

COMBISTOP

*Electromagnetic
Technology*



KEB

COMBISTOP N

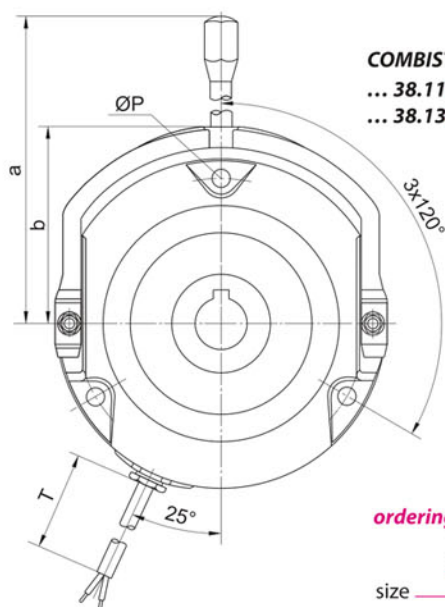
Combistop N the standard of dual-surface spring-applied brakes for dynamic application with continuous stress

COMBISTOP N: Rated torque in the range 5 ... 1000 Nm - designed for dynamic applications with regular brake applications at high speed!

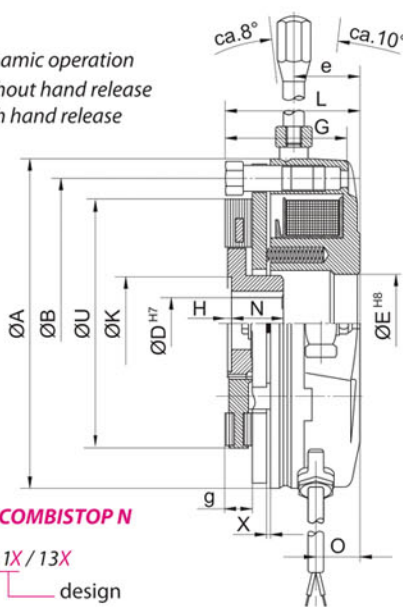
Range of application: e.g. brake motors, geared brake motors, wind energy plants, refrigerated warehouses

Accessories **COMBISTOP N:**

- friction disc
- flange
- friction disc with collar (up to size 06)
- dust protection ring
- micro switch
- terminal box



COMBISTOP N - dynamic operation
 ... 38.11X... without hand release
 ... 38.13X... with hand release



ordering example: **COMBISTOP N**

size — 06. 38. 11X/13X — design
 type
 V DC, ØD ?

Dimensions of COMBISTOP N

size	version „N“		A	B	H7 ØD max.	E	G	H	K	L	N	O	P	T	U	X	a	b	e	g	weight kg
	M ₂₀ ¹⁾ Nm	P ₂₀ W																			
02	5	25	85	72	15**	22	34.2	1-1.5	22	37.7	18	11.5	3x4.5	500	60	0.2	105.5	53.5	23	7.5	1
03	10	30	102	90	20	32	37.2	2-2.5	31	41.7	20	13	3x5.5	500	77	0.2	113	62	25.5	8	1.5
04	20	30	127	112	25	38	47.2	2-2.5	37	51.7	20	16.5	3x6.5	500	96	0.2	128	76	26.2	10.5	3
05	36	48	147	132	30	42	52.7	2.5-3	42	57.7	25	18.5	3x6.5	500	115	0.2	168	86	30.5	12	4.5
06	70	62	164	145	35**	47	59.8	2.5-3	42	68.8	30	20	3x9	500	115	0.3	176	96	39.5	12	7
07	100	65	190	170	45	62	68	3	57	75.5	30	21.5	3x9	750	149	0.3	225	115	41	14	10
08	150	75	218	196	60	78	80	4.5	57/76*	87.4	35	27	3x9	750	175	0.4	235	125	46.5	16	16
09	250	80	253	230	60	97	88.2	5	76	101.7	40	28	3x11	750	206	0.4	256	146	56	18	26
10	500	130	307	278	75	120	98.8	9.5	92	110.8	50	25	6x11	750	252	0.5	335	175	59	22	39
11	1000	180	363	325	90	140	122.1	-	-	134.5	100	30.5	6x11	1000	300	0.6	***	***	***	30	80

COMBITRON 91

Rectifiers for power supply of brakes and clutches. AC voltage supply max 720VAC for AC or DC side switching conform to the low voltage regulation 72/231 EWG of the European Union.



UL:	300 V	300 V	300 V	100 V
U_{in}	275 VAC +0%	500 VAC +0%	600 VAC +0%	720 VAC +0%
switching	AC/DC	AC/DC	AC	AC
U_{vmax}	450 V	900 V	1000 V	1600 V

half wave	02.91.010-CE07	04.91.010-CE07	05.91.010-CE09	06.91.010-CE09
$U_{out} = 0,45 * U_{in}$				
$I_N (45^{\circ}C) = 1,0A$				
$I_N (80^{\circ}C) = 0,5A$				

full wave	02.91.020-CE07	04.91.020-CE07		
$U_{out} = 0,9 * U_{in}$				
$I_N (45^{\circ}C) = 2,0A$				
$I_N (80^{\circ}C) = 1,0A$				

half wave with EMCp protection¹⁾	02.91.010-CEMV			
$U_{out} = 0,45 * U_{in}$				
$I_N (45^{\circ}C) = 1,0A$				
$I_N (80^{\circ}C) = 0,5A$				

U_{in}	maximum input voltage
U_{vmax}	maximum switch-off voltage
U_{out}	DC output voltage
AC	AC side switching
DC	DC side switching
$I_N (45^{\circ}C)$	nominal current at stated temperature

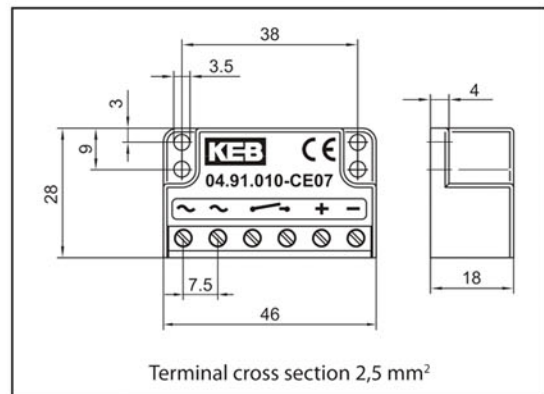
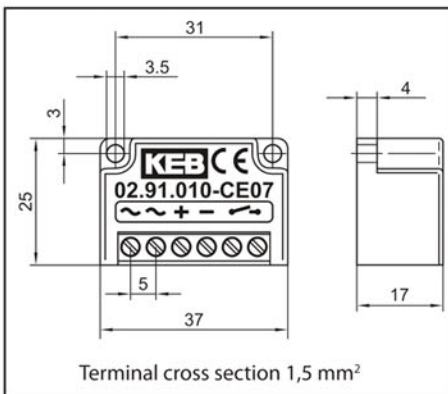
Characteristics

- compact design in a plastic housing
- possible installation into the motor terminal box
- protection against voltage peaks of the switching contacts
- maximal ambient temperature 80°C

¹⁾ with internal interference suppression according to EN 55011/class A

Nominal voltage magnet	Coil voltage tolerance	AC voltage supply	Type of rectifier
	$U_2 (U_{out})$	$U_1 (U_{in})$	
24 V DC			
105 V DC	93 - 118	230 V AC	half wave rectifier (02.91.010-CE07)
205 V DC	182 - 230	230 V AC	full wave rectifier (02.91.020-CE07)
180 V DC	162 - 198	400 V AC	half wave rectifier (04.91.010-CE07)

Drawing of COMBITRON 91



Switching Arrangements

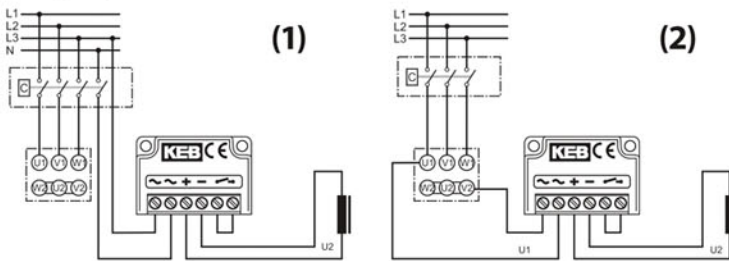
• AC-side Switching

When switching before the rectifier on the AC-side the magnetic field decays slowly. At this mode of switching the tripping delay is quite long. The AC-side switching requires no protective measurements for the coil and the switching contacts. On disconnection the rectifier diodes act as free-wheeling diodes.

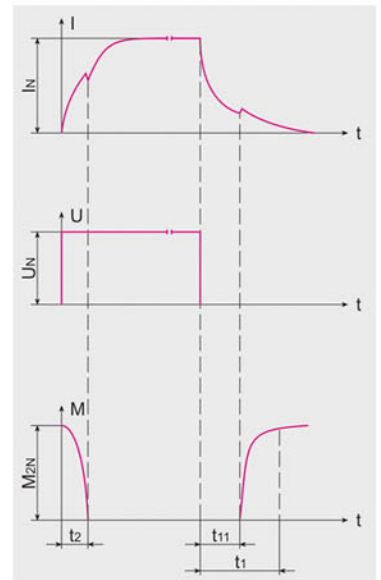
The switching times t_{11} for AC-side switching increase when the rectifier is connected directly in the motor terminal box (2). When the motor slows down a generative voltage is applied to the motor terminals. The wiring (2 and 3) is not permitted for frequency inverter operation.

For line lengths of more than 10 m between rectifier and brake at AC-side switching the regulations prescribe the use of a separate switch (1). In this case the supply voltage may not be tapped behind the motor contactor (2), if it is not possible to install an additional switch the use of special rectifiers becomes necessary.

Wiring diagram



Current-time / Voltage-time / Torque-time diagram

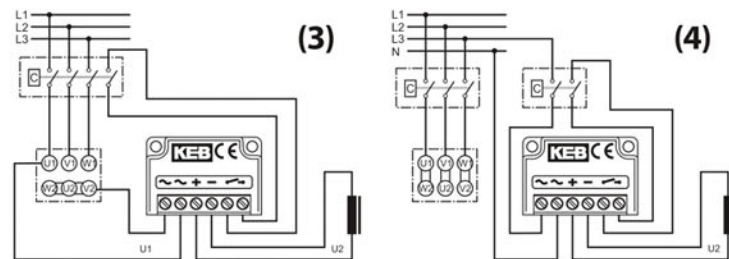


• DC-side Switching

The switching is done between the rectifier and the magnet. At this mode of switching the tripping delay is short, since the energy of the magnetic field is absorbed by the rectifier. The voltage peaks that occur at switching are limited to a harmless level for the rectifier.

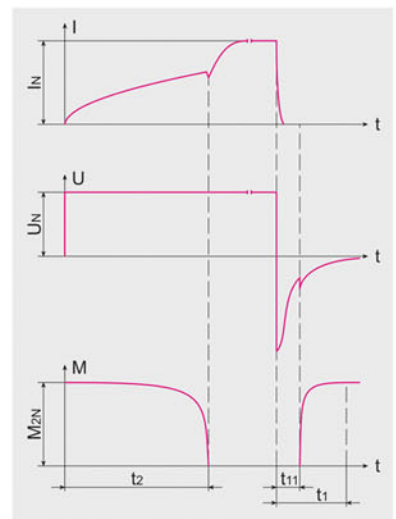
The maximal permissible switching frequency for the DC-side switching of rectifiers depends on the energy content of the magnet for COMBISTOP. Higher switching frequencies are achieved by the external connexion of a varistor in parallel to the brake or to the terminals + and - DC of the rectifier.

Wiring diagram



The simultaneous AC and DC-side switching, shown in example 4 guarantees short disconnecting times and reduces the contact erosion.

Current-time / Voltage-time / Torque-time diagram



t_1 = Engagement time
 t_{11} = Engagement delay time
 t_2 = Release time



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