DENCOP LIGHTING spol. s r.o.

Materials and components for neon signs

TRANSFORMERS F.A.R.T. - RESIN BLOCK Argon/Mercury

The first transformers equipped according to the new European standards EN 61050 with power supply of 230 V or 240 V, 50Hz. IP 44.

Certification: IMQ Italy VDE Germany up to 10.000 V, CEBEC Belgium, ASE-SEV Switzerland up to 10.000 V but only 230 V, ETSA Australia for main type on 240 V.

INNOVATION = SAVING

f.a.r.t. S.p.A.

ORANGE LABEL: **WORKING CURRENT 18 mA max.**, short circuit current 23 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl. protection switcher PI
820118	1.000/18 Pe	RESIN BLOCK	0,12	14	66	76	247	2,40		850118
825118	1.500/18 Pe	RESIN BLOCK	0,18	20	66	76	247	2,40	2 µF	851518
820218	2.000/18 Pe	RESIN BLOCK	0,24	27	66	76	247	2,40	2 µF	850218
825218	2.500/18 Pe	RESIN BLOCK	0,30	34	66	76	247	2,40	4 µF	852518
822318	3.000/18 Pe	RESIN BLOCK	0,34	39	66	76	247	2,40	4 µF	850318
820418	4.000/18 Pe	RESIN BLOCK	0,44	49	73	76	247	3,00	4 µF	850418
820518	5.000/18 Pe	RESIN BLOCK	0,54	59	73	76	247	3,00	6,3 µF	850518
820618	6.000/18 Pe	RESIN BLOCK	0,60	70	84	76	247	3,70	6,3 µF	850618
820718	7.000/18 Pe	RESIN BLOCK	0,71	79	84	76	247	3,70	6,3 µF	850718
820818	8.000/18 Pe	RESIN BLOCK	0,80	89	84	76	247	3,80	8 µF	850818
820918	9.000/18 Pe	RESIN BLOCK	0,90	93	95	77	247	5,80	8 µF	850918
831018	10.000/18 Pe	2000 COMP.	0,90	112	87	92	270	4,81	8 µF	851018

RED LABEL: **WORKING CURRENT 25 mA max.**, short circuit current 32,5 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl. protection switcher PI
822125	1.000/25 Pe	RESIN BLOCK	0,17	21	66	76	247	2,40	2 µF	850125
825125	1.500/25 Pe	RESIN BLOCK	0,23	27	66	76	247	2,40	2 µF	851525
822225	2.000/25 Pe	RESIN BLOCK	0,33	38	66	76	247	2,40	4 µF	850225
825225	2.500/25 Pe	RESIN BLOCK	0,37	43	66	76	247	2,40	4 µF	852525
822325	3.000/25 Pe	RESIN BLOCK	0,45	51	73	76	247	3,00	4 µF	850325
822425	4.000/25 Pe	RESIN BLOCK	0,60	67	73	76	247	3,00	6,3 µF	850425
822525	5.000/25 Pe	RESIN BLOCK	0,70	79	84	76	247	3,80	6,3 µF	850525
822625	6.000/25 Pe	RESIN BLOCK	0,83	92	84	76	247	3,80	8 µF	850625
822725	7.000/25 Pe	2000 COMP.	0,86	108	87	92	270	4,85	8 µF	850725
822825	8.000/25 Pe	2000 COMP.	1,00	125	87	92	270	4,90	10 µF	850825
822925	9.000/25 Pe	2000 COMP.	1,10	140	92	92	270	5,38	10 µF	850925
831025	10.000/25 Pe	2000 COMP.	1,27	160	92	92	270	5,45	10 µF	851025

GREEN LABEL: **WORKING CURRENT 37 mA max.**, short circuit current 48 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl. protection switcher PI
822137	1.000/37 Pe	RESIN BLOCK	0,25	31	66	76	247	2,50	2 µF	850137
825137	1.500/37 Pe	RESIN BLOCK	0,35	40	66	76	247	2,50	4 µF	851537
822237	2.000/37 Pe	RESIN BLOCK	0,45	50	73	76	247	3,00	6,3 µF	850237
825237	2.500/37 Pe	RESIN BLOCK	0,54	60	73	76	247	3,00	6,3 µF	852537
822337	3.000/37 Pe	RESIN BLOCK	0,60	70	84	76	247	3,80	6,3 µF	850337
822437	4.000/37 Pe	RESIN BLOCK	0,83	88	84	76	247	3,80	10 µF	850437
822535	5.000/37 Pe	2000 COMP.	0,95	114	87	92	270	4,87	10 µF	850537
822635	6.000/37 Pe	2000 COMP.	1,10	133	92	92	270	5,40	10 µF	850637
822735	7.000/37 Pe	2000 COMP.	1,30	150	92	92	270	5,50	12,5 µF	850737
822835	8.000/37 Pe	2000 COMP.	1,45	179	99	92	270	6,20	14 µF	850837
822935	9.000/37 Pe	2000 COMP.	1,75	198	105	107	310	7,70	16 µF	850937
831035	10.000/37 Pe	RESIN 2000	1,90	209	105	107	310	7,80	20 µF	851037

TRANSFORMERS F.A.R.T. - RESIN BLOCK Argon/Mercury

BLUE LABEL: **WORKING CURRENT 50 mA max.**, short circuit current 65 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
820150	1.000/50 Pe	RESIN BLOCK	0,33	37	66	76	247	2,40	4 µF	850150
825150	1.500/50 Pe	RESIN BLOCK	0,45	49	73	76	247	3,00	6,3 µF	851550
820250	2.000/50 Pe	RESIN BLOCK	0,60	64	73	76	247	3,00	6,3 µF	850250
825250	2.500/50 Pe	RESIN BLOCK	0,71	74	84	76	247	3,80	8 µF	852550
820350	3.000/50 Pe	RESIN BLOCK	0,83	87	84	76	247	3,80	10 µF	850350
822450	4.000/50 Pe	2000 COMP.	1,00	117	87	92	270	4,95	10 µF	850450
822550	5.000/50 Pe	2000 COMP.	1,25	144	92	92	270	5,55	12,5 µF	850550
820650	6.000/50 Pe	2000 COMP.	1,45	174	99	92	270	6,15	16 µF	850650
820750	7.000/50 Pe	2000 COMP.	1,67	197	104	92	270	6,85	16 µF	850750
822850	8.000/50 Pe	2000 COMP.	2,06	223	116	107	310	9,40	20 µF	850850
822950	9.000/50 Pe	RESIN 2000	2,25	253	116	107	310	9,50	25 µF	850950
821050	10.000/50 Pe	RESIN 2000	2,50	272	116	107	310	9,60	25 µF	851050

YELLOW LABEL: **WORKING CURRENT 75 mA max.**, short circuit current 95,5 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
822175	1.000/75 Pe	RESIN BLOCK	0,48	51	73	76	247	3,00	6,3 µF	850175
822275	2.000/75 Pe	RESIN BLOCK	0,86	86	84	76	247	3,90	10 µF	850275
822375	3.000/75 Pe	2000 COMP.	1,12	127	92	92	270	5,42	12,5 µF	850375
822475	4.000/75 Pe	2000 COMP.	1,45	168	99	92	270	6,17	14 µF	850475
822575	5.000/75 Pe	2000 COMP.	1,80	198	112	92	270	7,75	20 µF	850575
822675	6.000/75 Pe	RESIN 2000	2,30	239	116	107	310	9,50	25 µF	850675
822775	7.000/75 Pe	RESIN 2000	2,70	262	116	107	310	9,60	30 µF	850775
822875	8.000/75 Pe	RESIN 2000	2,90	307	138	107	320	12,60	30 µF	850875
822975	9.000/75 Pe	RESIN 2000	3,35	318	122	140	362	14,40	35 µF	850975
831075	10.000/75 Pe	RESIN 2000	3,65	352	122	140	362	14,60	40 µF	851075

BLACK LABEL: **WORKING CURRENT 100 mA max.**, short circuit current 130 mA (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
830110	1.000/100 Pe	RESIN BLOCK	0,60	64	73	76	247	3,00	6,3 µF	850110
831210	1.250/100 Pe	RESIN BLOCK	0,71	75	84	76	247	3,80	8 µF	851210
831510	1.500/100 Pe	RESIN BLOCK	0,85	88	84	76	247	3,80	10 µF	851510
830210	2.000/100 Pe	RESIN BLOCK	1,10	110	95	77	247	4,80	12,5 µF	850210
832510	2.500/100 Pe	2000 COMP.	1,25	143	92	92	270	5,53	12,5 µF	852510
830310	3.000/100 Pe	2000 COMP.	1,45	165	99	92	270	6,15	14 µF	850310
830350	3.500/100 Pe	2000 COMP.	1,70	185	104	92	270	6,85	16 µF	853510
830410	4.000/100 Pe	2000 COMP.	1,90	217	112	92	270	7,80	20 µF	850410
830510	5.000/100 Pe	RESIN 2000	2,50	259	116	107	310	9,60	25 µF	850510
830610	6.000/100 Pe	RESIN 2000	2,90	310	138	107	320	12,60	30 µF	850610
830710	7.000/100 Pe	RESIN 2000	3,30	350	138	107	320	12,80	35 µF	850710
830810	8.000/100 Pe	RESIN 2000	3,80	360	122	140	362	15,00	40 µF	850810
830910	9.000/100 Pe	RESIN 2000	4,35	420	132	140	362	17,20	50 µF	850910
831100	10.000/100 Pe	RESIN 2000	4,80	458	132	140	362	17,40	50 µF	851010

GREY LABEL: **for SLIM-LINE - WORKING CURRENT 180 mA max.** (Icc = 1,3 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
831420	1.400/200 Pe	2000 COMP.	1,10	121	92	92	270	5,60	12,5 µF	851420
832120	2.100/200 Pe	2000 COMP.	1,70	175	104	92	270	6,85	20 µF	852120
832820	2.800/200 Pe	RESIN 2000	2,30	222	116	107	310	9,70	25 µF	852820
833520	3.500/200 Pe	RESIN 2000	3,00	272	138	107	320	12,70	30 µF	853520
834220	4.200/200 Pe	RESIN 2000	3,50	322	138	107	320	12,90	40 µF	854220

On stock: working current 18 mA, 25 mA, 37 mA, 50 mA, 200 mA.
Upon order: working current 75 mA, 100 mA.

Transformers MILLENIUM

Transformers „MILLENIUM“ are equipped (from production) with protection switchers, capacitors and waterproof bushings.

They are produced now in these values:

9 - 10 KV/25 mA
7 - 10 KV/37 mA
6 - 10 KV/50 mA
4 - 8 KV/75 mA
3 - 7 KV/100 mA

UPON ORDER

TRANSFORMERS F.A.R.T. - RESIN BLOCK Neon

Lately designed transformers with lowered short-circuit current.
Specialy usable for neon gas (red light).

ORANGE LABEL: **WORKING CURRENT 18 mA max.**, short circuit current 20 mA (Icc = 1,2 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
UPON ORDER	1.000/20 Pe	RESIN BLOCK	0,12	12	66	76	247	2,40		850120
	2.000/20 Pe	RESIN BLOCK	0,24	21	66	76	247	2,40	2 µF	850220
	3.000/20 Pe	RESIN BLOCK	0,35	36	66	76	247	2,40	4 µF	850320
	4.000/20 Pe	RESIN BLOCK	0,44	42	66	76	247	2,40	6,3 µF	850420
	5.000/20 Pe	RESIN BLOCK	0,54	45	73	76	247	3,00	6,3 µF	850520
	6.000/20 Pe	RESIN BLOCK	0,65	53	73	76	247	3,00	6,3 µF	850620
	7.000/20 Pe	RESIN BLOCK	0,63	66	84	76	247	3,80	6,3 µF	850720
	8.000/20 Pe	RESIN BLOCK	0,74	76	84	76	247	3,80	8 µF	850820
	9.000/20 Pe	RESIN BLOCK	0,80	86	95	77	247	4,80	8 µF	850920
	10.000/20 Pe	2000 COMP.	0,86	94	87	92	270	4,81	8 µF	851020

RED LABEL: **WORKING CURRENT 25 mA max.**, short circuit current 30 mA (Icc = 1,2 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
820130	1.000/30 Pe	RESIN BLOCK	0,18	17	66	76	247	2,40	2 µF	850130
820230	2.000/30 Pe	RESIN BLOCK	0,33	34	66	76	247	2,40	4 µF	850230
820330	3.000/30 Pe	RESIN BLOCK	0,44	45	73	76	247	3,00	6,3 µF	850330
822430	4.000/30 Pe	RESIN BLOCK	0,60	57	73	76	247	3,00	6,3 µF	850430
820530	5.000/30 Pe	RESIN BLOCK	0,71	71	84	76	247	3,70	8 µF	850530
820630	6.000/30 Pe	RESIN BLOCK	0,83	86	84	76	247	3,80	8 µF	850630
820730	7.000/30 Pe	2000 COMP.	0,86	97	87	92	270	4,85	10 µF	850730
820830	8.000/30 Pe	2000 COMP.	1,00	110	87	92	270	4,90	10 µF	850830
820930	9.000/30 Pe	2000 COMP.	1,12	124	92	92	270	5,38	10 µF	850930
821030	10.000/30 Pe	2000 COMP.	1,25	138	92	92	270	5,45	12,5 µF	851030

GREEN LABEL: **WORKING CURRENT 37 mA max.**, short circuit current 45 mA (Icc = 1,2 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
822145	1.000/45 Pe	RESIN BLOCK	0,24	27	66	76	247	2,40	2 µF	850145
822245	2.000/45 Pe	RESIN BLOCK	0,44	46	73	76	247	3,00	6,3 µF	850245
822345	3.000/45 Pe	RESIN BLOCK	0,65	64	84	76	247	3,70	8 µF	850345
822445	4.000/45 Pe	RESIN BLOCK	0,83	80	84	76	247	3,80	8 µF	850445
822545	5.000/45 Pe	2000 COMP.	0,94	101	87	92	270	4,80	10 µF	850545
822645	6.000/45 Pe	2000 COMP.	1,10	119	92	92	270	5,40	12,5 µF	850645
822745	7.000/45 Pe	2000 COMP.	1,28	129	92	92	270	5,50	12,5 µF	850745
822845	8.000/45 Pe	2000 COMP.	1,46	158	99	92	270	6,20	16 µF	850845
822945	9.000/45 Pe	RESIN 2000	1,75	176	105	107	310	7,70	20 µF	850945
831045	10.000/45 Pe	RESIN 2000	1,90	192	105	107	310	7,80	20 µF	851045

BLUE LABEL: **WORKING CURRENT 50 mA max.**, short circuit current 60 mA (Icc = 1,2 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
UPON ORDER	1.000/60 Pe	RESIN BLOCK	0,33	34	66	76	247	2,40	4 µF	852160
	2.000/60 Pe	RESIN BLOCK	0,60	56	73	76	247	3,00	8 µF	852260
	3.000/60 Pe	RESIN BLOCK	0,83	80	84	76	247	3,80	8 µF	852360
	4.000/60 Pe	2000 COMP.	1,00	102	87	92	270	4,95	10 µF	852460
	5.000/60 Pe	2000 COMP.	1,25	126	92	92	270	5,55	14 µF	852560
	6.000/60 Pe	2000 COMP.	1,45	150	99	92	270	6,15	16 µF	852660
	7.000/60 Pe	2000 COMP.	1,70	166	104	92	270	6,85	20 µF	852760
	8.000/60 Pe	RESIN 2000		225	116	107	310	9,40	20 µF	850860
	9.000/60 Pe	RESIN 2000		220	116	107	310	9,50	25 µF	850960
	10.000/60 Pe	RESIN 2000	2,50	249	116	107	310	9,60	25 µF	851060

BLACK LABEL: **WORKING CURRENT 100 mA max.**, short circuit current 120 mA (Icc = 1,2 x I working current)

	type (V/mA)	design	A (for 230V)	W	height	width	length	weight(kg)	capacitor	incl.pr.switcher PI
UPON ORDER	1.000/120 Pe	RESIN BLOCK	0,60	53	73	76	247	3,00	8 µF	850112
	2.000/120 Pe	RESIN BLOCK	1,05	100	95	77	247	4,80	12,5 µF	850212
	3.000/120 Pe	2000 COMP.			99	92	270	6,15	14 µF	850312
	4.000/120 Pe	2000 COMP.			112	92	270	7,80	20 µF	850412
	5.000/120 Pe	RESIN 2000	2,50	216	116	107	310	9,40	30 µF	850512
	6.000/120 Pe	RESIN 2000	2,90	263	138	107	320	12,40	30 µF	850612
	7.000/120 Pe	RESIN 2000			138	107	320	12,80		850712
	8.000/120 Pe	RESIN 2000			122	140	362	15,00		850812
	9.000/120 Pe	RESIN 2000	4,35	365	132	140	362	17,30	50 µF	850912
	10.000/120 Pe	RESIN 2000	4,80	393	132	140	362	17,50	50 µF	851012

ATTENTION: Transformers for neon have stated short-circuit current on label !

PROTECTION SWITCHERS F.A.R.T.

PROTEC

810107	PI 07 (switchs off only at current leakage) (pc)
810108	PI 08 (switchs off only at current leakage)
810110	PI 10 (switchs off only at current leakage)
810140	PI 40 (switchs off only at current leakage)

DUALPRO

811107	DP 07C (current leakage + open circuit) (pc)
811207	DP 07D (current leakage + open circuit)
811307	DP 07B (current leakage + open circuit)
811407	DP 07A (current leakage + open circuit)
812110	DP 10L (current leakage + open circuit)
812210	DP 10M (current leakage + open circuit)

810106	PPE (pc)
813107	DP PPE 07C (group)
813207	DP PPE 07D-10L (group)
813307	DP PPE 07B (group)
813407	DP PPE 07A (group)

Table of connection

Icc = 1.3 ... transformer suitable for blue mixture
Icc = 1.2 ... transformer suitable for neon mixture

PROTEC (switchs off only at ground fault)

Icc = 1,3	18 mA	25 mA	37 mA	50 mA	75 mA	100 mA	
Icc = 1,2	20 mA	30 mA	45 mA	60 mA	90 mA	120 mA	200 mA
1 000	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	
1 250						PROTEC 07	
1 400							PROTEC 07
1 500	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07		PROTEC 07	
2 000	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	
2 100							
2 500	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07		PROTEC 07	
2 800							
3 000	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07		
3 500							
4 000	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07			
4 200							
5 000	PROTEC 07	PROTEC 07	PROTEC 07	PROTEC 07			
6 000	PROTEC 07	PROTEC 07	PROTEC 07				
7 000	PROTEC 07	PROTEC 07					
7 500	PROTEC 07	PROTEC 07					
8 000	PROTEC 07	PROTEC 07					
9 000	PROTEC 07						
10 000	PROTEC 10						

PROTEC 08 is intended for all transformers in version COMPACT

DUALPRO (switchs off at ground fault and idle cycle)

Icc = 1,3	18 mA	25 mA	37 mA	50 mA	75 mA	100 mA	
Icc = 1,2	20 mA	30 mA	45 mA	60 mA	90 mA	120 mA	200 mA
1 000	DP07A	DP07A	DP07B	DP07B	DP07B	DP07C	
1 250						DP07C	
1 400							DP07D
1 500	DP07A	DP07B	DP07B	DP07B		DP07C	
2 000	DP07B	DP07B	DP07B	DP07C	DP07C	DP07D	
2 100							DP10L
2 500	DP07B	DP07B	DP07C	DP07C		DP07D	
2 800							DP10M
3 000	DP07B	DP07B	DP07C	DP07C	DP07D	DP10L	
3 500						DP10L	DP10M
4 000	DP07B	DP07C	DP07C	DP07D	DP10L	DP10M	
4 200							DP10M
5 000	DP07C	DP07C	DP07D	DP07D	DP10M	DP10M	
6 000	DP07C	DP07C	DP07D	DP10L	DP10M	DP10M	
7 000	DP07C	DP07D	DP10L	DP10L	DP10M	DP10M	
7 500	DP07C	DP07D	DP10L	DP10L	DP10M	DP10P	
8 000	DP07C	DP07D	DP10L	DP10M	DP10M	DP10P	
9 000	DP10L	DP10L	DP10L	DP10M	DP10P	DP10P	
10 000	DP10L	DP10L	DP10L	DP10M	DP10P	DP10P	

TRANSFORMERS F.A.R.T. - MINIBLOCK Argon/Mercury

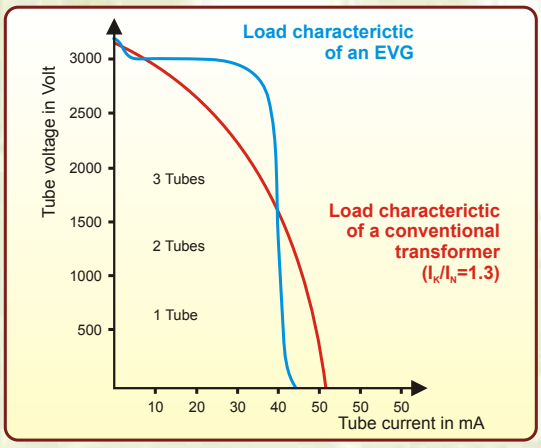
Transformers to interior with protection IP 20.

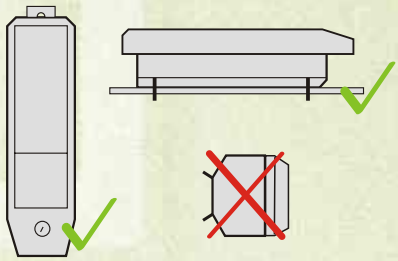
f.a.r.t. S.p.A.

1-5 KV/18, 25, 37, 50 mA ARGON/MERCURY
1-5 KV/20, 30, 45, 60 mA NEON

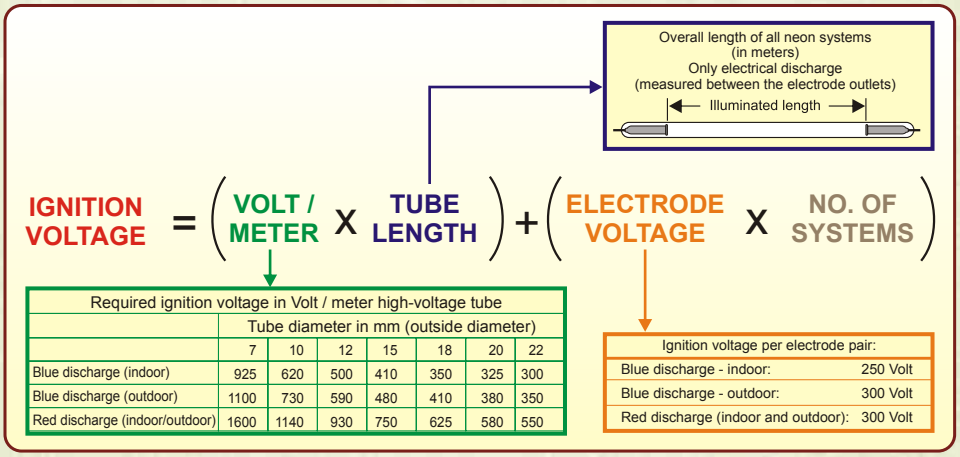
ASSEMBLY PRINCIPLES FOR TRANSFORMERS

Correct fixation of transformers





Calculation of ignition voltage of transformers



Required ignition voltage in Volt / meter high-voltage tube							
	Tube diameter in mm (outside diameter)						
	7	10	12	15	18	20	22
Blue discharge (indoor)	925	620	500	410	350	325	300
Blue discharge (outdoor)	1100	730	590	480	410	380	350
Red discharge (indoor/outdoor)	1600	1140	930	750	625	580	550

Ignition voltage per electrode pair:	
Blue discharge - indoor:	250 Volt
Blue discharge - outdoor:	300 Volt
Red discharge (indoor and outdoor):	300 Volt

Example of calculation:

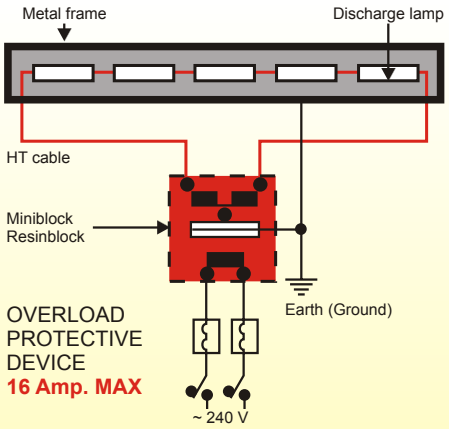
A neon sign consists of 5 systems with an overall illuminated length of 4.2 m at a tube diameter of 15 mm. The system should be installed indoors, and the tube current shall be 37 mA.

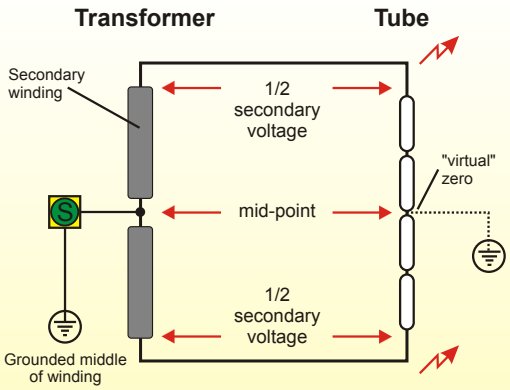
Calculation:

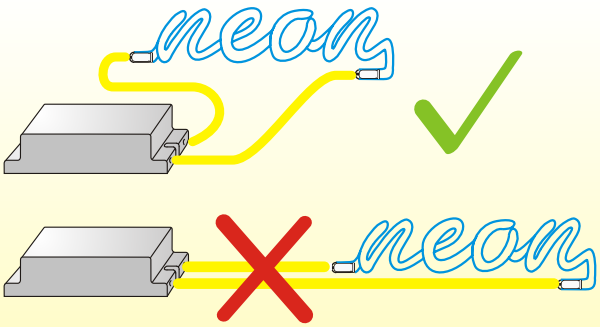
4,2 m	x	410 V/m	=	1722 V
5 systems	x	250 V/systems	=	1250 V
				2972 V

Result: A convertor with no load voltage of 3.000 Volt and a rated current of 37 mA is required.

ASSEMBLING PRINCIPLES FOR TRANSFORMERS

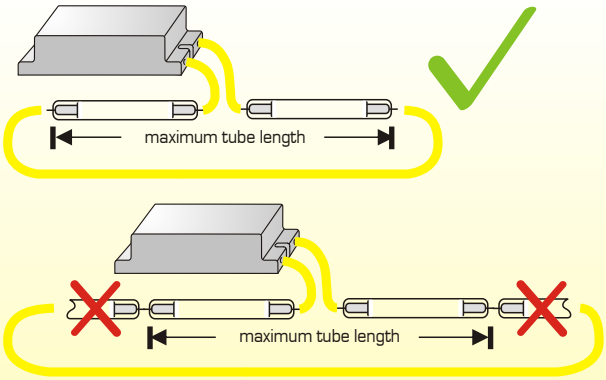






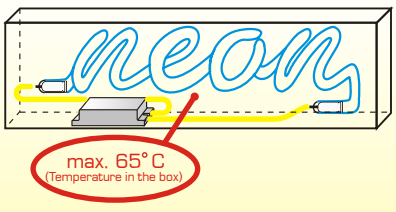
Correct:
Short cable connections between EVG and neon tube

Wrong:
Long or parallel cables from the convertor to the neon tube



Correct:
Do not exceed the maximum tube lengths.

Wrong:
The maximum value from the tube length table has been exceeded.

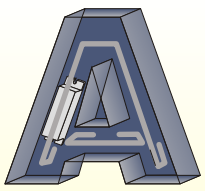


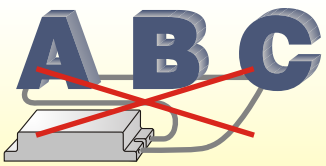
Correct:
Install the convertor so that no exessive heat will be generated.

Wrong:
Accumulation of heat due to a too small housing, extreme sunlight or overload of the neon tubes

electrode type	tube diameter	recommended tube current
20 mA	10	max. 20 mA
50 mA	12	20 - 30 mA
80 mA	14-15	20 - 40 mA
90 mA	15-20	40 - 50 mA
120 mA	18-22	50 - 80 mA

Correct:
Connect the tubes of only one letter to the EVG !





Wrong:
Never connect the tubes of several letters to the same convertor !