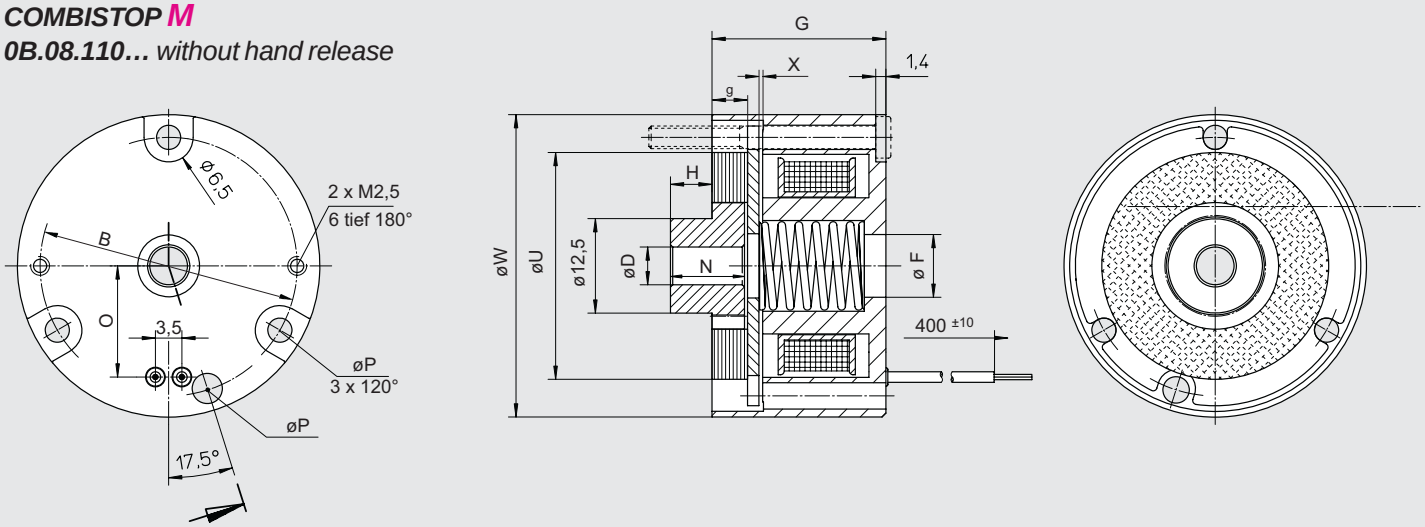
Electromagnetic Technology

COMBISTOP M

stands for MINI Brake, the small compact solution with torques up to 2 Nm. The brake is characterized by a particular compact construction, it is designed for small loads and holding functions without torque adjustment and adjustability and available with or without hand release.

Range of application: *e.g. general machine building, small-power motors, automation technique, apparatus engineering.*

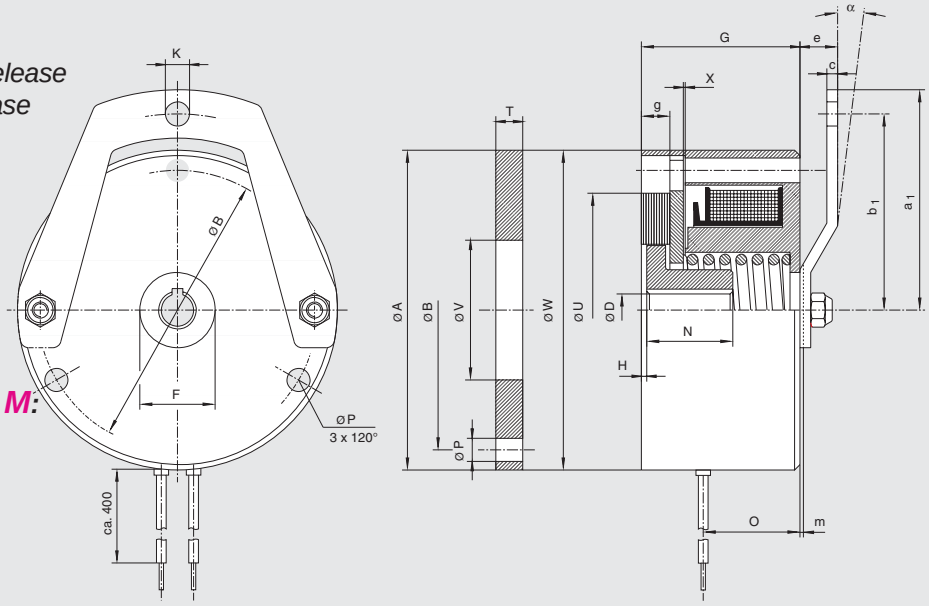
COMBISTOP M
0B.08.110… *without hand release*



size	M_{2N} [1] [Nm]	P_{20} [W]	A	B	D	F	G	H	K	N	O	P	T	U	V	W	X	a_1	b_1	c	e	g	m [3]	a °	weights [kg]
0B.08	0.3	6	40	34	5	8,3	23	5,5		9.8	14.7	3.5		30			0.1					4.7			0.15
00.08	0.5-2	11-15	59.5	52	10 [2]	14	29.5	0.5-1	4.5	16	18	4.3	5	43.5	26	60	0.15	41	36.5	2	7	5.5	0.8	7	0.4

All dimensions in mm keyway according to DIN 6885/1 according to VDE 0580, isolation class „B“ [1] static braking torque after completed run-in-phase [2] bore tolerance Ø 10 mm H7, otherwise H8
[3] Mounting dimension „m“ with attracted armature

COMBISTOP M
00.08.110… *without hand release*
00.08.130… *with hand release*



Accessories ***COMBISTOP M:***

- *flange*

back

COMBISTOP

COMBISTOP N and H

are the standard series of dual-surface spring-applied brakes in two designs:

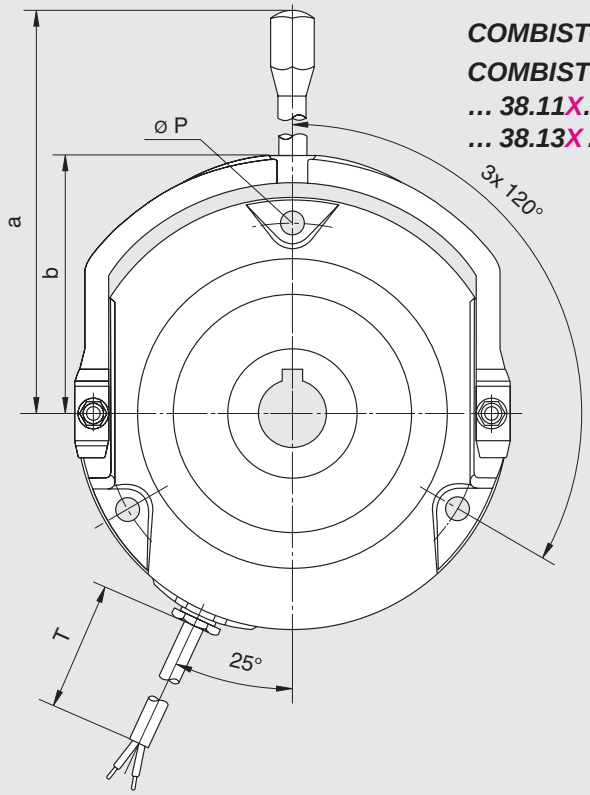
- *dynamic applications with continuous stress* — ***COMBISTOP N***
- *static applications with short-term stress* — ***COMBISTOP H***

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

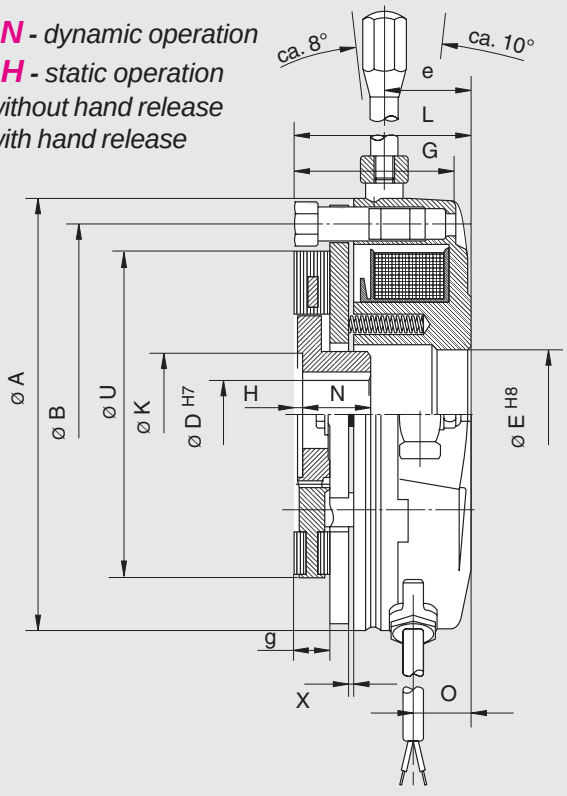
Range of application: *e.g. brake motors, geared brake motors*

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*
COMBISTOP H *- static operation*
… 38.11X… *without hand release*
… 38.13X … *with hand release*



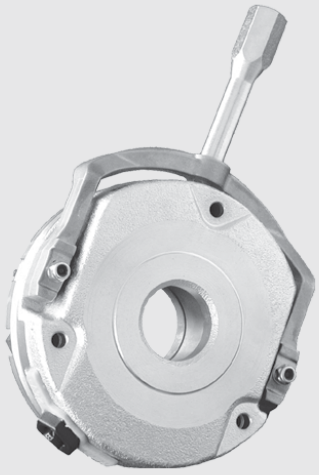
size	version "N"		version "H"																			
	M_{2N} Nm	P_{20} W	M_{2N} Nm	P_{20} W	A	B	H7 Ø D max.	E	G	H	K	L	N	O	P	T	U	X	a	b	e	g
02	5	25	7,5	25	85	72	15**	22	34.2	1-1.5	22	37.7	18	11.5	3x4,5	500	60	0.2	105.5	53.5	23	7.5
03	10	30	15	30	102	90	20	32	37.2	2-2.5	31	41.7	20	13	3x5,5	500	77	0.2	113	62	25.5	8
04	20	30	30	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
05	36	48	50	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
06	70	62	90	75	164	145	35**	47	59.8	2.5-3	42	68.8	30	20	3x9	500	115	0.3	176	96	39.5	12
07	100	65	150	90	190	170	45	62	68	3	57	75.5	30	21.5	3x9	750	149	0.3	225	115	41	14
08	150	75	225	90	218	196	60	78	80	4.5	57/76*	87.4	35	27	3x9	750	175	0.4	235	125	46.5	16
09	250	80	375	115	253	230	60	97	88.2	5	76	101.7	40	28	3x11	750	206	0.4	256	146	56	18
10	500	130	750	180	307	278	75	120	98.8	9,5	92	111.3	50	25	6x11	750	252	0.5	335	175	59	22
11	1000	180	1500	280	363	325	90	140	122.1	-	-	134.5	100	30.5	6x11	1000	300	0.6	***	***	***	30

All dimensions in mm keyway according to DIN 6885/1 Standard voltage 24 / 105 / 180 / 205 V DC according to VDE 0580, isolation class „B“
* hub bore > ø 45 ** keyway according to DIN 6885/3 *** mech. release with hexagon screw

COMBISTOP N and H

COMBISTOP H: *Rated torque in the range 7.5 ... 1500 Nm - designed for static applications, i.e. braking from low speeds and secure holding of loads!*

Range of application: *e.g. electronically controlled or regulated drives*



*Accessories **COMBISTOP H:***

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

back

COMBISTOP

COMBISTOP T

Two brakes designs which are always used whenever the application puts higher demands on the protection

COMBISTOP T: *the **IP 65**-brake with identical hole circle such as **COMBISTOP N** and **H**, optionally compl prepared for the attachment of tacho-generators (xx.28.GxT) or shaft sealing ring.*

Range of application: *e.g. general machine building, crane construction, ship gear, wind energy plants*

size	M_{2N} [Nm]	P_{20} [W]	øA$_1$	øA h8/H8	øB	C	øD max.	øE	øE$_1$	øF	øG	H	øK	L	M	M$_1$	N	O	øP	øP$_1$	øP$_2$	R	T	øV
02	4	20	102	98	72	34	15**	50	85	94.5	88	1-1.5	22	37.5	2.4	88x3	18	11	4.5	8	M4	0.5	6	37
03	8	25	123	118	90	37	20	64	102	116	109.5	2-2.5	31	41.1	2.4	110x3	20	12.5	5.6	10	M5	1.5	7	48
04	16	30	148	143	112	47	25	80	127	138.5	132	2-2.5	37	51.1	2.4	132x3	20	16	6.5	11	M6	1.5	9	60
05	32	40	170	165	132	51.5	30	102	147	158.5	152	2.5-3	42	56.1	2.4	152x3	25	17	6.5	11	M6	2	9	70
06	60	52	186	180	145	60	35**	115	164	176.5	170	2.5-3	42	66.5	2.4	170x3	30	20	9	15	M8	2	11	70
07	100	65	216	210	170	68	45	144	193	200.5	196	2.0	57	74	3.5	196x4	30	20	9	15	M8	3.0	12	75
08	150	75	246	240	196	77	60	160	217	235.5	225	4.5	57/76*	86.5	3.2	225x4	35	25	9	15	M8	3.5	14	95
09	250	75	280	240	230	86	60	180	254	272	260	5.0	76	102	3.5	260x5	40	33	11	18	M10	4.0	15	95

all dimensions in mm keyway according to DIN 6885/1 standard voltage 24 / 105 / 180 / 205 V DC according to VDE 0580, ISO-class „B" * hub bore > ø 45
** keyway according to DIN 6885/3

*Accessories **COMBISTOP T** :*

- *flange*
- *terminal box*
- *hand release*
- *shaft sealing ring*

COMBISTOP P : *completely closed version in protection class IP 66 with sealing of the mounting side and electrical connection, optionally with internally running connecting cable or attached terminal box.*

Range of application: *e.g. general machine building, crane construction, ship gear, wind energy plants*

size	M_{2N} [Nm]	P_{20} [W]	øA	øB	H7 øD max.	øE	øF	øG	H	øK	L	M	M$_1$	N	O	R	S	S$_1$	sw	T	T$_1$	øV	øV$_1$	W
02	4	20	108	100	15**	50	94	88	1-1.5	22	38	2.4	88x3	18	13.5	2	4.5	8	11	6	6	20	37	43
03	8	25	138	125	20	64	116.5	110	2-2.5	31	42.2	2.4	110x3	20	14	2	6.5	8	11	7	7	40	48	57.5
04	16	30	160	148	25	80	139	132	2-2.5	37	51.2	2.4	132x3	20	16	2	6.5	8	11	8.5	9	40	61	68
05	32	40	190	175	30	102	163	154	2.5-3	42	56.2	3.5	155x4	25	17	2	8.5	10	14	9	10	47	71	82
06	60	52	200	185	30	115	173	164	2.5-3	42	66.5	3.5	164x4	30	20	2	8.5	10	14	10	11	55	71	87
07	100	65	238	220	45	144	206	196	3	57	74	3.2	196x4	30	20	-	11	14	17	12	12	75	-	100
08	150	75	268	250	60	160	235	225	4.5	57/76*	86.5	3.2	225x4	35	27	-	11	14	17	14	14	95	-	114
09	250	75	312	290	60	180	272	260	5	76	102	4	260x5	40	33	-	14	14	17	15	15	95	-	131.5
10	400	130	362	340	75	230	322	310	9.5	92	110	4	310x5	50	35	-	14	16	19	15	15	120	-	158

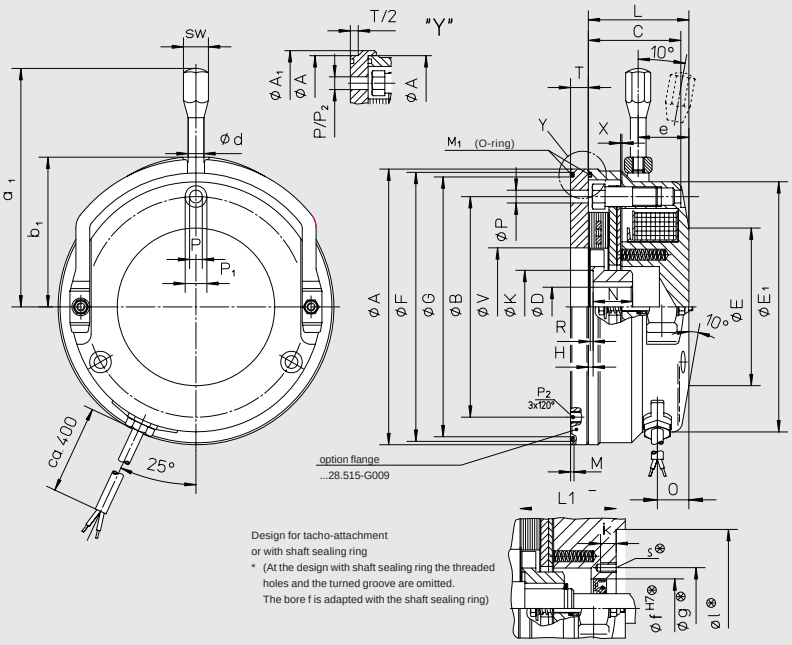
all dimensions in mm keyway according to DIN 6885/1 standard voltage 24 / 105 / 180 / 205 V DC according to VDE 0580, ISO-class „B" * hub bore > ø 45
** keyway according to DIN 6885/3

class.

etely closed on the backside or

X	a_1	b_1	ød	e	sw	øf	øg	s	k	L1	l
0.2	105.5	53.5	8	22.5	11	25	34	4xM4	10	36.5	44
0.2	114	62	8	24	11	32	40	4xM5	12	40.1	52
0.2	128	76	8	25.7	11	42	54	4xM5	12	50.1	66
0.2	166	86	10	28	14	50	64	4xM5	12	56.1	76
0.3	176	96	10	40	14	60	75	4xM5	12	65.5	88
0.3	225	115	14	40	17	68	85	4xM6	15	73	100
0.4	235	125	14	45	17	80	100	4xM6	15	86	120
0.5	256	145	14	40	17	80	110	4xM6	15	101	130

COMBISTOP T
...28.GXX...



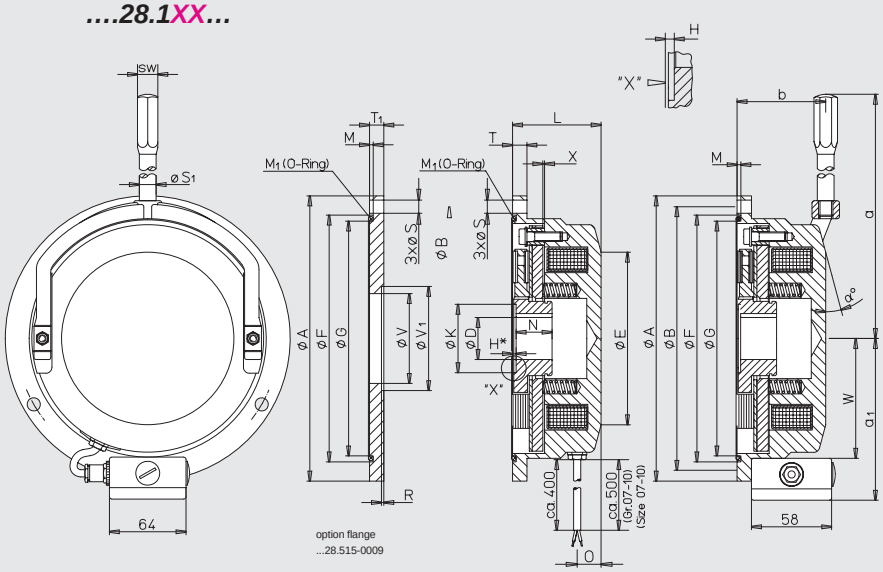
COMBISTOP P

*Accessories **COMBISTOP P**:*

- *flange*
- *terminal box*
- *hand release*

X	a	a_1	b	a
0.2	105.5	79	36	10°
0.2	113	93.5	40	10°
0.2	128	104	49	10°
0.2	166	118	55	10°
0.3	176	123	74	15°
0.3	225	136	74	15°
0.4	235	150	76,5	15°
0.5	256	168	92	15°
0.5	335	194	101	15°

COMBISTOP P
....28.1XX...



back

COMBISTOP

COMBISTOP D

*stands for **double safety** and covers a series of double brakes, which is prepared for tasks with redundant brake circuits.*
The mechanical construction with two completely independent fail-safe spring-applied brakes meets the requirements according to DIN 56921 and DIN 56925 (BGV C1).
The brakes are supplied ex factory, ready for attachment with preadjusted air gaps.

Extensive constructional measures reduce the switching and running noises to a minimum.

size	M_{2N} (Nm stat)	P_{20} (W)	A	B	C	1 & 2 D (max)	E	F	H	L_1	L_2	M	N1	N_2	R_1	T	X	a	b	e_1	e_2
02	2x5	2x25	85	72	22	15**	22	36	91.2	9.5	1.5	18	27.5	13	8	500	0.2	105.5	53.5	45.5	22.5
03	2x10	2x30	102	90	32	20	31	48	106	12.5	2.5	20	34	17	10	500	0.2	114	62	54	27
04	2x20	2x30	127	112	38	25	37	60	121	12.5	2.5	20	39	23	10	500	0.2	128	76	65	31
05	2x36	2x48	147	132	42	30	42	70	135	14	3	25	41	21	11	500	0.2	168	86	72	33
06	2x70	2x62	164	145	47	35**	42	70	157	16	3	30	45	20	13	500	0.3	176	96	81	36
07	2x100	2x65	190	170	62	45	57	75	180	18.5	3	30	59	37	15	750	0.3	225	115	94	45
08	2x150	2x75	218	196	78	60	57/76*	100	193	19.5	5	35	55	33	14.5	750	0.3	235	125	97	50
09	2x250	2x80	254	230	97	60	76	100	224	22	5.5	40	65	45	16.5	750	0.3	256	146	107	56
10	2x500	2x130	306	278	120	75	92	120	241	27	10	50	63	36	17	750	0.4	335	175	121	61
11	2x1000	2x180	upon request																		

all dimensions in mm keyway according to DIN 6885/1 standard voltage 24 / 105 / 180 / 205 V DC according to VDE 0580, ISO-class „B“ * hub bore > ø 45
** keyway according to DIN 6885/3

As special development for the elevator industry the dual-circuit spring-applied faill-safe brake fulfills the valid requirements of EN 81 respectively TRA 227.
The brake series, tested by the technical inspection authority, contains two mechanical braking circuits and offers compact dimensions and easy mounting.

Range of application: *e.g. passenger and freight elevators, theatre equipment*

*Accessory **COMBISTOP L** :*

- *friction disc*
- *flange*
- *micro switch*
- *terminal box*

size	2 x M_{2N} (Nm stat.)	P_{20} (W)	A	B	C	D^{H7}	E	F	G	H D8.230	H D8.630	L D8.230	L D8.630	N	O	X_n
05	25	60	154	146	132	30	42	65	147	3	3	53.8	54.3	25	19.5	0.3
07	50	65	203	188	170	40	57	65	190	3	3	74.3	74.3	30	20	0.4
09	125	75	268	230	230	60	76	101	254	5	5	98.7	98.7	40	20	0.5

size	a	b	d	e D8.230	e D8.630	l	m	P1* ISO 4762	P2* ISO 4762	P3* ISO 4762	2 x X_V D8.630	SW	a °		đ°
05	169	89	10	34.8	35.3	2.5	1.2	M6x65	M6x10	M5x40	0.15	14	10		28
07	225	115	14	33.5	33.5	2.5	1.3	M8x80	M8x12	M6x50	0.20	17	10		25
09	255	145	14	65.7	65.7	3.0	1.4	M10x100	M10x16	M8x75	0.25	17	10		25

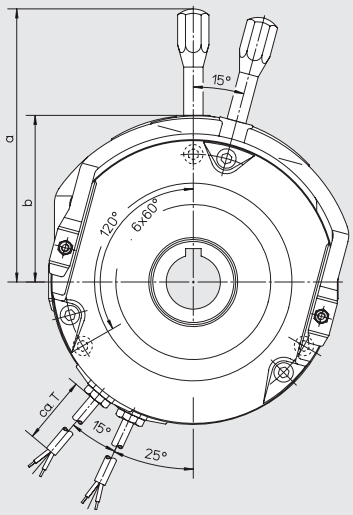
all dimensions in mm keyway according to DIN 6885/1 standard voltage 24 / 105 / 180 / 205 V DC according to VDE 0580, ISO-class „B“
* hub bore > ø 45 ** keyway according to DIN 6885/3 see dimension diagram D8.M01-4-0707

Range of application:
e.g. theatre equipment, passenger and freight elevators

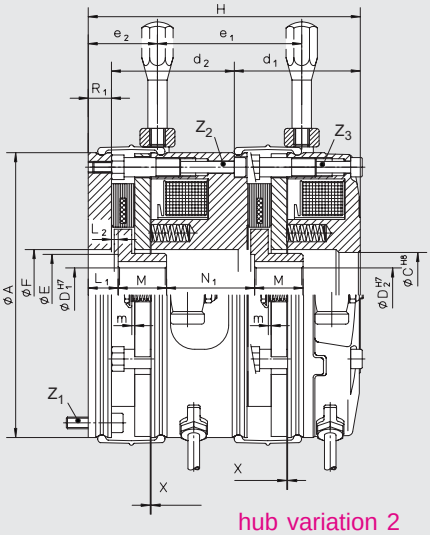
			Fastening Screws			
d_1	d_2	m	Z 1/2/3	Z_1	Z_2	Z_3
34.6	39	0.8	M4	3x8.8	3x8.8	3x8.8
37.7	47.5	1	M5	3x8.8	3x8.8	3x8.8
47.8	54.4	1.4	M6	3x8.8	3x8.8	3x8.8
53.4	55.9	1.5	M6	3x10.9	3x8.8	3x8.8
60.3	64.5	1.8	M8	3x10.9	3x8.8	3x8.8
68.8	77.6	2	M8	6x8.8	3x8.8	3x8.8
80.8	82.7	2	M8	6x10.9	3x10.9	3x10.9
89.4	95.4	2.3	M10	6x8.8	3x10.9	3x10.9
99.5	105	2.7	M10	6x10.9	6x8.8	3x8.8

see dimension diagram 38.003-3-0714

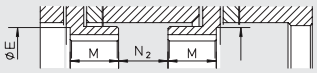
COMBISTOP D
…38.DDN…



hub variation 1



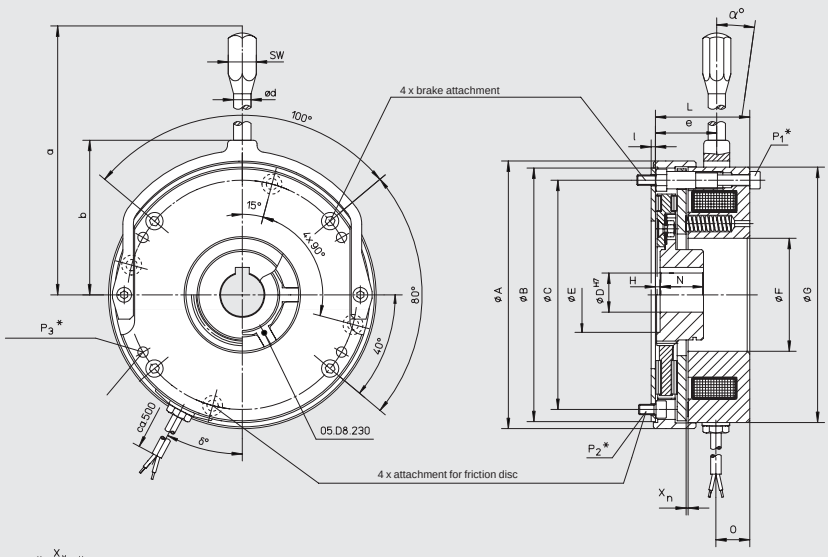
hub variation 2

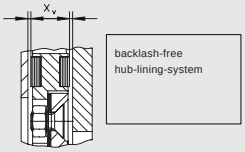


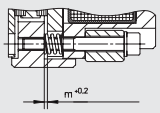
*Accessories **COMBISTOP D** :*

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

COMBISTOP L







COMBISTOP L
…D8.230… with hand release

COMBISTOP L
…D8.630… with hand release
with backlash-free hub-lining-system

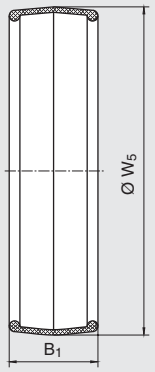
back

COMBISTOP

COMBISTOP Accessories

To adapt the spring-applied brakes to the various requirements of different applications an extensive program with a wide range of accessories is available.
Please contact us to discuss your requirements. To ensure correct selection we have on hand an experienced team of application engineers to assist you in all aspects of selection, enabling you to get the optimum solution.

Accessory - *dust protection ring (IP44) …08.550-0009*

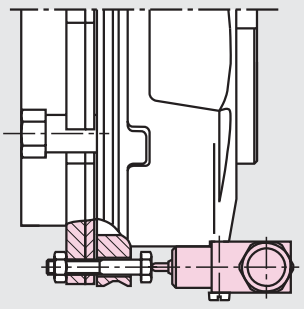


*To protect the friction surfaces against dust or dripping water different sizes of dust protection rings are available. When fitting the **COMBISTOP** with a dust protection ring the friction disc must be used on the motor side. This friction disc will be supplied nitrated and is especially designed to hold the dust protection ring.*

article number xx.08.550-0009										
size	02	03	04	05	06	07	08	09	10	11
B_1	22.5	25	33	33.5	38.5	45.5	49	54.5	63	upon request
W_5	86	103	129	149	167	195	222	259	310	

all dimensions in mm

Accessory - *micro switch*

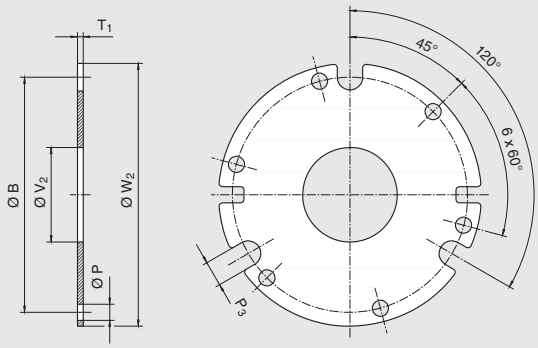


*The use of **COMBISTOP** can be fitted with a micro switch for monitoring the functions and the wear. The use of **COMBISTOP** with micro switch is particularly sensible for braking motors on hoisting gears that are operated with frequency inverters.*

Detailed mounting dimensions and technical data are provided in the dimension sheet 08.M01-3-0604.

Friction discs and ***flanges*** provide suitable counter-rotation surfaces for the spring applied brakes and are available in hardened and rustproof design.

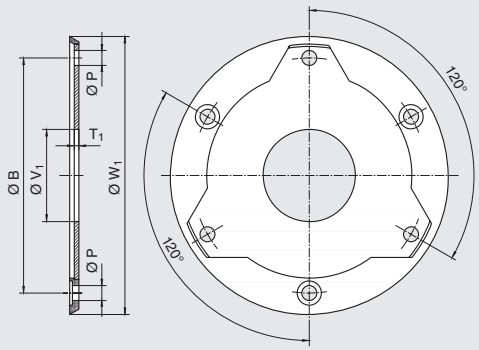
Accessory - friction discs …08.451…



article number xx.08.451-xxxx										
size	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
B	72	90	112	132	145	170	196	230	278	
P	4.5	5.5	6.5	6.5	9	9	9	11	11	
T_1	1.5	2	2	2	2.5	2.5	2.5	3	4	
P_3	7.5	8.5	10.5	18	18	18	14.5	17	17	
V_2	27	35.5	42.5	47	51	85	100	105	198	
W_2	82	98	123	146	157	188	214	250	302	
weight [kg]	0.05	0.10	0.15	0.22	0.30	0.40	0.64	0.93	1.50	

all dimensions in mm

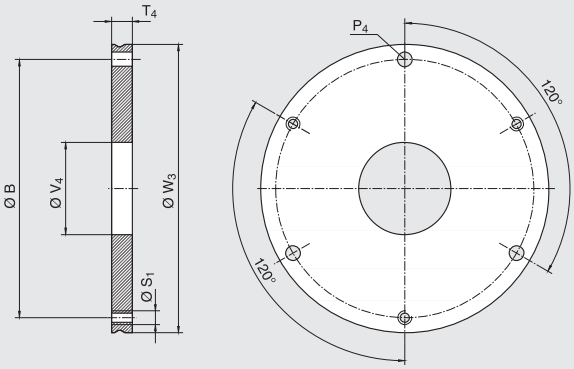
Accessory - friction discs with collar …08.515…



article number xx.08.515-xxxx										
size	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
B	72	90	112	132	145					
P	4.5	5.5	6.5	6.5	9					
T_1	1.5	2	2	2	2.5					
V_1	27	35.5	42.5	47	51					
W_1	88.5	106	132	153	171					
weight[kg]	0.05	0.10	0.15	0.25	0.35					

all dimensions in mm

Accessory - flange with collar for dust protection ring …08.510…



article number xx.38.510-0009											
size	**00**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**
B	52	72	90	112	132	145	170	196	230	278	325
P_4		3x4,3	3x5,3	3x6,4	3x6,4	3x9	3x9	3x9	3x11	6x11	8x11
S_1		3xM4	3xM5	3xM6	3xM6	3xM8	3xM8	3xM8	3xM10	6xM10	8xM10
T_4	5	6	7	9	9	11	11	11	11	12.5	20
V_4	26	20	30	40	45	55	65	75	90	120	160
W_3	60	83	100	125	145	163	190	217	254	306	363
weight [kg]	0.08	0.20	0.35	0.75	1	1.50	2.10	2.70	3.70	5.90	12.7

all dimensions in mm

back

COMBISTOP

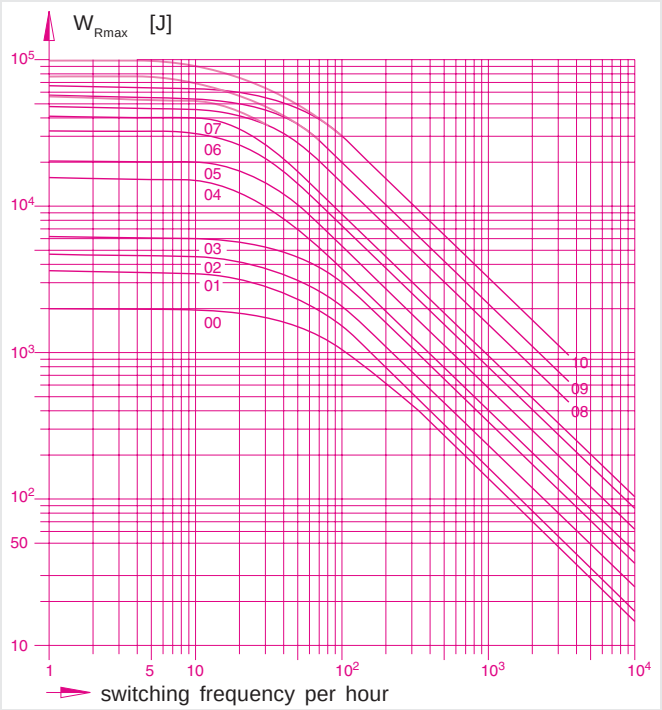
Technical data

max. speed

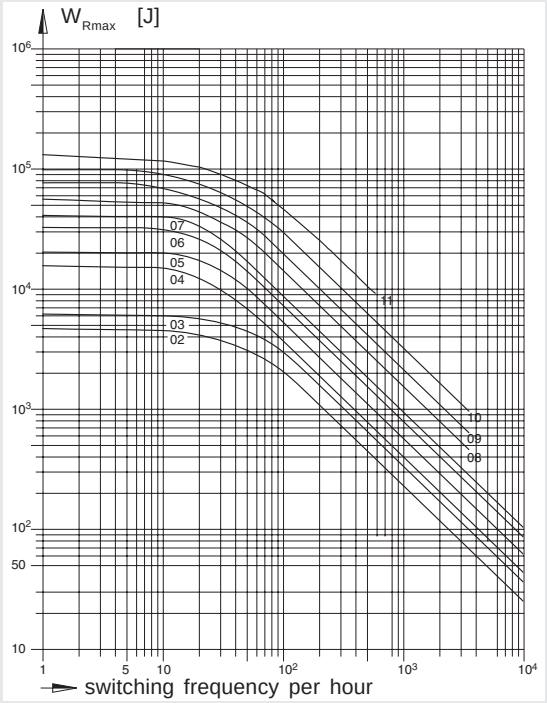
size	max. speed operating stop [rpm]	max. speed type M, P, T emergency stop [rpm]	max. speed type N, H, D emergency stop [rpm]	J type M, P, T [10^{-3} kgm²]	J type N, H, D [10^{-3} kgm²]	g_{min} [mm]	X_n [mm]
0B	3000	6000	0,001		-	-	-
02	3000	6000	6000	0.025	0.025	5.5	0.4
03	3000	6000	6000	0.072	0.072	6.5	0.5
04	3000	6000	6000	0.136	0.136	8	0.6
05	3000	5000	5000	0.35	0.35	10	0.6
06	3000	5000	5000	0.56	0.56	10	1
07	3000	4500	4500	1.57	1.57	10	1
08	3000	3500	3500	5.92	5.92	11	1.2
09	1500	3000	3000	7.38	7.38	12	1.2
10	1500	3000	3000	20.54	20.54	14	1.5
11	1500		2000		180.7	28	1.5

g_{min} *min. permissible lining thickness [mm]*

Friction switching frequency Type M, P, T



Friction switching frequency Type N, H, D



Red line for brake without friction disc

Permissible friction W_{Rmax} [J] dependention the switching frequency

Valid only for the stated revolutions per minute

*type **M, P, T, N, H, D** size 0B. … 07. - 3000 rpm*
*type **P, T, N, H, D** size 08. … 11. - 1500 rpm*

The values for W_{Rmax} are valid for standard brakes and a second friction surface of casting. Depending on application these values may be exceeded or remained under. Rustfree friction discs, or speeds higher than specified in the diagram, reduce the permissible friction work considerably. If the rated torque of the brake is reduced by turning the adjustment ring (optional) the permissible friction work increases.

COMBISTOP

Switching cycles and switching times

size	M_{2N} [Nm]	P_{20} [W]	switching cycles SC_1 [1/min]	switching cycles SC_2 [1/min]	t_2 [ms]	AC-switching t_{11}~ [ms]	AC-switching t_1~ [ms]	DC-switching t_{11}= [ms]	DC-switching t_1= [ms]
00	1	11	70	140	35	60	100	12	25
02	4/5	20	60	120	40	40/70	90/100	10	20
03	8/10	25	40 / 60	75	60/55	80/100	140/150	15	30
04	16/20	30	40 / 60	75	100/90	140/180	200	20/25	50
05	32/36	40	25	50	120/110	180/220	240	25	55
06	60	52	5	10	240	200/260	330	25	90
07	100	65	5	10	240/220	400	650	50/40	150/120
08	150	75	5	10	300/320	700	900	60/50	180
09	250	75	2	5	350	900	1200	60	220
10	400/500	130	1	3	350/400	1400	1800/2000	60/100	250/300
11	1000	180	1	2	750	3100	3500	450	1000

*variations COMBISTOP type **N**, **H**, **D***

***SC_1** applicable for rectifiers:*
02.91.010-CE07
02.91.020-CE07
02.91.010-CEMV

***SC_2** applicable for rectifiers:*
04.91.010-CE07
04.91.020-CE07
05.91.010-CE09
06.91.010-CE09

SC ***maximal permissible switching cycle***
at DC-side switching and max. operating temperature of 80 °C. *[min^{-1}]*

t_1 ***engaging time***
time from disconnecting the current to attaining the rated torque. *[ms]*

t_{11} ***engagement delay time***
time from disconnecting the current to the rise of the torque. *[ms]*

t_2 ***release time***
time from connecting the current to the beginning of torque decrease. *[ms]*

The designation of the switching times corresponds to DIN VDE 580.

Switching cycles COMBISTOP with POWERBOX

size	t_2 [ms]	max. air gap [mm]	switching cycles [1/min]
02	20	1.0	55
03	35	1.8	40
04	50	2.1	40
05	60	3.0	25
06	120	3.0	5
07	120	3.5	5
08	150	3.0	5
09	170	3.5	2
10*	180	4.5	1

* *Continuos operation only permissible at 45°C !*

230 V AC input voltage and 105 V DC coil
Switching times apply to rated air gap X
Switching cycles apply to DC-side switching

Power supply

***COMBISTOP** requires DC voltage for operation. For the power supply different half-wave or full-wave rectifiers of the series **COMBITRON 98** are available for DC or AC-side switching, which, depending on the type, are suitable for connection voltages up to 720 V AC rated voltage.*

*The switching characteristics and functions of the **COMBISTOP** can be optimized through the rapid switch rectifier **COMBITRON 98**.*

back

COMBIPERM

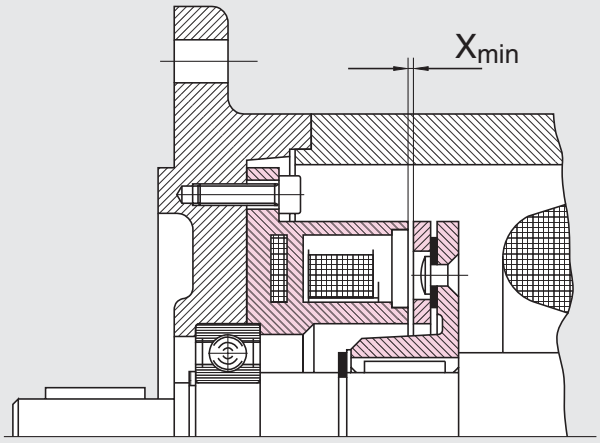
COMBIPERM *are electromagnetically released permanent magnet brakes and clutches for dry operation whose flux is generated by permanent magnets. This effect permits the connection of shafts in voltage free condition or the safe deceleration of masses.*

You find possible shaft diameters in the "Bore Table" on page 51.

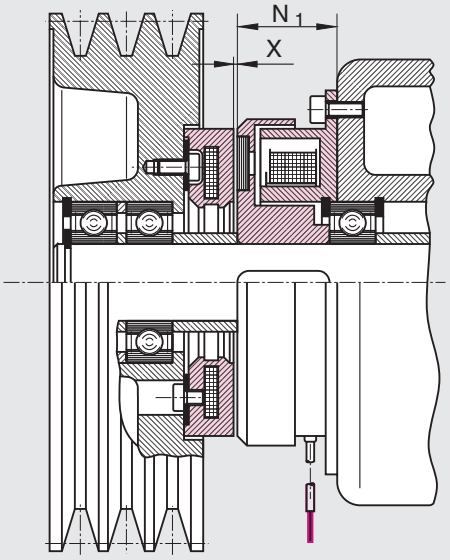
On request we adapt ***COMBIPERM*** *to your constructional and electrical requirements.*

Program Schedule

COMBIPERM ***quiescent-current operated brakes and clutches***



COMBIPERM P1



COMBIPERM 22

Technical data

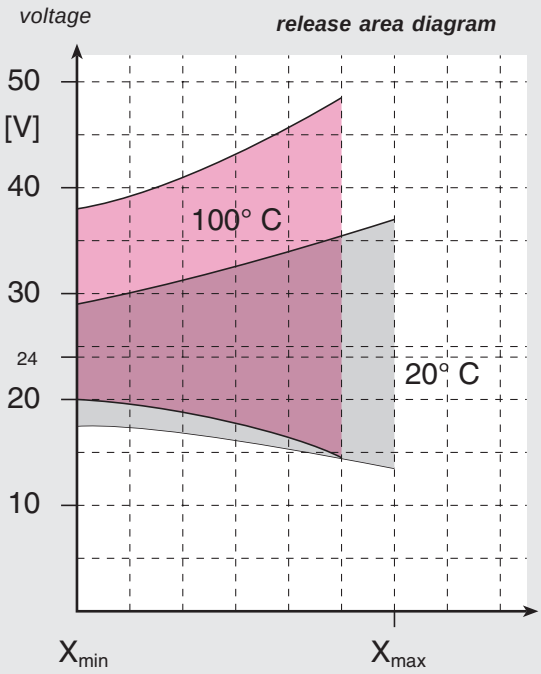
COMBIPERM P1 first choice for your servomotor

are powerful permanent magnet brakes with frictionally engaged, backlash-free effect. Rare earth magnets create a force field, which is cancelled by the counter-pole magnet coil (opened) in current-supplied condition and in combination with the membrane spring on the armature it ensures a residual torque-free separation independent of the installation position.

***COMBIPERM P1** are designed for rated operating voltage 24 V DC according to ISO class F (max. 155°C) and ensure a safe operation within a wide range of temperatures. On request versions in ISO class H (180°C) and other operating voltages are available.*

Range of application: *e.g. machine building, medical technology, industrial robots, servo-drives*

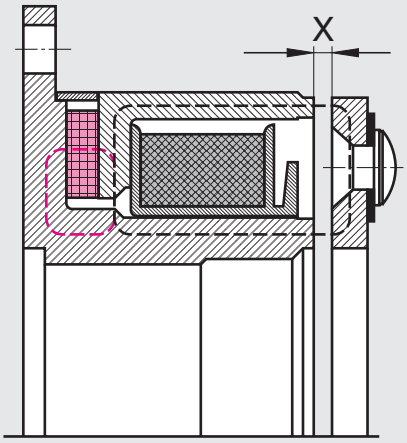
release area diagram



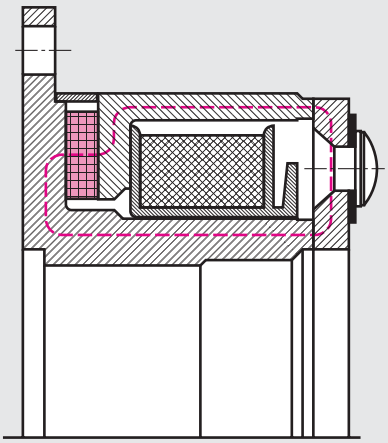
Please bear in mind

- *that magnetic materials within the direct surroundings can weaken the torque, reduce maximal air gaps and lead to a shifting of the release range.*
- *that the rated torques are achieved after a required running-in process (please see instruction manual).*
- *that the torques become less at higher speeds.*

COMBIPERM
- brake with current -



COMBIPERM
- brake without current -



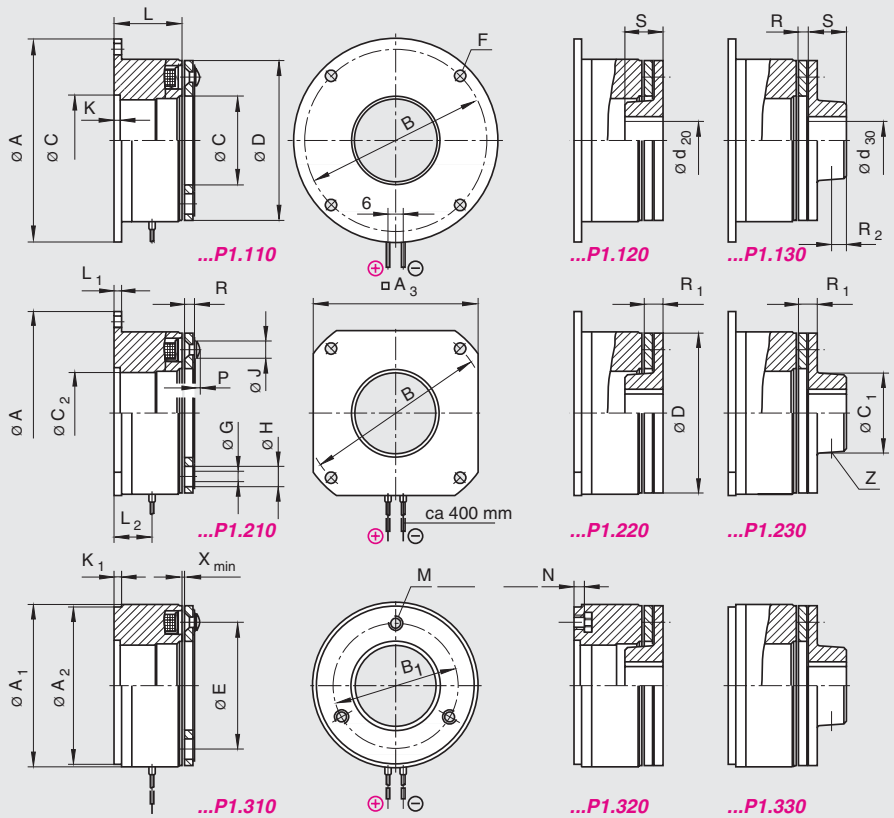
ordering example: COMBIPERM P1

06. P1. 130

size — type — design

back

COMBIPERM P1



size	M_{2N} [Nm]	P_{20} [W]	A_{h8}	A_1	$A_{2\,h8}$	A_3	B	B_1	C^{H8}	C_1	C_2	D	E	Ø F	G	H	J	K
01	0.4	8	39	28	28	32	33.5	22	11	13.5	-	28	19.5	3.4	2x2.1	5.3	4.5	-
02	1	10	45	32,2	32	34	38	23	12.5	16	-	32	23	3.4	3x2.6	6	5	-
03	2	11	54	41	40	42	47	28.5	19	22	-	40	30	3.4	3x3.1	6	5.5	-
05	4.5	12	65	51.5	50	53	58	40	26	24	24	50	38	3.4	3x3.1	6.5	5.5	2
06	9	18	80	64	63	66	72	49	35	32	32	63	50	4.5	3x4.1	10	8	2
07	18	24	100	80.8	80	83	90	63	42	38	38	80	60	5.5	3x4.1	11	8	2
08	36	26	125	101	100	103	112	78	52	48	48.5	100	76	6.5	3x5.1	11.5	10	2.5
09	72	40	150	126	125	128	137	106	62	57	58	125	95	6.5	3x6.1	15	11.5	3.5
10	145	50	190	161	160	163	175	135	80	71	75	160	120	9	3x8.1	21	14.5	3.5

size	K_1	L	L_1	L_2	M	N	P	R	R_1	R_2	S	d_{20}^{H7}	d_{30}^{H7}		d_{30}^{H7}	X_{min}	$X_{max}^{20°}$	Z
01	3	19.5	2	10.5	2xM3	3	1	2.25	4.25	2.7	7	6	6		8	0.15	0.3	1xM3
02	2	21.5	2	10.5	3xM3	3	1.3	2.1	4.1	4	10	8	8		10	0.15	0.3	1xM3
03	2	22.5	2	12	3xM3	3	1.5	2.6	5.2	5	12	10	12		15	0.15	0.4	1xM4
05	2	28.5	2	14	3xM3	3	1.5	3	6	5	12	15	15	*upon request**	19	0.2	0.5	1xM5
06	3	26.8	3	15	3xM4	4	2	3.9	7.4	6	15	18	18		25	0.3	0.65	1xM6
07	3	29.9	3	16.5	3xM4	5	2	4.5	8.5	8	20	22	22		30	0.3	0.8	1xM6
08	4	33.9	4	19.5	3xM5	6.2	2.5	6.2	11.2	10	25	30	30		38	0.35	0.9	1xM8
09	5	37.8	5	23	3xM6	7	3	7.3	13.3	12	30	40	40		50	0.4	1.0	2xM10
10	6	42.6	6	24	3xM8	9.5	4	9.4	16.4	15	38	50	50		65	0.5	1.2	2xM10

all dimensions in mm keyway to DIN 6885/1-P9 standard voltage 24 V DC (release range + 6 % / - 10 %) according to VDE 0580, isolation class B" hub DIN 6885/1

COMBIPERM

back

COMBIPERM P22

COMBIPERM P22 *are permanent magnet* ***clutches****, which transmit in currentless condition frictionally engaged torque. The magnetic circle is optimized by the arrangement of the permanent magnets in the armature, thus permitting the transmission of high torques on small constructional spaces. The opening of the friction-type connection takes place by the antipole connection of the electromagnetic circuit, thereby neutralizing the force action of the permanent magnets*

Range of application: *e.g. robot technique, medical equipment*

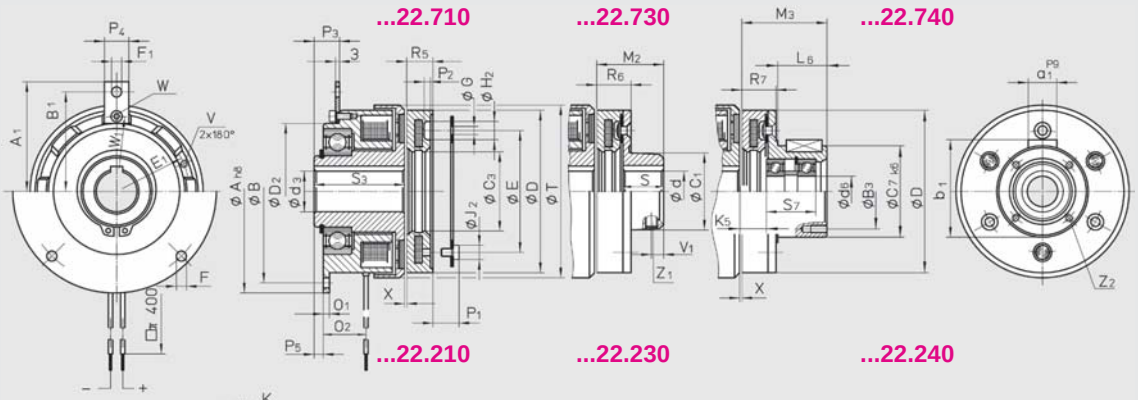
size	M_{2N} [Nm]	P_{20} [W]	a_1	A h8	A_1	b_1	B	B_1	B_3	Ø C_3	C_1	C_7 k6	C H8	C_2	d max	d_1 max	d_3 max	d_6	D	D_2	E
06	6	15	10	80	-	40.3	72	-	-	32	32	38	35	36.0	18	20	17	12	63	-	50
07	12	20	14	100	-	47.0	90	-	37	39	38	45	42	43.5	22	25	22	15	80	-	60
08	24	28	16	125	62.5	57.3	112	56.0	47	48	48	55	52	53.8	30	30	30	20	100	85	76
09	50	35	18	150	75.0	66.2	137	68.5	52	62	58	64	62	63.8	35	35	35	25	125	95	95
10	120	50	20	190	95.0	77.6	175	87.5	62	80	73	75	80	82.1	45	50	50	30	160	126	120

size	E_1	ØF	$ØF_1$	ØG	$ØH_2$	J_2	K	K_1	K_5	N_1	O	O_1	O_2	N_2	M_3	L_6	P_1	P_2	P_3	P_4	P_5
06	-	4x4.5	-	3x4.1	3x8	3x7.0	3.5	1.6	12.2	24.0	6	3	19.0	27.0	36	20	3.3	3.9	-	-	4.0
07	-	4x5.5	-	3x4.1	3x8	3x7.0	4.25	1.85	13.5	26.5	7	3	21.5	33.5	43	25	3.3	3.9	-	-	4.5
08	45.75	4x6.6	6.5	3x5.1	3x10	3x8.5	5.0	2.15	16.0	30.0	8	4	24.0	40.5	52	30	4.0	4.7	16.2	12	5.5
09	55.0	4x6.6	6.5	3x6.1	3x11	3x10.0	5.5	2.15	20.0	33.5	9	4	25.0	48.5	66	40	4.7	5.2	18.7	14	5.5
10	72.5	4x9.0	9.0	3x8.1	3x15	3x13.0	6.0	2.65	22.7	37.5	11	5	31.5	58.0	80	50	5.8	6.5	21.5	14	7.0

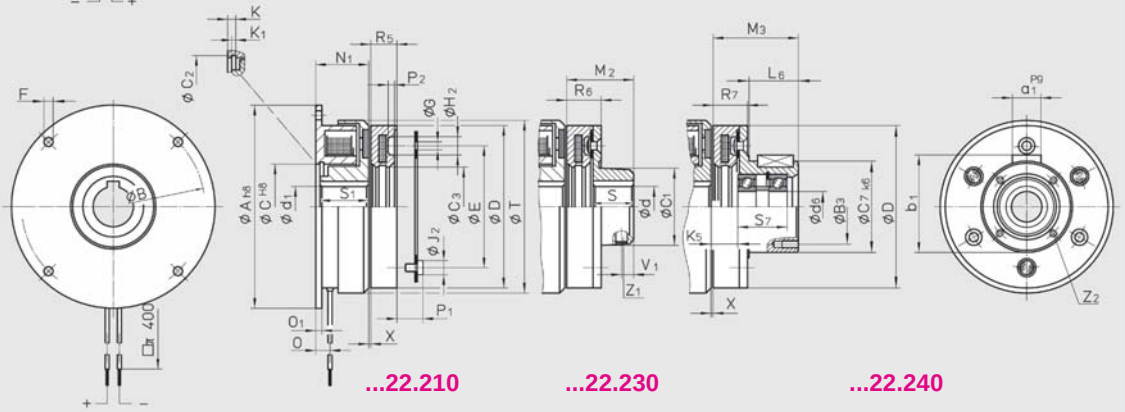
size	R_5	R_6	R_7	V_1	S	S_1	S_3	S_7	T	V	W	W_1	X	Z_1	Z_2	weight [kg] 110	130/140	210 (710)	230 (730) 240 (740)
06	12.5	16	16.0	6	15	22	41.0	18.6	67	-	-	-	0.3	1xM6	-	0.5	0.5	1.0	1.0
07	14.0	18	17.7	8	20	24	45.0	24.2	85	-	-	-	0.3	1xM6	3xM4	1.0	1.25	1.25	1.75
08	17.0	22	21.6	10	25	27	51.5	30.7	106	M5	M4	46.5	0.35	1xM8	4xM4	2.0	2.25	2.25	3.0
09	20.0	26	25.5	12	30	30	55.0	40.8	133	M8	M5	55.0	0.4	2xM10	4xM4	3.5	4.0	4.0	5.0
10	23.0	30	29.5	15	38	34	65.0	52.5	169	M8	M5	72.5	0.5	2xM10	4xM5	11.5	12.5	12.5	10.0

all dimensions in mm keyway to DIN 6885/1-P9 standard voltage 24 V DC (release range + 6 % / - 10 %) according to VDE 0580, isolation class „B“ hub DIN 6885/1

shaft mounted clutch
COMBIPERM P22
…22.XX0-…



flange mounted clutch
COMBIPERM P22
…22.XX0-…



COMBIPERM

back

COMBIPERM

Technical data

COMBIPERM size	P1 / 22			01	02	03	05	06	07	08
M_{2N}	P1	20°		0.4	1	2	4.5	9	18	36
	P22	20°	[Nm]					6	12	24
$M_{stat.}$	P1	100°		0.35	0.8	1.8	4	8	15	32
			[Nm]	0.3	0.8	1.7	3,8	7.5	15	28
$M_{dyn.}$	P1	20°	[kgm^2]	0.001	0.001	0.001	0.001	0.002	0.004	0.012
			[rpm]	3000	3000	3000	3000	2000	2000	2000
P_{20}	P1		[W]	8	10	11	12	18	24	26
	P22							15	20	28
J										
armature	P1.110			0.01	0.014	0.045	0.122	0.37	1.15	4
	P1.120/130			0.013	0.021	0.068	0.18	0.54	1.66	5.56
	22.110/210/710							1.18	3.7	10.9
	22.130/230/730		[10^{-4}kgm^2]					1.38	4.23	12.85
rotor	22.140/240/740							1.86	5.6	16.4
	22.110/130/140							0.825	2.38	7.25
	22.210/230/240/710/730/740							0.9	2.6	8
$W_{R\,0,1}$	P1		[kJ]	200	300	410	580	890	1290	2900
			[kgm^2]	0.001	0.001	0.001	0.001	0.0015	0.004	0.0120
			[rpm]	3000	3000	3000	3000	2000	2000	2000
$W_{R\,0,1}$	P22		[10^7J]					0.67	1.14	1.77
X_{max}	P1	20°	[mm]	0.3	0.3	0.4	0.5	0.65	0.8	0.9
	P22							0.4	0.4	0.5
X_{min}	P1			0.15	0.15	0.15	0.2	0.3	0.3	0.35
	P22							0.3	0.3	0.35
n_{max}	P1		[rpm]	10000	10000	10000	10000	10000	10000	10000
	P22							8000	6000	5000
switching times	P1	t_2	[ms]	10	12	25	35	40	50	90
		t_{11} =		2	2	2	2	2	3	3
		t_1 =		6	6	6	7	7	10	22
	P22	t_2					35	40	70	90
		t_{11} =					6	7	8	10
		t_1 =					30	35	42	50

Legend

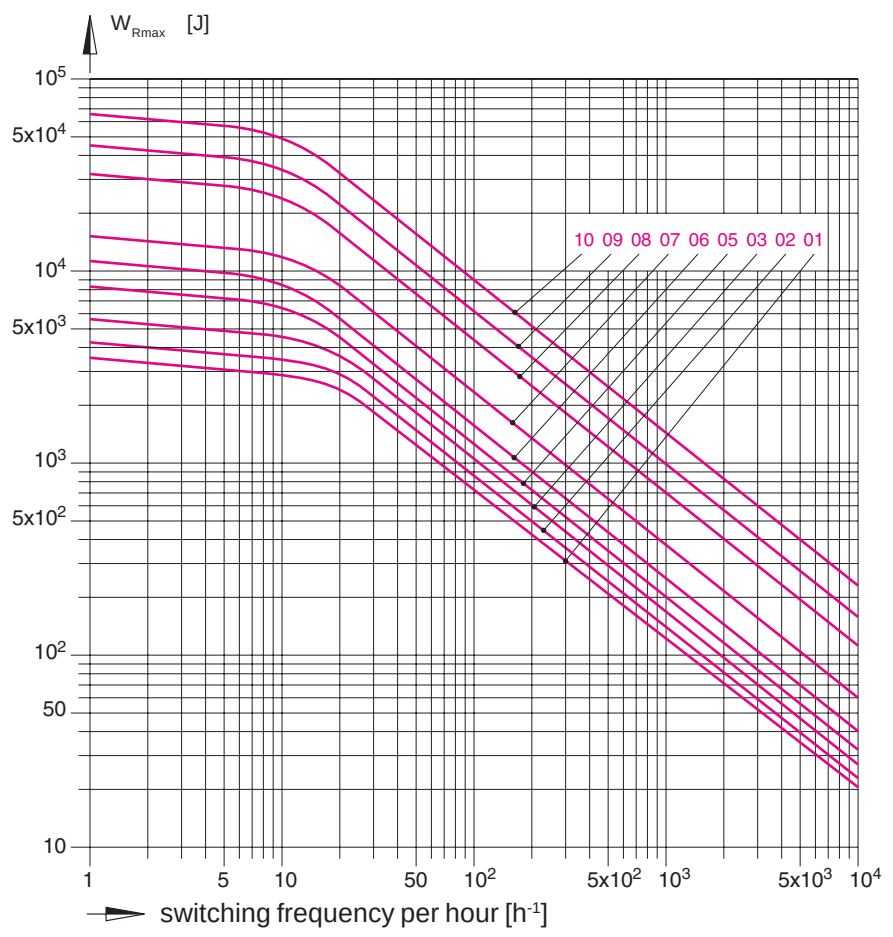
M_{2N}	*rated torque after running in process (slip speed 20 rpm)*	*[Nm]*	t_1	***Engaging time:** Time from disconnecting the current until the rated torque is attained.*	*[ms]*
$M_{stat.}100°C$	*rated torque at 100° C (slip speed 20 rpm)*	*[Nm]*	t_{11}	***Engaging delay time**: Time from disconnecting the current until the torque rises.*	*[ms]*
$M_{dyn..}20°C$	*switching torque at specified conditions*	*[Nm]*	t_2	***Release time**: Time from connecting the current until the torque decreases.*	*[ms]*
P_{20}	*power at 20° C*	*[W]*			
J	*moment of inertia*	*[kgm²]*			
n_{max}	*max. speed*	*[rpm]*			
X_{min}	*nominal air gap*	*[mm]*			
X_{max}	*max. air gap at which the armature attracts*	*[mm]*			
$W_{R\,0,1}$	*friction work up to 0.1 mm abrasion*	*[kJ]*			

The stated switching times are achieved with adjusted nominal air-gap (x_{min}). These are averages whose dispersion depends on the power supply and coil temperature.

COMBIPERM

09	10
72	145
50	120
62	130
55	110
0.036	0.1
2000	2000
40	50
35	50
11.5	39
16	53
31.7	95
36.6	110
46.6	140
21.9	67.4
24	73
6200	13000
0.036	0.1
2000	2000
2.86	4.66
1	1.2
0.6	0.7
0.4	0.5
0.4	0.5
8000	8000
4000	3000
140	190
7	12
25	65
105	
12	
60	

Permissible friction W_{Rmax} [J]
depending on the switching frequency type P1



The values for W_{Rmax} apply to a speed 3000 rpm. Dependent on the actual application W_{Rmax} may exceed or fall below these values.

Power Supply
COMBIPERM *needs a smoothed DC voltage. To ensure a safe operation in case of large temperature variations, the coil should be supplied with constant current.*

Please pay attention to the polarity of the connection leads.
(positive = green/red, negative = green/blue).
KEB supplies transformer rectifiers with capacitor for the 24 V DC power supply.
Please refer to our dimension diagram for mounting dimensions and technical datas ***92.M01-4-0702****.*

back

COMBINORM

COMBINORM *- operating-current operated brakes and clutches use the flux of an electromagnet, concentrated on two pole surfaces, for the connecting, separating or holding of shafts and the connected loads.*

***COMBINORM** covers a complete program with brakes, clutches and combinations as installation and attachment components for the applications in machines, plants and equipment in the application range of 0.5 to 500 Nm.*

*On request we adapt the **COMBINORM** to your constructional and electrical requirements.*

Program Schedule

COMBINORM ***Operating-current operated brakes and clutches***

Technical data

ordering example: COMBINORM C

06. 03. 130

size — type — design

V DC, Ø d_1, Ø d **?**

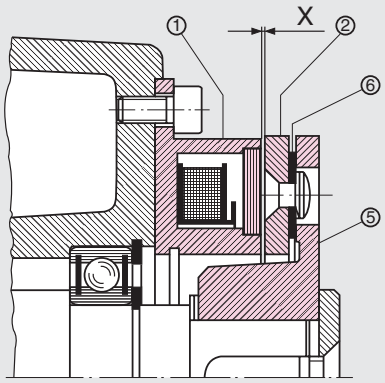
COMBINORM

Installation Examples

flange mounted brakes

COMBINORM B ***…02.120…***

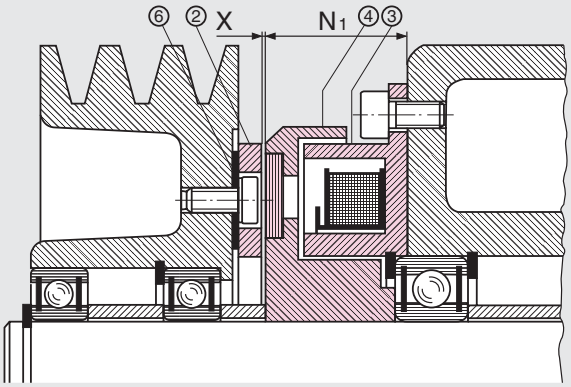
① *brake magnet*
② *armature*
⑤ *hub*
⑥ *spring*



flange mounted clutches

COMBINORM C and T ***…03.110…***

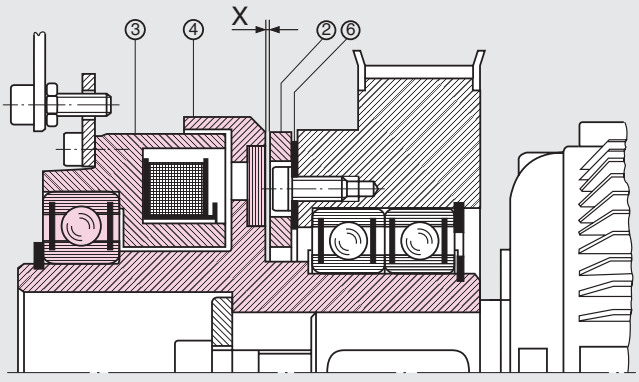
② *armature*
③ *clutch magnet*
④ *rotor*
⑥ *spring*



shaft mounted clutches

COMBINORM C and T ***…03.810…***

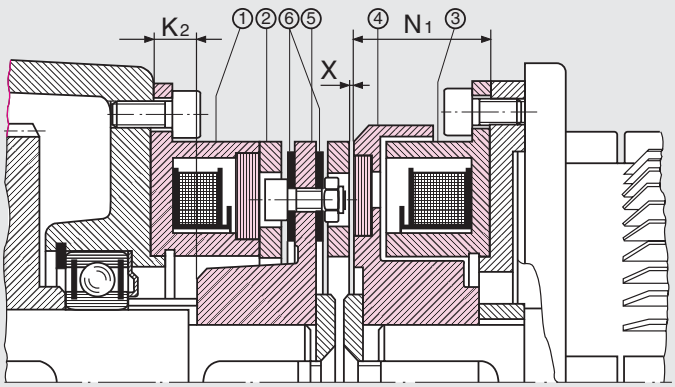
② *armature*
③ *clutch magnet*
④ *rotor*
⑥ *spring*



clutch-brake-combination

COMBINORM K ***…04.170…***

① *brake magnet*
② *armature*
③ *cluch magnet*
④ *rotor*
⑤ *hub*
⑥ *spring*



back

COMBINORM

COMBINORM B

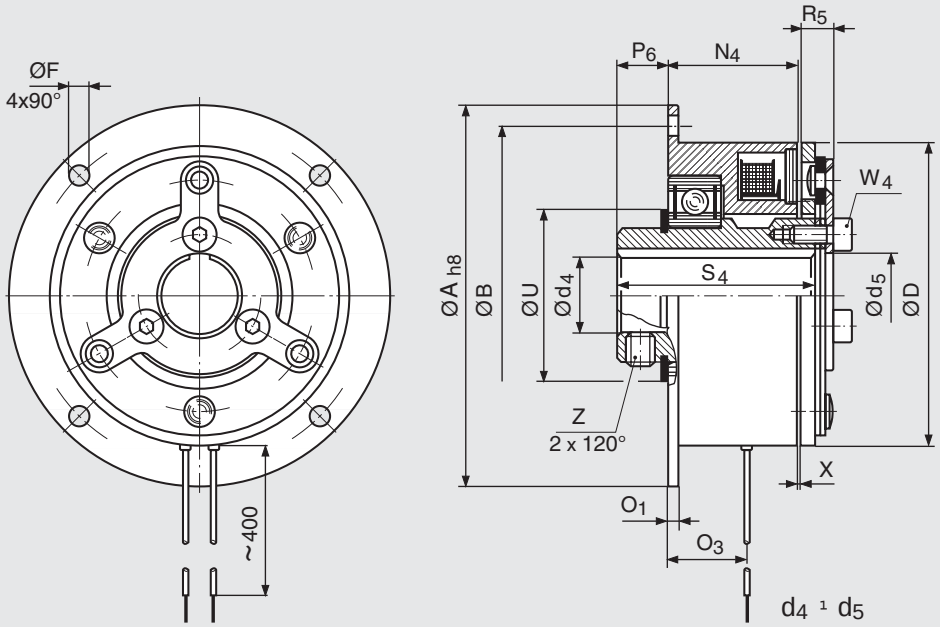
are the most economical solution for the deceleration and holding of loads for the flange- and shaft-mounted installation in machines and plants.

The magnets with a rated voltage of 24 V DC are designed according to ISO class B and are available in various special voltages on request.

Shaft mounted brakes

COMBINORM B

…02.320…



available shaft diameters page 51

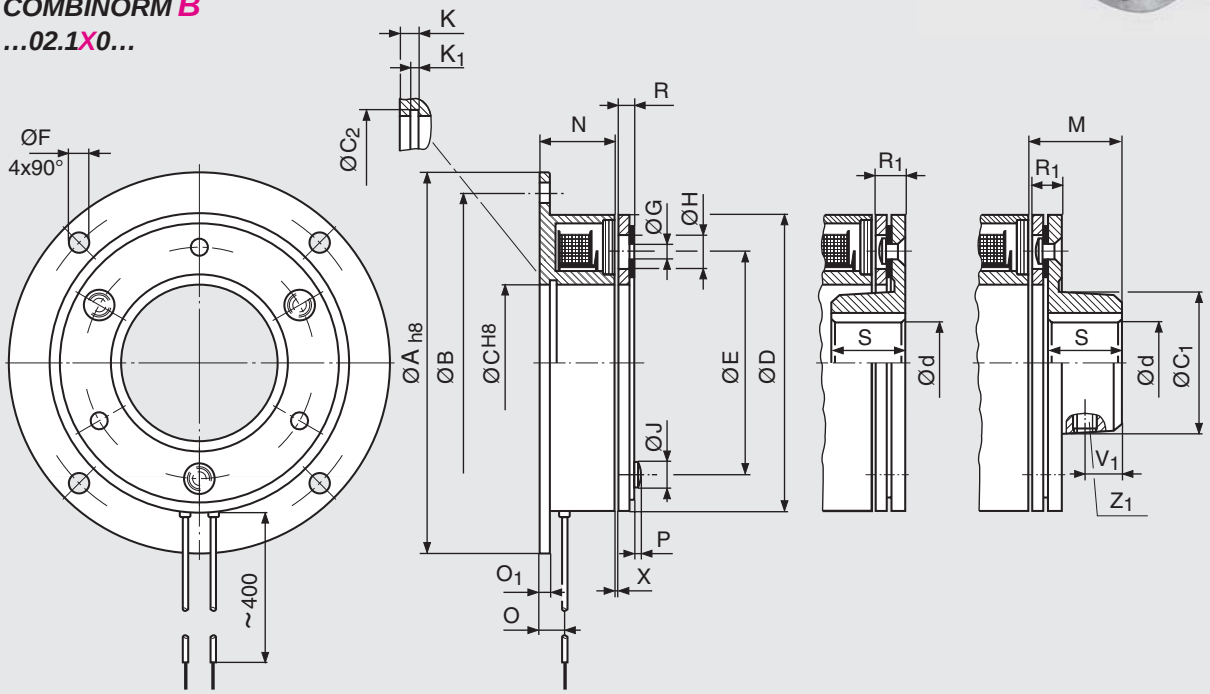
...02.320

size	M_{2N} [Nm]	P_{20} [W]	A_{h8}	B	C^{H8}	C_1	C_2	d/d_4 max	d_5	D	E	F	G	H	J	K	K_1
01	0.5	6	39	33.5	11	13.5	-	6		28	19.5	3,4	2 x 2.1	5.3	4.5	-	-
02	0.75	6	45	38	13	16	13.6	8		32	23	3,4	3 x 2.6	6	5	3	1.1
03	1.5	8	54	47	19	22	20	10		40	30	3,4	3 x 3.1	6	5.5	3	1.1
05	3	10	65	58	26	24	27	15		50	38	3,4	3 x 3.1	6.5	5.5	3.2	1.3
06	7	12	80	72	35	32	36	20	18	63	50	4,5	3 x 4.1	10	8	3.5	1.6
07	15	16	100	90	42	38	43.5	22	21	80	60	5,5	3 x 4.1	11	8	4.25	1.85
08	30	21	125	112	52	48	53.8	30	28	100	76	6,6	3 x 5.1	11.5	10	5	2.15
09	65	28	150	137	62	58	63.8	35	35	125	95	6,6	3 x 6.1	15	11.5	5.5	2.15
10	130	38	190	175	80	73	82.1	45	44	160	120	9	3 x 8.1	21	14.5	6	2.65
11	250	50	230	215	100	92	102.1	60		200	158	9	3 x 10.1	25	17.5	7	3.15
12	500	65	290	270	125	112	127.4	70		250	210	11	4 x 12.1	28	20.5	8	4.15
13	Dimensions and technical data see drawing 02.004-4-01001																

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B“

Range of application:
e.g. mail processing, winding equipment, door and gate systems, roller conveyor, strapping machines, balancing machines, sorting machines.

Flange mounted brakes
COMBINORM B
…02.1X0…



...02.110 **...02.120** **...02.130**

M	N	N_4	O	O_1	O_3	P	P_6	R	R_1	R_5	S	S_4	U	V_1	W_4	X	Z_1	weight [kg]		
																		110	120/130	320
9.3	13.7		5	1.5		1		2.3	4.3		7			2.5		0.1	1 x M 3	0.05	0.05	
12.1	17		7.5	2		1.3		2.1	4.1		10			4		0.15	1 x M 3	0.1	0.1	
14.7	20		7	2		1.5		2.7	5.3		12			5		0.15	1 x M 4	0.15	0.15	
15	22		7.5	2		1.5		3	6		12			5		0.2	1 x M 5	0.2	0.25	
18.8	18	31.2	6	3	19	2	9.3	3.8	7.3	6.3	15	45	39	6	M4	0.2	1 x M 6	0.3	0.3	0.8
24.3	20	34.2	7	3	21.5	2	13.2	4.3	8.3	6.9	20	52.5	45	8	M5	0.2	1 x M 6	0.5	0.6	1.5
31	22	38	8	4	24	2.5	13.5	6	11	9.3	25	58.5	56	10	M6	0.2	1 x M 8	0.9	1.1	2.7
36.9	24	40	9	4	25	3	13.8	6.9	12.9	10.9	30	62	61	12	M8	0.3	2 x M10	1.7	2	4.2
46.9	26	46.3	11	5	31.5	4	17.3	8.9	15.9	14.1	38	74	84	15	M10	0.3	2 x M10	3.2	4	7.8
59.2	30		12	5		4.5		11.2	20.2		48			19		0.4	2 x M12	5.9	7	
68	35		15	6		5		13	24		55			22		0.4	2 x M12	11.2	13.5	

back

COMBINORM

COMBINORM K

covers a series of houseless construction units, designed for the connection and holding of auxiliary drives, allowing a backlash-free transmission with spring-controlled armature systems. The installation is done directly in the machine construction.

Range of application: *e.g. paper processing, laundry folding equipment, feeder*

available shaft diameters page 51

size	M_{2N} [Nm]	P_{20} [W] K	B	A_{h8}	B	C^{H8}	C_2 max.	d max.	d_1	F	K	K_1	K_2	L_5	N	N_1	O	O_1	R_2	S	S_6	X	weight [kg]
06	7	15	12	80	72	35	36	20	20	4.5	3.5	1.6	11.2	55.1	18	24	6	3	12.9	15	20	0.2	0.85
07	15	20	16	100	90	42	43.5	22	25	5.5	4.25	1.85	9.3	61.3	20	26.5	7	3	14.6	20	22	0.2	1.5
08	30	28	21	125	112	52	53.8	30	30	6.6	5	2.15	8.9	71	22	30	8	4	18.8	25	24.5	0.2	2.7
09	65	35	28	150	137	62	63.8	35	35	6.6	5.5	2.15	7.9	79.6	24	33.5	9	4	21.8	30	27.5	0.3	4.8
10	130	50	38	190	175	80	82.1	45	50	9	6	2.65	5	90.8	26	37.5	11	5	27	38	31	0.3	9.5
11	250	68	50	230	215	100	102.1	60	65	9	7	3.15	3.4	108.2	30	44	12	5	33.8	48	37	0.4	17.9
12	500	85	65	290	270	125	127.4	70	80	11	8	4.15	5.1	125.6	35	51	15	6	39.2	55	43.5	0.4	31.5

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B“

the switchable shaft connections are proven millions of times in the machine building and allow the controlled connection and disconnection of functional parts in an especially easy manner.
Electromagnets according to ISO class B with rated voltage of 24 V DC create a flux, whose effect leads over the pole surfaces of the rotors and armatures.
Available on request in various special voltages.

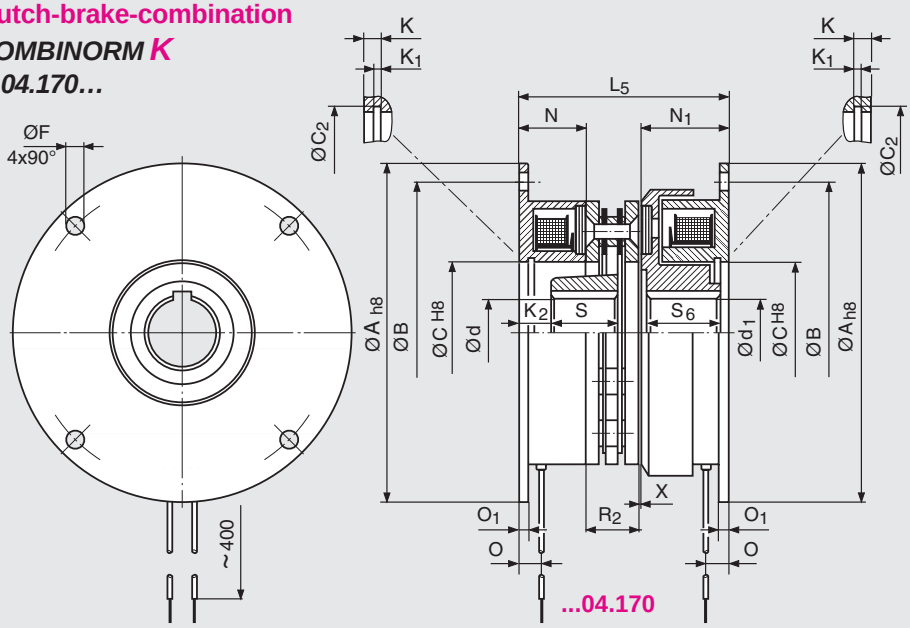
Range of application: *e.g. paper processing, winding drives, door and gate systems, feed systems, strapping machines, sorting machines*

available shaft diameters page 51

size	M_{2N} [Nm]	P_{20} [W]	A_{h8}	B	C^{H8}	C_1	C_2	d max	d_1 max	D	E	F	G	H	J
01	0.5	6	39	33.5	11	13.5	-	6	6	28	19.5	3.4	2 x 2.1	5.3	4.5
02	0.75	6	45	38	13	16	13.6	8	8	32	23	3.4	3 x 2.6	6	5
03	1.5	8	54	47	19	22	20	10	10	40	30	3.4	3 x 3.1	6	5.5
05	3	10	65	58	26	24	27	15	15	50	38	3.4	3 x 3.1	6.5	5.5
06	7	15	80	72	35	32	36	18	20	63	50	4.5	3 x 4.1	10	8
07	15	20	100	90	42	38	43.5	22	25	80	60	5.5	3 x 4.1	11	8
08	30	28	125	112	52	48	53.8	30	30	100	76	6.6	3 x 5.1	11.5	10
09	65	35	150	137	62	58	63.8	35	35	125	95	6.6	3 x 6.1	15	11.5
10	130	50	190	175	80	73	82.1	45	50	160	120	9	3 x 8.1	21	14.5
11	250	68	230	215	100	92	102.1	60	65	200	158	9	3 x 10.1	25	17.5
12	500	85	290	270	125	112	127.4	70	80	250	210	11	4 x 12.1	28	20.5

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B“

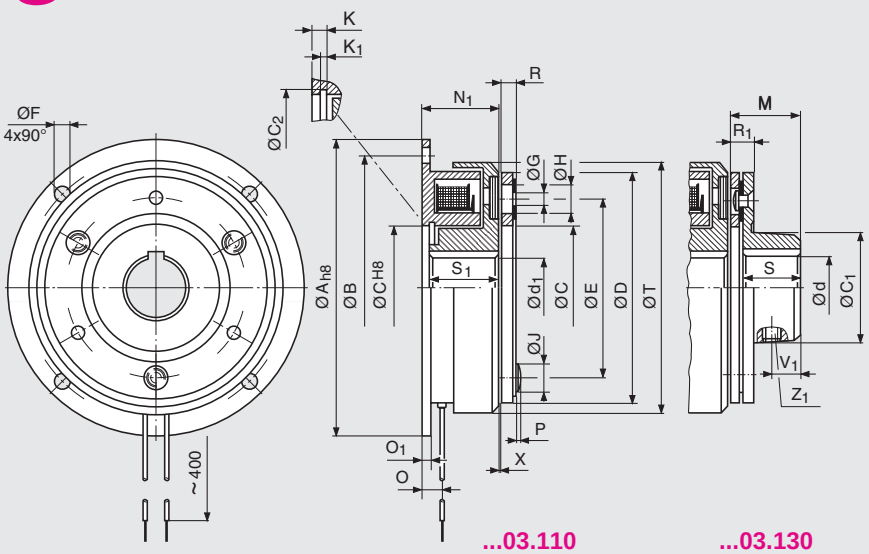
clutch-brake-combination
COMBINORM K
…04.170…



...04.170

COMBINORM C

flange mounted clutches
COMBINORM C
…03.1X0…



...03.110 ...03.130

K	K_1	M	N_1	O	O_1	P	R	R_1	S	S_1	T	V_1	X	Z_1	weight [kg]	
															110	130
-	-	9.3	18	5	1.5	1	2.3	4.3	7	16.5	31	2.5	0.1	1 x M 3	0.1	0.1
3	1.1	12.1	22.2	7.5	2	1.3	2.1	4.1	10	20.2	34	4	0.15	1 x M 3	0.1	0.1
3	1.1	14.7	25.4	7	2	1.5	2.7	5.3	12	23.4	43	5	0.15	1 x M 4	0.2	0.2
3.2	1.3	15	28.1	7.5	2	1.5	3	6	12	26.1	54	5	0.2	1 x M 5	0.35	0.4
3.5	1.6	18.8	24	6	3	2	3.8	7.3	15	22	67	6	0.2	1 x M 6	0.5	0.5
4.25	1.85	24.3	26.5	7	3	2	4.3	8.3	20	24	85	8	0.2	1 x M 6	0.9	1
5	2.15	31	30	8	4	2.5	6	11	25	27	106	10	0.2	1 x M 8	1.6	1.8
5.5	2.15	36.9	33.5	9	4	3	6.9	12.9	30	30	133	12	0.3	2 x M10	2.8	3.1
6	2.65	46.9	37.5	11	5	4	8.9	15.9	38	34	169	15	0.3	2 x M10	5.6	6.3
7	3.15	59.2	44	12	5	4.5	11.2	20.2	48	40	212.5	19	0.4	2 x M12	9.7	11
8	4.15	68	51	15	6	5	13	24	55	47	266	22	0.4	2 x M12	17.9	20.3

back

COMBINORM

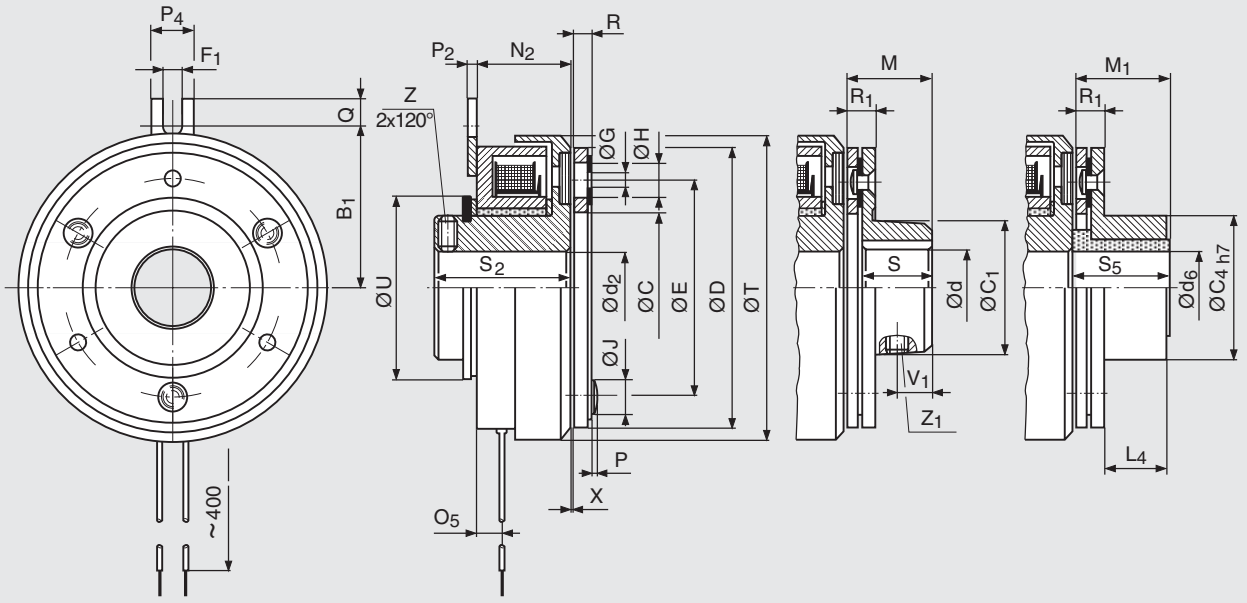
COMBINORM C

shaft mounted clutches size 01 ... 07

COMBINORM C

...03.6X0...

table (1)



...03.610 ...03.630 ...03.640

table (1)

size	M_{2N} [Nm]	P_{20} [W]	B_1	C	C_1	C_4	d max	d_2 max	d_6 max	D	E	F_1	G	H	J	L_4	M	M_1
01	0.5	6	16.8	11	13.5	13	6	6	6	28	19.5	3.1	2 x 2.1	5.3	4.5	4.8	9.3	9.3
02	0.75	6	20	13	16	14	8	6	6	32	23	3.1	3 x 2.6	6	5	7.8	12.1	12.1
03	1.5	8	23	19	22	18	10	10	10	40	30	3.1	3 x 3.1	6	5.5	9.1	14.7	14.7
05	3	10	28	26	24	28	15	17	15	50	38	3.1	3 x 3.1	6.5	5.5	8.8	15	15
06	7	15	36	35	32	-	18	20	-	63	50	5.2	3 x 4.1	10	8	-	18.8	-
07	15	20	45	42	38	-	22	25	-	80	60	5.2	3 x 4.1	11	8	-	24.3	-

table (2)

size	M_{2N} [Nm]	P_{20} [W]	A_{h8}	A_1	B	B_1	C	C_1	d max	d_3 max	D	D_2	E	E_1	F	F_1	G
06	7	15	80	-	72	-	35	32	18	17	63	-	50	-	4.5	-	3 x 4.1
07	15	20	100	-	90	-	42	38	22	22	80	-	60	-	5.5	-	3 x 4.1
08	30	28	-	62.5	-	56	52	48	30	30	100	85	76	45.75	-	6.5	3 x 5.1
09	65	35	-	75	-	68.5	62	58	35	35	125	95	95	55	-	6.5	3 x 6.1
10	130	50	-	95	-	87.5	80	73	45	50	160	126	120	72.5	-	9	3 x 8.1
11	250	68	-	115	-	107.5	100	92	60	50	200	126	158	88	-	9	3 x 10.1
12	500	85	-	145	-	135	125	112	70	60	250	160	210	110	-	11	4 x 12.1

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B"

available shaft diameters page 51

back

shaft mounted clutches size 06 ... 12

COMBINORM C

…03.XX0…

design
torque support

size 08... 12

size 06 + 07

design
flange

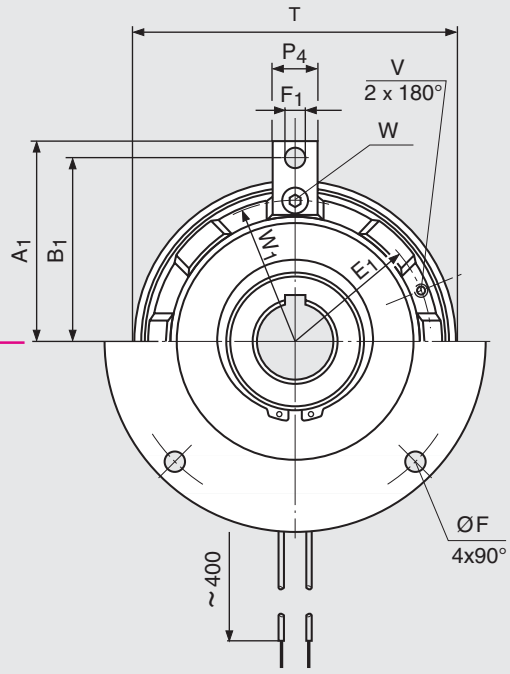
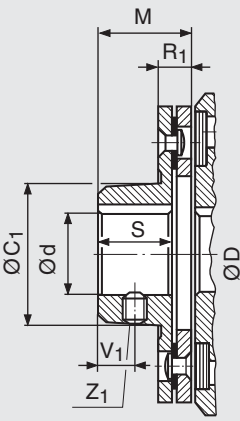
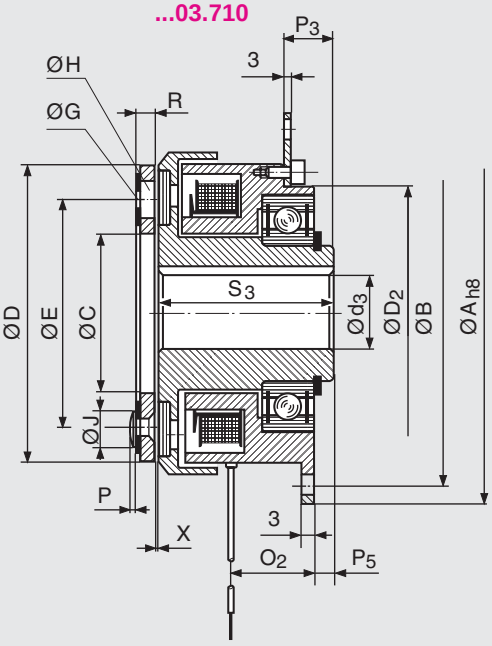


table (2)

...03.730



...03.710



...03.230

...03.210

N_2	O_5	P	P_2	P_4	Q	R	R_1	S	S_2	S_5	T	U	V_1	X	Z	Z_1	weight [kg] 110	130
17.3	3.6	1	1.5	8	3	2.3	4.3	7	23.5	9.4	31	17	2,5	0.1	M3	M3	0.1	0.1
19.8	5	1.3	1.5	8	3	2.1	4.1	10	26.2	12.25	34	21	4	0.15	M3	M3	0.1	0.1
23	5.1	1.5	1.5	8	3	2.7	5.3	12	30.4	14.85	43	23	5	0.15	M4	M4	0.2	0.2
26.1	7.8	1.5	1.5	8	3	3	6	12	34.1	15.2	54	32	5	0.2	M4	M5	0.35	0.4
24	6	2	2.5	12	7	3.8	7.3	15	33	-	67	41	6	0.2	M4	M6	0.5	0.5
26.5	7	2	2.5	12	7	4.3	8.3	20	38	-	85	50	8	0.2	M6	M6	0.9	1

H	J	M	O_2	P	P_3	P_4	P_5	R	R_1	S	S_3	T	V	V_1	W	W_1	X	Z_1	weight [kg] 210 710	230 730
10	8	18.8	19	2	-	-	4	3.8	7.3	15	41	67	-	6	-	-	0.2	1xM6	0.8	0.9
11	8	24.3	21.5	2	-	-	4.5	4.3	8.3	20	45	85	-	8	-	-	0.2	1xM6	1.5	1.6
11.5	10	31	24	2.5	16.2	12	5.5	6	11	25	51.5	106	M5	10	M4	46.5	0.2	1xM8	2.3	2.5
15	11.5	36.9	25	3	18.7	14	5.5	6.9	12.9	30	55	133	M8	12	M5	55	0.3	2xM10	3.7	4.1
21	14.5	46.9	31.5	4	21.5	14	7	8.9	15.9	38	65	169	M8	15	M5	72.5	0.3	2xM10	7	7.7
25	17.5	59.15	32.5	4.5	32.5	20	7	11.15	20.15	48	71	212.5	M10	19	M6	88	0.4	2xM12	13.1	14.3
28	20.5	68	41	5	41	22	8	13	24	55	85	266	M10	22	M8	110	0.4	2xM12	23	25

COMBINORM

back

COMBINORM C

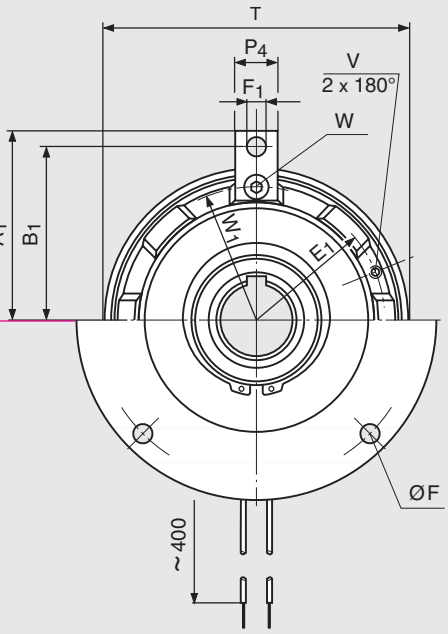
shaft mounted clutches with bearing take-up for the output
COMBINORM C
…03.810…

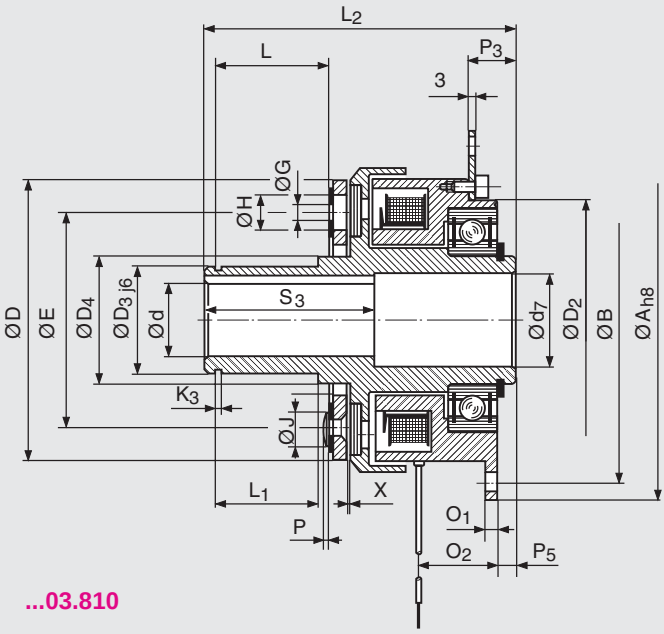
design
torque support

size 08... 12

size 06 + 07

design
flange





...03.810

available shaft diameters page 51

size	M_{2N} [Nm]	P_{20} [W]	M_A [Nm] 1)	A_{h8}	A_1	B	B_1	C_5	D	D_2	D_3	D_4	d_4 max	d_7	d max	E	E_1	E_2	F	F_1	G	H	J
06	7	15	10	80	-	72	-	30	63	-	25	29	19	17	16	50	-	44	4x4.5	-	3x4.1	10	8
07	15	20	25	100	-	90	-	40	80	-	35	40	26	25	22	60	-	68	4x5.5	-	3x4.1	11	8
08	30	28	25	-	62.5	-	56	45	100	85	40	46	30	28.5	25	76	45.75	80	-	6.5	3x5.1	11.5	10
09	65	35	50	-	75	-	68.5	60	125	95	50	57	38	33	35	95	55	100	-	6.5	3x6.1	15	11.5
10	130	50	140	-	95	-	87.5	85	160	126	70	76	55	41	50	120	72,5	140	-	9	3x8.1	21	14.5
11	250	68	220	-	115	-	107.5	100	200	126	70	76	65	48	50	158	88	165	-	9	3x10.1	25	17.5
12	500	85	500	-	145	-	135	125	250	160	80	89	85	52	60	210	110	215	-	11	4x12.1	28	20.5

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B“ 1) tightening torque for W_2

*For **flexible clutches** (type ...03.840) the following additional instructions are applicable:*

The radial and axial screws connecting the rubber element to the hubs must all be tightened to the torque (M_A) given in the table, using a torque wrench.
Ensure that when tightening the screws the aluminium bushes do not twist in the rubber part and that they sit squarely. In order to reduce friction between the screw head and the aluminium bush smear a small amount of grease under the head of the screw before fitting. If necessary use a suitable tool to apply counter pressure on the element to prevent twisting of the rubber part while tightening the screws. This is particularly important with the radial screws otherwise the curved faces between the aluminium bush and the hub will not engage on the full area but only across the two sides. This will inevitably lead to slackening of the screws and destruction of the clutch. If the clutch is supplied in a pre-assembled state, do not dismantle it, but fit it in this condition.

back

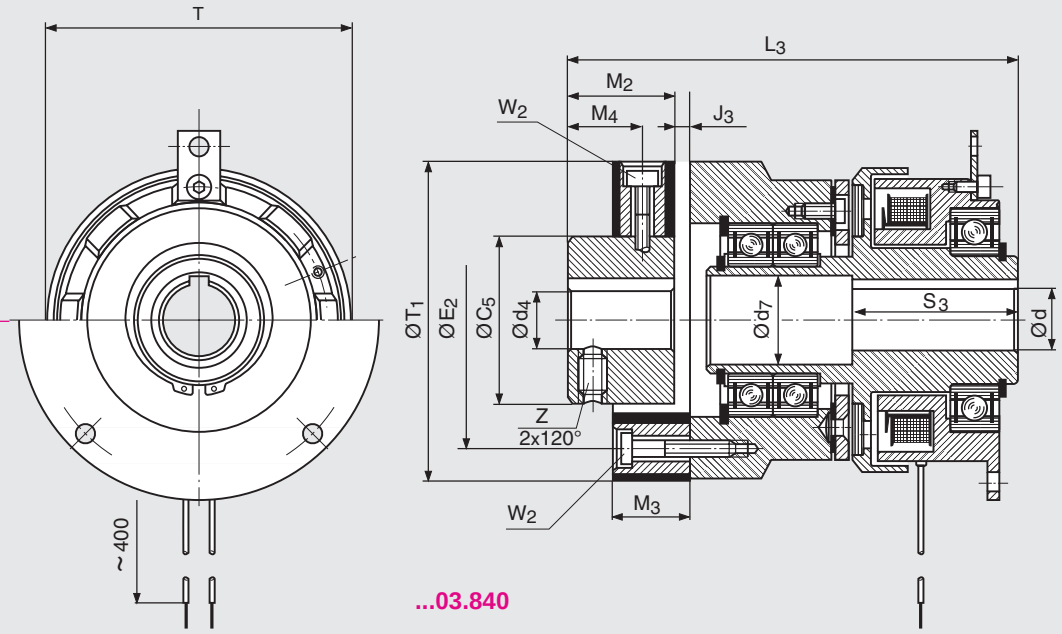
shaft mounted clutches with flexible clutches
COMBINORM C
…03.840…

design
torque support

size 08... 12

size 06 + 07

design
flange



...03.840

J_3	K_3	L	L_1	L_2	L_3	M_2	M_3	M_4	O_1	O_2	P	P_3	P_4	P_5	S_3	T	T_1	V	W	W_1	W_2	X	Z	weight kg] 810	840
2	1.3	32.9	25.6	80	117	30	24	19	3	19	2	-	-	4	41	67	56	-	-	-	2 x M 6	0.2	M 5	1	1.7
4	1.6	37.7	29.9	90	129	30	24	20	3	21.5	2	-	-	4.5	45	85	85	-	-	-	2 x M 8	0.2	M 6	1.8	3
4	1.85	35.2	32.15	96	141	35	28	23	-	24	2.5	16.2	12	5.5	51.5	106	100	M 5	M 4	46.5	3 x M 8	0.2	M 8	2.7	4.1
4	2.15	37.6	34.6	103	160	45	32	31	-	25	3	18.7	14	5.5	55	133	120	M 8	M 5	55	3 x M10	0.3	M 10	4.2	7.4
6	2.65	47.8	43.1	126	200	60	46	40	-	31.5	4	21.5	14	7	65	169	170	M 8	M 5	72.5	3 x M14	0.3	M 10	8.3	14.6
8	2.65	47.5	43.3	134	217	65	58	40	-	32.5	4.5	23	20	7	82	212.5	200	M10	M 6	88	3 x M16	0.4	M 12	14.5	24.4
8	2.65	59.6	55.3	162	260	80	70	49	-	41	5	27	22	8	85	266	260	M10	M 8	110	3 x M20	0.4	M 12	26	45.2

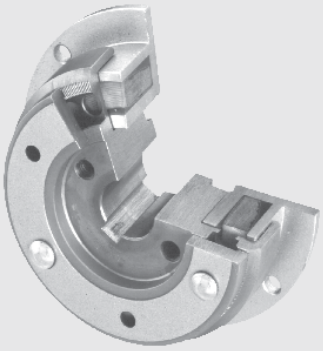
size	Compliance [mm] of flexible clutches radial	axial
06	1.5	2
07	1.5	3
08	1.5	3
09	2	4
10	2	5
11	2	5
12	2	5

COMBINORM

back

COMBINORM

COMBINORM T



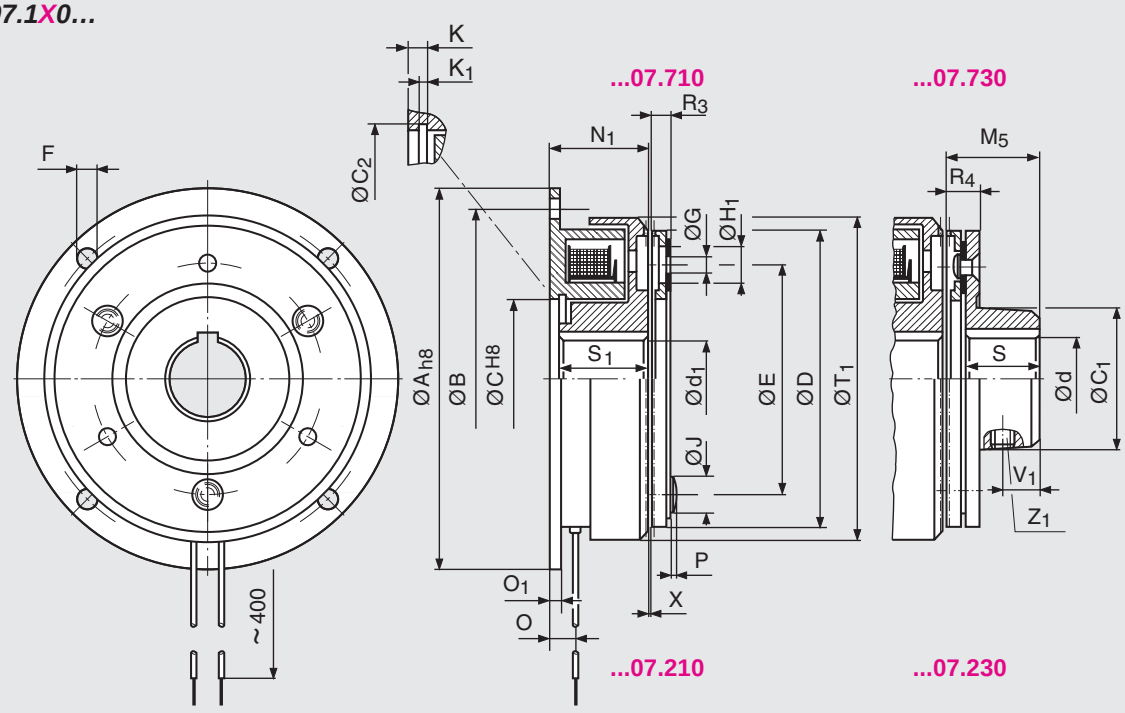
Are electromagnetically operated tooth clutches for wet or dry operation. Torque is transmitted by the leading faces of hardened serrations and is backlash free. Large torques are transmitted with less space requirements in both directions.

On request we manufacture special toothing with fixed point switching on saw toothing.

Range of application: *e.g. door drives*
printing machines
transport roller
aggregate connection

flange mounted tooth clutches

COMBINORM T
…07.1X0…



shaft mounted tooth clutches

COMBINORM T

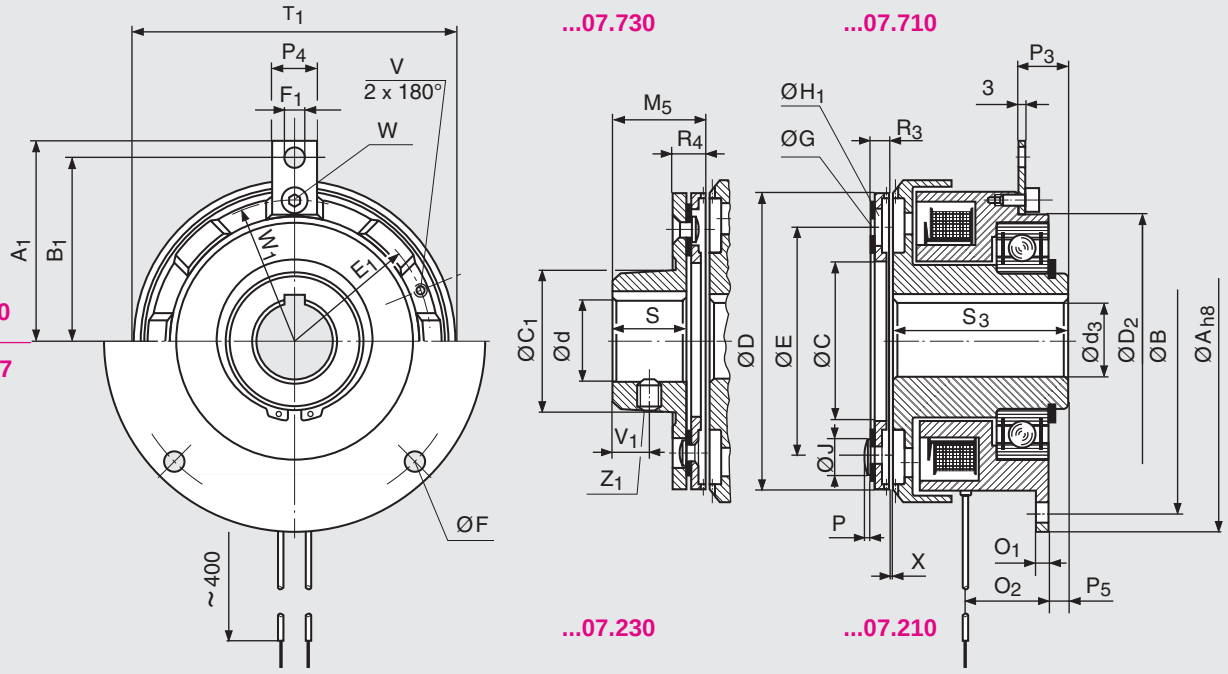
...07.XX0...

design
torque support

size 08... 10

size 06 + 07

design
flange



available shaft diameters page 51

size	M_{2N} [Nm]	$P^{20°C}$ [W]	A_{h8}	A_1	B	B_1	C^{H8}	C_1	C_2	D	d_1 max	D_2	d_3 max	d max	E	E_1
06	21	15	80	-	72	-	35	32	36	63	20	-	17	18	50	-
07	45	20	100	-	90	-	42	38	43.5	80	25	-	22	22	60	-
08	90	28	125	62.5	112	56	52	48	53.8	100	30	85	30	30	76	45.75
09	195	35	150	75	137	68.5	62	58	63.8	125	35	95	35	35	95	55
10	390	50	190	95	175	87.5	80	73	82.1	160	50	126	50	45	120	72.5

size	F	F_1	G	H_1	J	K	K_1	M_5	N_1	O	O_1	O_2	P	P_3	P_4	P_5
06	4x4,5	-	3x4.1	8	8	3,5	1.6	20.3	24	6	3	19	2	-	-	4
07	4x5,5	-	3x4.1	8	8	4.25	1.85	26.4	26.5	7	3	21.5	2	-	-	4.5
08	4x6,6	6.5	3x5.1	11.2	10	5	2.15	33.6	30	8	4	24	2,5	16.2	12	5.5
09	4x6,6	6.5	3x6.1	15	11.5	5.5	2.15	41.2	33.5	9	4	25	3	18.7	14	5.5
10	4x9	9	3x8.1	16	14.5	6	2.65	50.8	37.5	11	5	31.5	4	21.5	14	7

size	R_3	R_4	S	S_1	S_3	T_1	V	V_1	W	W_1	X	Z_1	weight [kg]			
													210/710	230/730	110	130
06	5.3	8.8	15	22	41	68	-	6	-	-	0.15	1 x M 6	1	1	0.7	0.7
07	6.4	10.4	20	24	45	86.5	-	8	-	-	0.2	1 x M 6	1.7	1.8	1.1	1.2
08	8.6	13.6	25	27	51.5	108	M5	10	M 4	46.5	0.2	1 x M 8	2.6	2.8	1.9	2.1
09	11.2	17.2	30	30	55	135	M8	12	M 5	55	0.2	2 x M10	4.1	4.4	3.2	3.5
10	12.8	19.8	38	34	65	172.2	M8	15	M 5	72.5	0.25	2 x M10	7.5	8.3	6.1	6.9

All dimensions in mm keyway according to DIN 6885/1-P9 Standard voltage 24 V DC VDE 0580, ISO-class „B“

back

COMBINORM

Technical data

Combinorm 02 / 03 / 04 / 07 size				01	02	03	05	06	07	08
M_{2N}	02/03/04	20°	[Nm]	0.5	0.75	1.5	3	7	15	30
	07						21	45	90	195
P_{20}	02/04 brake	20°	[W]	6	6	8	10	12	16	21
	03/04/07 clutch	20°		6	6	8	10	15	20	28
J										
armature	110/210/610/710/810		[10^{-4}kgm^2]	0.010	0.014	0.045	0.122	0.366	1.07	3.72
	120/130/230/630/730			0.013	0.021	0.068	0.18	0.53	1.57	5.29
	320						0.82	2.6	10.3	27
	170						0.99	2.7	9.12	25.4
Rotor	110/130/140/170/610			0.025	0.035	0.15	0.375	0.825	2.38	7.25
	630/640									
	210/230/240/710/730/740			0.027	0.038	0.17	0.4	0.9	2.6	8
	810							1.02	3.05	8.76
$W_{R\,max.}$	02/03/04		[10^4J]	0.04	0.05	0.08	0.12	0.19	0.31	0.48
$W_{R\,0,1mm}$	02/03/04		[10^7J]	0.23	0.3	0.43	0.63	0.95	1.63	2.53
$P_{R\,max.}$	02/04 brake		[J/s]	12.8	18.6	26.9	38.9	58.3	79.2	114
	03/04 clutch			20.3	28.6	40.6	58.3	80.6	114	161
$Xn_{max.}$ **20°**	02/03/04		[mm]	0.3	0.45	0.45	0.6	0.7	0.7	0.7
	07								0.15	0.2
X	02/03/04			0.1	0.15	0.15	0.2	0.2	0.2	0.2
	02/03/04/07		[rpm]	10000	10000	10000	10000	8000	6000	5000
$n_{max.}$	exception clutch!			1500	1500	1500	1500	1500	1500	
	03.610/630/640									
switching times										
brake 02/04		t_2 DC	[ms]	3	4	5	8	10	15	50
		t_2 AC		17	20	25	40	70	95	240
	rated torque	t_{11} =		2	3	3	5	6	8	10
		t_1 =		5	8	8	17	24	38	42
	3 x rated torque	t_{11} =		1	2	2	3	3	4	5
		t_1 =		3	4	4	8	11	17	20
clutch		t_2 DC	[ms]	5	6	7	10	14	19	40
03/04		t_2 AC		17	19	22	30	39	61	115
	rated torque	t_{11} =		4	5	7	10	14	18	23
		t_1 =		10	14	17	32	48	74	81
	3 x rated torque	t_{11} =		2	2	3	5	6	8	10
		t_1 =		5	6	7	16	22	33	37

Legend

M_{2N}	*static rated torque*	*[Nm]*	t_1	***Engaging time** Time from connecting the*
M_{erf}	*required torque*	*[Nm]*		*the rated torque is attained*
J	*moment of inertia*	*[10^{-4}kgm^2]*	t_{11}	***Engaging delay time**: Time from connec*
P_{20}	*power at 20° C*	*[W]*		*current until the torque rises*
n_{max}	*maximum speed*	*[min^{-1}]*	t_2	***Release time:** Time from disconnecting t*
X	*rated air gap*	*[mm]*		*until 0.1 M_{2N}*
X_n	*clearance at which an adjustment is recommended*	*[mm]*		
W_{Rmax}	*permissible friction per switching operation*	*[10^4J]*		
$W_{R0,1}$	*friction work up to 0,1 mm wear*	*[10^7J]*		
P_{Rmax}	*permissible friction work per second*	*[J/s]*		
I	*magnet-rated torque*	*[A]*		
t	*time*	*[ms]*		

COMBINORM

09	10	11	12
65	130	250	500
390			
28	38	50	65
35	50	68	85
10.6	40	115	311
15.1	50.1	159	437
101			
88.9	272	814	
21.9	67.4	200	450
24	73	220	500
26	82.5	230	520
0.75	1.25	2	2.9
4.09	6.66	10.4	16.3
164	236	339	489
228	322	458	647
0.9	1.0	1.2	1.2
0.2	0.2	0.25	
0.3	0.3	0.4	0.4
4000	3000	3000	2000
85	100	140	200
300	400	600	800
13	15	23	35
48	85	118	155
6	8	10	16
22	38	50	76
68	100	130	200
220	400	650	900
25	29	37	55
90	161	201	295
12	14	16	25
42	69	91	125

e current *[ms]*

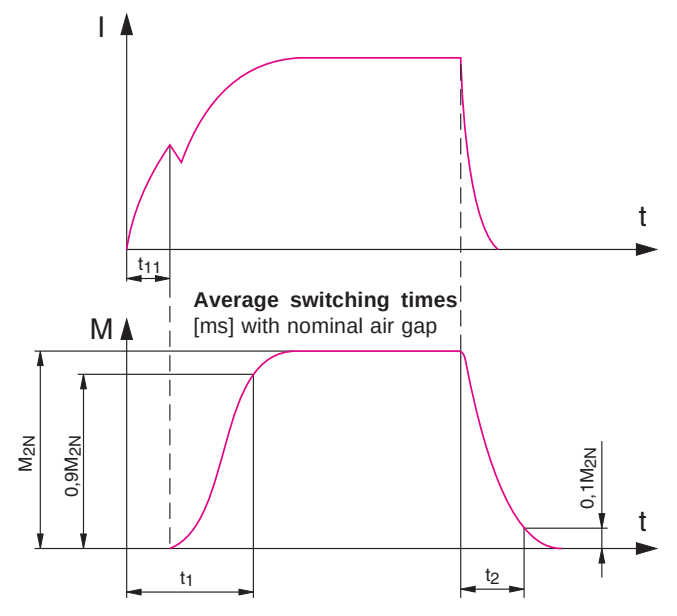
ting the *[ms]*

he current *[ms]*

DC-side switching

Current / time and torque / time diagrams

The mentioned designations of switching times are according to DIN VDE 580.



The specified switching times are achieved with adjusted nominal air gap (x_{min}). It concerns average values whose scattering depends on the current supply and the coil temperature.

The torques specified in the measuring tables are safely achieved with single-side clutches and brakes after a run-in phase at 100 rpm. In new condition and in case of substantially higher speeds the torques are possibly smaller

Current supply

*The **COMBINORM** requires a DC voltage, which can be made available by different rectifiers, transformer rectifiers as well as electronic switches of the series **COMBITRON 91**, **92** and **94**.*

A short-time overvoltage produces very short switching times and high switching accuracies.