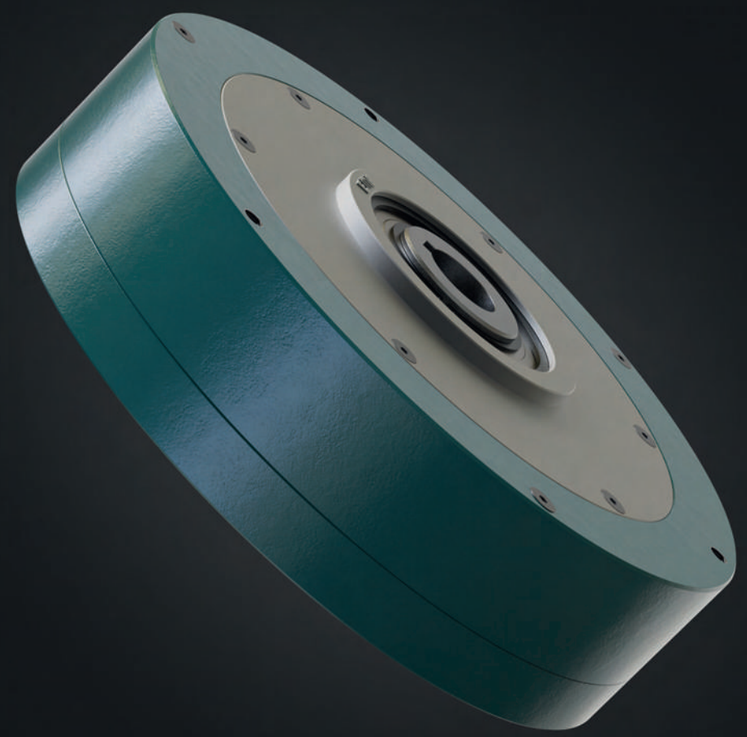
ПРАХОВИ СПИРАЧКИ

POWDER BRAKES

5 Nm. - 1000 Nm.



Спирачките от серията BTF и съединителите от серията BTK осигуряват линейно увеличаване или намаляване на спирачния момент чрез промяна на подаваното електрическо напрежение. По този начин контролируемата сила на въртящия момент може да се прилага в различни системи.

- Производство в 8 различни размера между 5 Nm и 1000Nm
- Изолация на намотка от клас H (180 °C)
- Метални части със специално покритие
- Режим на тиха работа
- 0 – 24 V DC Стандартен диапазон на работно напрежение Лесен монтаж
- Възможност за монтаж на независимо охлаждане, чрез външен вентилатор

Силата на триене се генерира от металния прах, който е електромагнетизиран и запълва частта между вградения ротор и неподвижната част - статора.

Той създава основния въртящ момент на спирачката. По този начин, в зависимост от подадената електрическа енергия в диапазона 0-24 V DC, се получава контролируема, линейно нарастваща или намаляваща сила на въртящия момент.

BTF series brakes and BTK series clutches provide increasing or decreasing braking torque in linear ratio by giving variable electrical voltage. In this way, the controllable counter brake torque force can be applied in different systems.

FEATURES

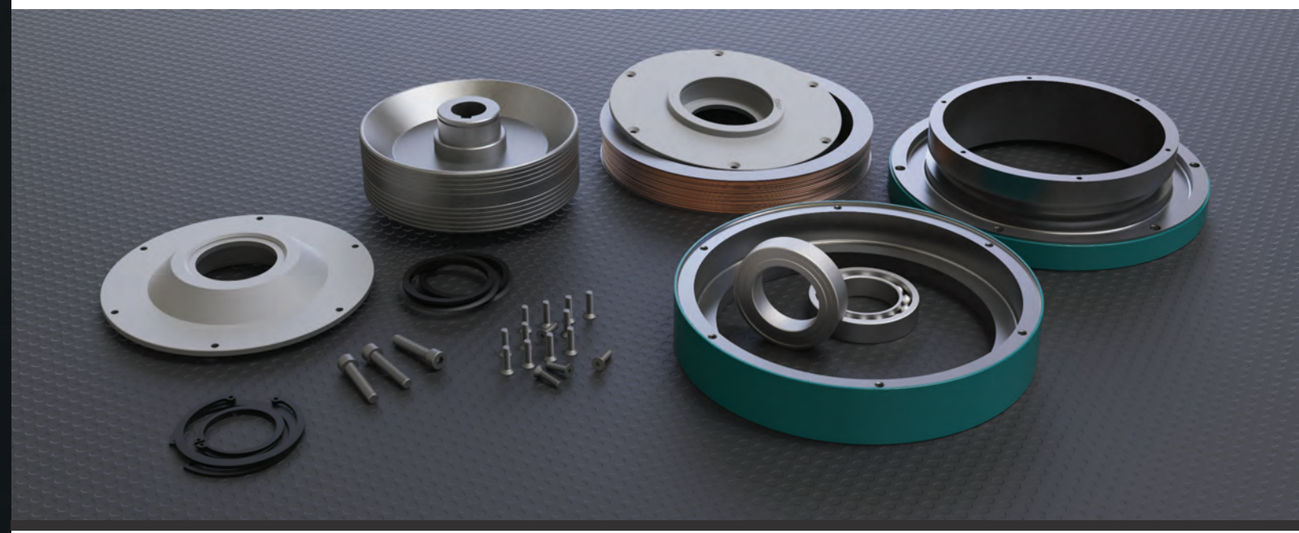
- *Production in 8 Different Sizes Between 5 Nm. and 1.000 Nm.*
- *Class H Coil Insulation (185 °C)*
- *Special Coated Metal Parts*
- *Quiet Operation Regime*
- *0 – 24 V DC Standard Operating Voltage Range*
- *Easy Installation*
- *Optional External Fan Application*

WORKING PRINCIPLE

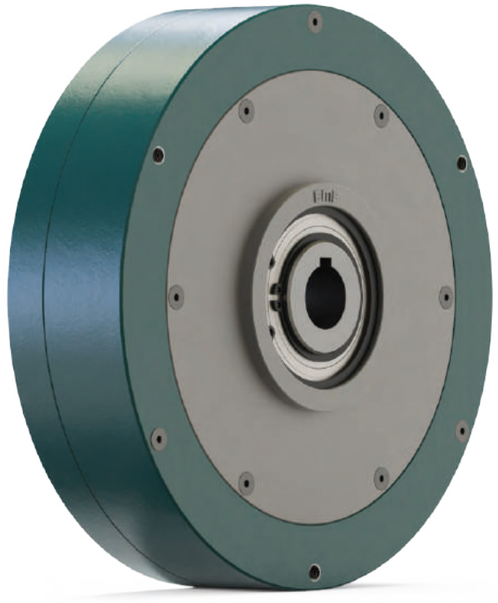
The frictional force generated from the metal powder which is magnetised by electromagnetic force and filling between the embedded rotor part and the stationary stator part constitutes the main torque of the brake. In this way, depending on the electrical energy supplied in the 0-24 V DC range, a controllable, linearly increasing or decreasing torque force is obtained.

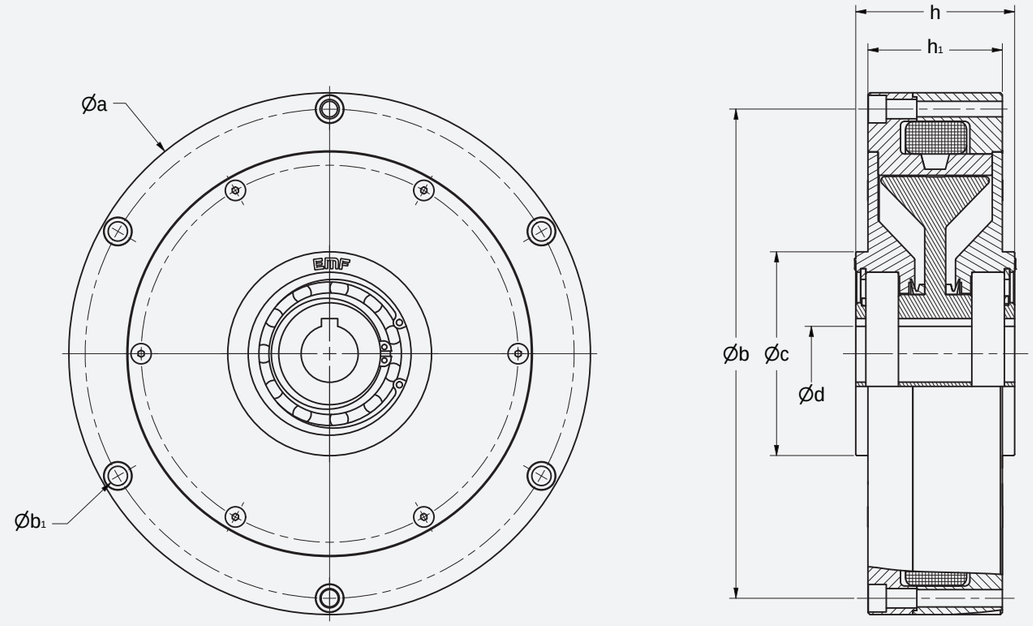
POWDER CLUTCHES

BTF Series products can be used both as brakes and as clutches. BTF series powder brakes are converted to BTK series clutches with mounted special parts and Slip Ring. Its have the same work-ing principle as the BTF series brakes and have a standard work-ing voltage range of 0-24 V DC.



BTF Series





Приложения
Application Areas

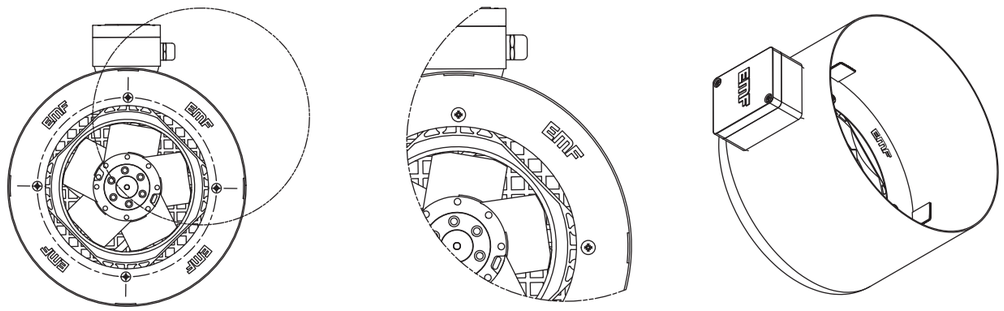
- *Printing Machines*
- *Textile Machines*
- *Simulation Systems*
- *Test Systems*
- *Special Systems*
- *Tension Control*
- *Torque Control*
- *Speed Control*

BTF	T_F 1) (Nm)	Güç Power (W)	a	b	b_1	c	d	h	h_1	Weight (Kg)
01	5	18	95	86	M5X3	53	15	40	36	1.4
02	15	24	115	103	M6x3	55	15	50	46	2.7
03	35	24	140	128	M6x3	65	17	66	58	5.1
04	65	24	172	160	M6x3	80	20	78	66	8.2
05	120	25	256	240	M8x6	100	28	78	66	17.6
06	200	24	292	274	M10x6	140	38	91	76	27.3
07	500	19.2	360	342	M10x6	190	55	127	112	62.2
08	1000	Upon request.								

All dimensions in mm
Keyway acc. to DIN 6885/1
Standard voltage 24 V DC
1) Please see diagrams in the P.9

Parts

External Fan

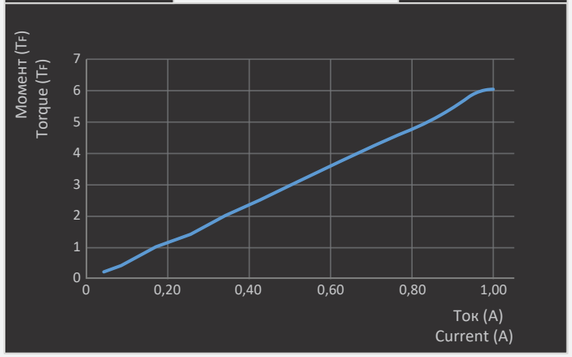


EXTERNAL FAN

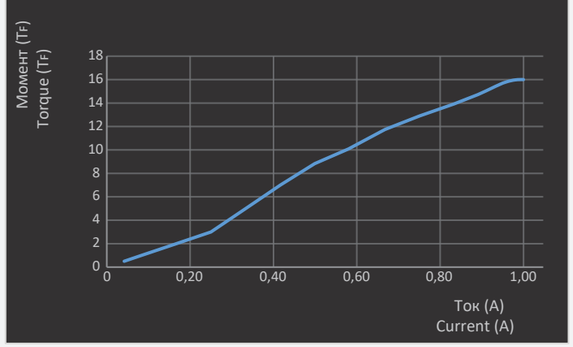
Due to the working principle of ***BTF*** *series powder brakes, its could reach high temperatures depending on the working environment. External fan application should be used in areas with harsh environmental conditions or high temperature. By creating considerable cooling effect on the brake, it eases the environmental impact, provides more efficiency and longevity.*

Torque Diagrams

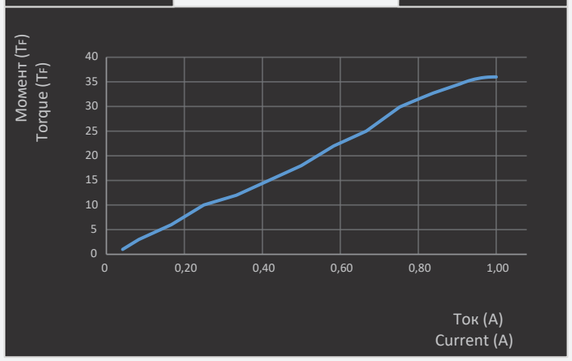
ABTF - 01 / **BTK - 01**



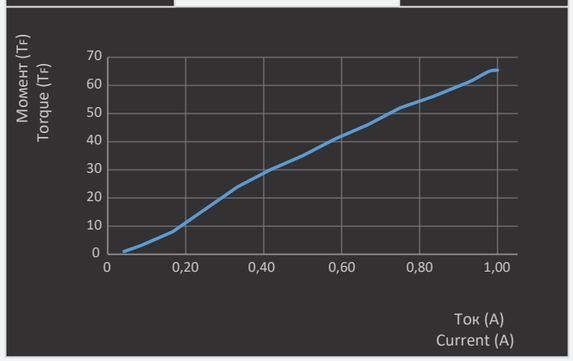
BTK - 02 / **ABTF - 02**



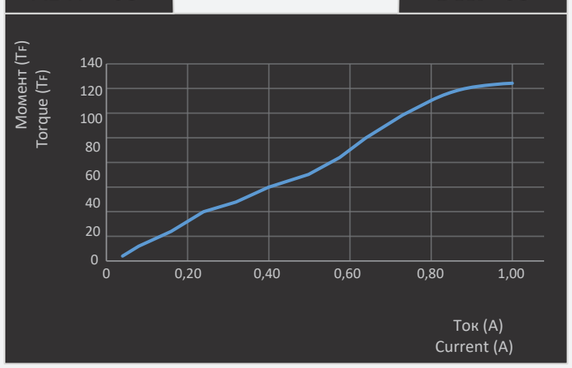
BTF - 03 / **BTK - 03**



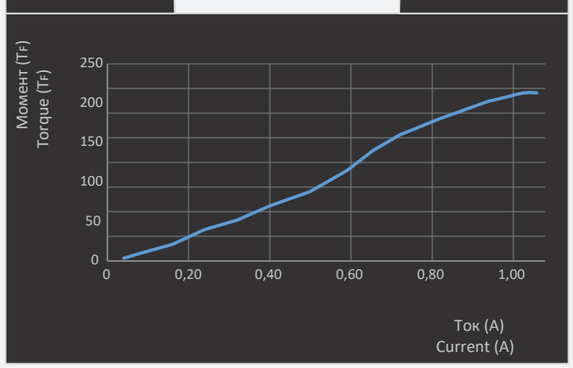
BTK - 04 / **BTF - 04**



ABTF - 05 / **BTK - 05**



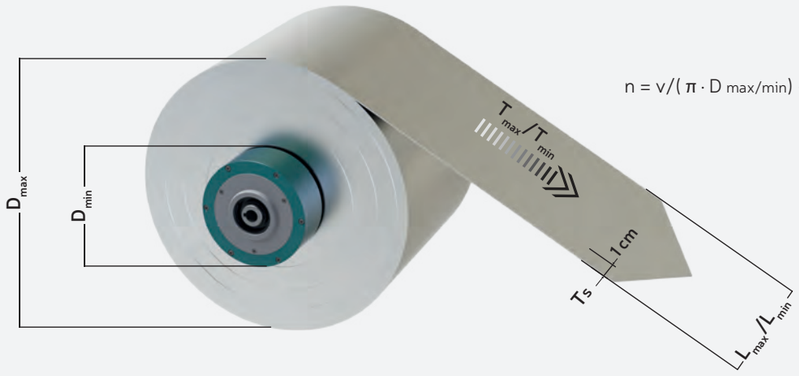
BTK - 06 / **BTF - 06**



Rated torques specified may vary depending on the working environment.
Test Conditions: 25 °C, 100 rpm, 10 min.

Formulas

T_D	(Nm)	*min/max*	- *Torque* - min./max.
J	(Kgm^2)		- *Total Inertia Load*
n	(rpm)		- *Revolutions Per Minute*
n	(rpm)	*min/max*	- *Revolutions Per Minute* - min./max.
t	(s)		- *Braking Time*
v	(m/min)		- *Web Speed*
T	(N)	*min/max*	- *Web Tension* - min./max.
D	(m)	*min/max*	- *Roll Diameter* - min./max.
H_D	(W)		- *Heat Dissipation in Continuous Slipping*
H_{DK}	(W)		- *Clutch's Heat Dissipation in Continuous Slipping*
m	(Kg)		- *Roll Weight* - max.
r	(m)		- *Roll Radius* - max.
T_S	(N/cm)		- *Web Tension Per Centimeter*
L	(cm)		- *Web Width* - min./max.



J = m.r²/2 - *Roll Inertia* (kgm²)
n = v/(π · D max/min) - *Revolutions Per Minute* (rpm) v = π · D · n - Doku *Web Speed* (m/min)

Dmin	= 0,1 m	Dmax	= 0,7 m
Lmin	= 50 cm	Lmax	= 150 cm
V	= 200 m/min	m	= 500 kg

Aluminium Foil Thickness 40 µ

Web Tension max.	T_{max}	=	$T_s \cdot L_{max}$	=	(0,025 N/cm · 40µ) · 150 cm	= 150 N
Web Tension min.	T_{min}	=	$T_s \cdot L_{min}$	=	1 N/cm · 50 cm	= 50 N
Dynamic Torque max.	T_{Dmax}	=	$\frac{D_{max} \cdot T_{max}}{2}$	=	$\frac{0,7\ m \cdot 150\ N}{2}$	= 52.5 Nm
Dynamic Torque min.	T_{Dmin}	=	$\frac{D_{min} \cdot T_{min}}{2}$	=	$\frac{0,1\ m \cdot 50\ N}{2}$	= 2,5 Nm
Revolutions per Minute min.	n_{min}	=	$\frac{v}{D_{max} \cdot \pi}$	=	$\frac{200\ m/min}{0,7\ m \cdot \pi}$	= 91 rpm
Revolutions per Minute max.	n_{max}	=	$\frac{v}{D_{min} \cdot \pi}$	=	$\frac{200\ m/min}{0,1\ m \cdot \pi}$	= 636 rpm
Heat Dissipation in Continuous Slipping	H_D	=	$\frac{T_{max} \cdot v}{60}$	=	$\frac{150\ N \cdot 200\ m/min}{60}$	= 500 W
Heat Dissipation in Continuous Slipping	H_{DK}	=	$\frac{T_{Dmax} \cdot (n_{max} - n_{min})}{9,55}$	=	$\frac{52.5\ Nm \cdot (636 - 91\ rpm)}{9,55}$	= 2996 W

Emergency Stop

t = 6 S

Dynamic Torque min. $T_{Dmax} = \frac{m \cdot D_{max} \cdot v}{240 \cdot t}$ = Nm = $\frac{500\ kg \cdot 0,7\ m \cdot 200\ m/min}{240 \cdot 6\ s}$ = 48 Nm

Recommended Brake
BTF-04

Powder brakes are preferred in applications where variable torque is required. It is only possible with a high performance powder brake controller that powder brakes provide the desired torque levels of the consumer with high performance.

FEATURES

- *Wide Operating Voltage Range*
- *Controllable with PLC and/or Other Industrial Devices*
- *4-20 mA, 0-10 V and Potentiometer Input*
- *High current capacity*
- *RoHS Compliant*
- *Microprocessor Based System[1)]*
- *Modbus Communication[2)]*
- *Setting from the Menu with the Screen and Keypad[2)]*

Управление TFD-01	**Управление TFD-02**	**FEATURES**
12-37VDC	12-48VDC	**Input DC Voltage Range**
30A (T_A=100 °C)	50A (T_A=100 °C)	**Max. Output Current (Short-Term 8.3ms)**
4A (T_A=100 °C)		**Continuous Output Current**
-40/+80°C	-20/+70°C	**Circuit Ambient Temperature**
4-20mA		**Operating Mode - 1**
0-10V		**Operating Mode - 2**
Pot		**Operating Mode - 3**
-	Modbus	**Operating Mode - 4**
-	8x2 Karakter x Satır 8x2 Character x Line	**Screen**
Evet/Yes		**External Start-Stop**

RoHS 2002/95/EC

1)Valid for model TFD-01.
2) Valid for model TFD-02.