRUCTIONS

Dessicant regeneration.

During its normal operation the salt starts changing colour due to its moisture absorption. It is possible to carry out a regeneration in order to dry back the salt. This operation can be easily made by heating the salt at a temperature between 120°C and 150°C, until its colour changes to the original one.

## PROTECTION OF OUTER SURFACES

(according to COMEM NT-03 technical standards)

Outer surfaces in aluminium alloy are first sandblasted and degreased and then covered with highly protective paint that protects against all harmful weather conditions, and that resists both high and low temperatures. External hardware is entirely made out of AISI 304 stainless steel.

## SPECIAL DESIGNS

We recommend, for desert installations or in the presence of sandstorms and highly acid atmospheres (with high concentrations of SO<sub>2</sub>), to use the tube with a tempered glass units and applying a special paint process consisting of a double coat of primer before proceeding with standard finish.

## IDENTIFICATION MARKS

The sign identifying the unit consists of:

- 1• Letter E = Air dehumidifier
- 2• Letter M = Polycarbonate tube and pocket (size 7 and 8 always have tempered pocket)
- Letter C = Tempered glass tube and polycarbonate pocket (tempered glass pocket is available on demand - size 7 and 8 always have tempered pocket)
- 3• Number = from 1 to 8 to identify the size
- 4• Letter D = Hydraulic closing
- Letter M = Mechanical closing
- 5• Letter A = Flange assembling system
- Letter B = Female thread assembling system

Example: **EM 3 DB** = Air dehumidifier with polycarbonate tube and sump - size 3 - hydraulic closing - female thread assembling system.

TAB. 3	Type	SILICA GEL dm <sup>3</sup>	Weight kg
	1	0,46	0,37
	2	0,95	0,76
	3	2,75	2,2
	4	6,50	5,2
	5	13,3	10,5
	6	19	15,2
	7	32	25,6
	8	58	46,3

TAB. 4	Equilibrium capacity for water vapour at 25 °C and given relative humidity	
	10% R.H.	6.4 w.t.%
	20% R.H.	10.7 w.t.%
	40% R.H.	22.7 w.t.%
	60% R.H.	33.3 w.t.%
	80% R.H.	36.3 w.t.%

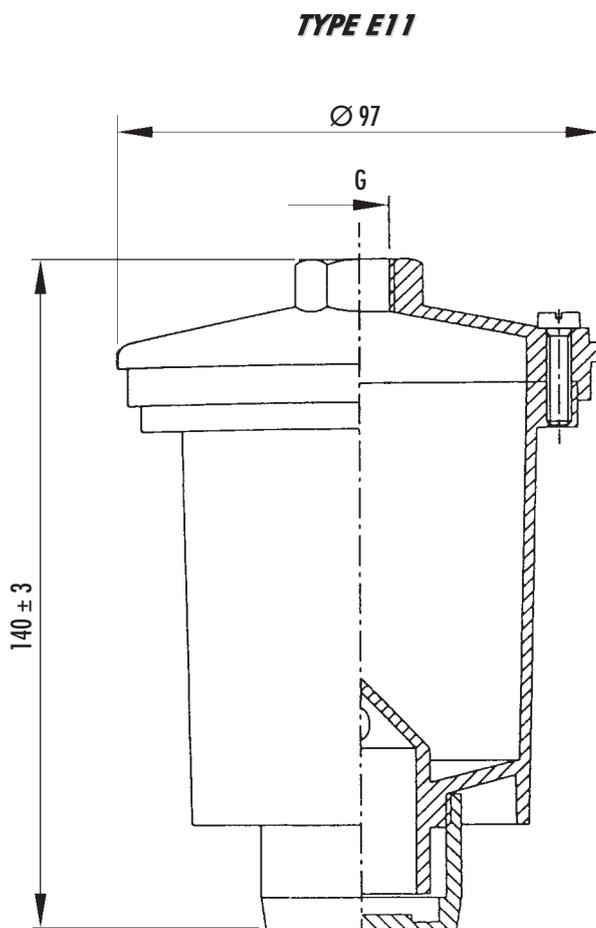
TAB. 5	Type	Oil quantity <sup>(a)</sup> Ton
	1-2	0÷8
	3-4	8÷20
	5-6	20÷60
	7-8	>60

<sup>(a)</sup> The oil quantities assigned to size classes are oriented on normal European ambient conditions as given in EN 50216-1, Table 1. The values are intended to give guidance to the user: The proper choice must take into consideration the real environmental conditions, the thermal cycles due to the service conditions of the transformer and the maintenance cycles.

## AIR DEHUMIDIFIERS TYPE **E11**



## SUMMARY TABLE FOR TYPE **E11** DEHUMIDIFIERS



COD.	Type	SILICA GEL dm <sup>3</sup>	G UNI-ISO 228	Weight kg
1EM1100000	E11	0.25	G 3/8"	0.40
1EM1100001	E11	0.25	G 1/2"	0.40

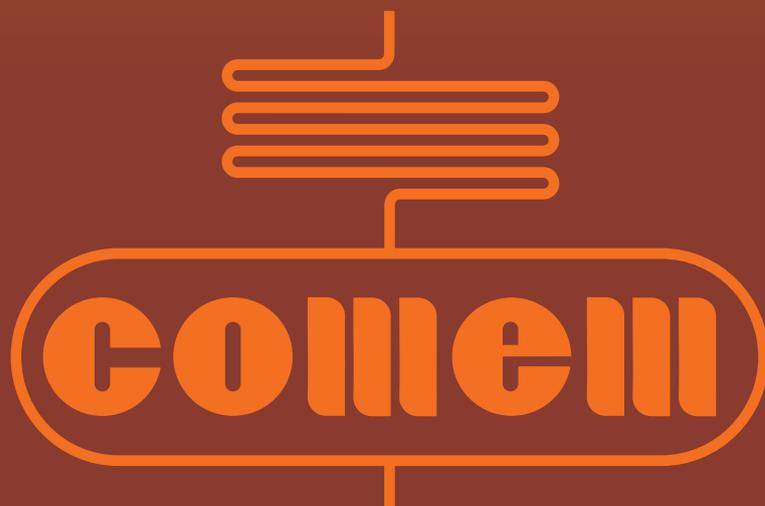
### AIR DEHUMIDIFIERS TYPE "E11"

These are small dehumidifiers particularly suited for distribution transformers. Type "E11" on distribution transformers with conservator type.

E11 is a dehumidifier with its top made of painted aluminium alloy while the rest of the container is made of cellulose triacetate (commercial name: Cellidor).

This can be provided with a 3/8" gas female thread assembling system or, on request, with a 1/2" gas connection.





**comem** - s.p.A

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