

Stromag Dessau

safety in motion

NIFF



Applications

Dockside/Harbour and Marine Crane brake suitable for seawater environment.

Standard Features

Coil Body with coil	Class F insulation, nitrocarburated and postoxidated
Outer Body	Manufactured in sea water proof aluminium with large inspection holes and sealed bearing hand release provision
Armature Plate	Special protection: nitrocarburated and postoxidated
Brake Flange	Special protection: nitrocarburated and postoxidated
Friction Lining	Low wear rate with low torque fade over wide temperature band. High thermal capacity
End Cover	Manufactured in sea water proof aluminium with provision for condensation heater
Hub	Nitrocarburated and postoxidated
Fixings screws	All stainless steel
Flying Leads	1 metre long
Seals	For high protection

Optional Extra's

Simple adjustment with adjusting ring
Hand Release Lever
Tacho / Endcover provision
Terminal Box
Micro switch to monitor switching states
Micro switch for wear monitoring
Condensation heaters

Switching modules

Half wave
Full wave
Quick switching units
Built in terminal box
Attached for mounting into the motor terminal box

Advantages

- ☒ Comprehensive range 20 -10.000 Nm.
- ☒ Simple assembly to motor, no dismantling of brake required.
- ☒ Concentricity through body for tacho fixing.
- ☒ No setting required when changing armature disc and friction disc.
- ☒ Compatibility of consumable spares.
- ☒ Simple maintenance, once only adjustment by shim removal.
- ☒ Positive feel hand release mechanism.
- ☒ Proven reliable design.
- ☒ Sealed inspection holes for air gap or lining wear.
- ☒ Extremely low inertia.
- ☒ High heat dissipation.
- ☒ Free from axial loads when braking and running.
- ☒ Suitable for vertical mounting, please consult Stromag Dessau GmbH.
- ☒ Many optional extras available.
- ☒ Facilities to design to customer's special requirements.
- ☒ Protection available up to IP66.
- ☒ "Asbestos free" linings as standard
- ☒ Holding and Working brake variations.

Voltages available

Standard 24 V DC, 103 V DC, 190 V DC and 207 V DC

Other voltages on request.

Coils available to suit: AC – supplies with integral Half and Full wave rectification.

We suggest the following alternative - Customer to take standard voltage with rectifier which Stromag Dessau can provide.

Brake operation

Brakes should be switched on the DC side. (This will achieve fastest response times).

Brakes are FAIL SAFE i.e. Spring Applied.

Power on to release.

When the coil is energized, the magnetic flux attracts the armature disc to the coil body, this compresses the springs and releases the friction lining assy. and the brake is released.

When the coil is de-energized the pressure springs push the armature disc axially against the friction lining assy. This is clamped between the armature disc and the brake flange thereby preventing rotation. The braking effect is transmitted through the friction lining assy. to the shaft by way of a splined driving hub.



Micro Switch

Optional availability, Inboard Proving Switch, one common contact, one normally open contact and one normally closed contact.

This can be interlocked with motor contactor for parking brake duty, ie. brake release before starting motor.



Brake termination

Three standard versions:

- 1) Flyaway leads, usually 1 meter long through PG Cable Gland in coil body.
- 2) IP66 Terminal box, for easy connection and removal,
- 3) Versions for AC supply with built-in full wave or half wave rectification inside the Terminal Box.

Please note that when the brake is electrically connected to an AC motor and switched on the AC side, care must be taken so that the load does not drive back into the motor and generate a voltage that may hold the brake off, i.e. in hoist and lift applications. If in doubt please contact the Stromag Dessau GmbH.



Emergency hand release lever

No setting is required over maximum lining wear.

Special bearing mechanism for easy operation and positive feel.

Emergency jacking screws available if hand release lever not supplied.



Brake Flange

Manufactured to suit our brake and your motor.



Condensation heaters

Inboard condensation heaters can be provided.



Tacho / Encoder

Can be provided as optional extras.



Special Surface Finishes

Most of the components can be treated with a protective surface coating for arduous environments; i.e. Dockside Cranes / Deck mounting etc.

Calculations

Full Load Torque = FLT
Load torque = Nm
Torque = Nm
Power = kW
Constant = 9550
Speed = rpm

Initial Torque, size of brake = FLT x Factor (25% - 200%)

Calculating Maximum Stops per Hour using Braking Tables

Example:

Motor = 15 kW; 1500 rpm

J = Total inertia of Load + motor = 2.04 kgm²

M_L = Load Torque = 20 Nm

M_{SN} = Brake Torque = 100% FLT

$$\text{Motor FLT} = \frac{\text{kW} \times 9550}{\text{rpm}} = \frac{15 \times 9550}{1500} = \underline{\underline{95.5 \text{ Nm}}}$$

Brake selection = NFF 10 (100 Nm)

$$\begin{aligned} \text{KJ per switching} &= \frac{J \times n^2}{182000} \times \frac{M_{SN}}{M_{SN} \pm M_L} \\ &= \frac{2.04 \times 1500^2}{182000} \times \frac{100}{100 + 20} \\ &= 25.21 \times \frac{100}{120} = \underline{\underline{21 \text{ kJ per switching}}} \end{aligned}$$

From NFF Table "Permissible heat capacity", page 7,
at 1500 rpm

NFF 10 Brake will stop approx. 40 times per hour.

To Calculate Stopping Time

$$\text{Stopping Time} = \frac{J \times \text{rpm}}{9.55 \times (M_{SN} \pm M_L)}$$

Example:

Brake = NFF 10 (100 Nm)

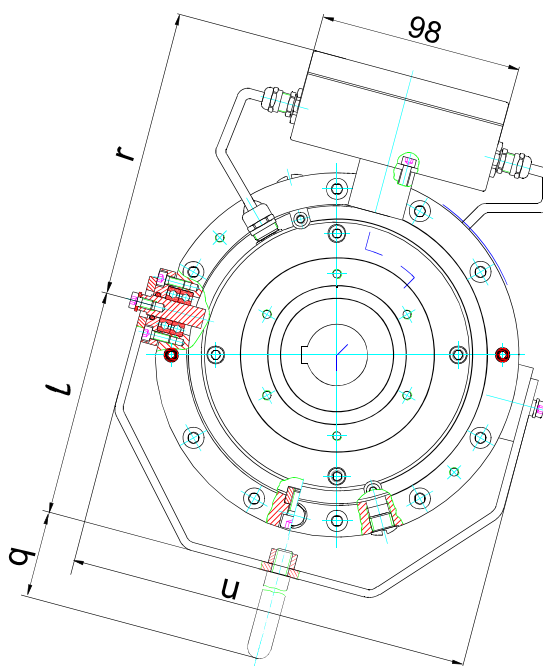
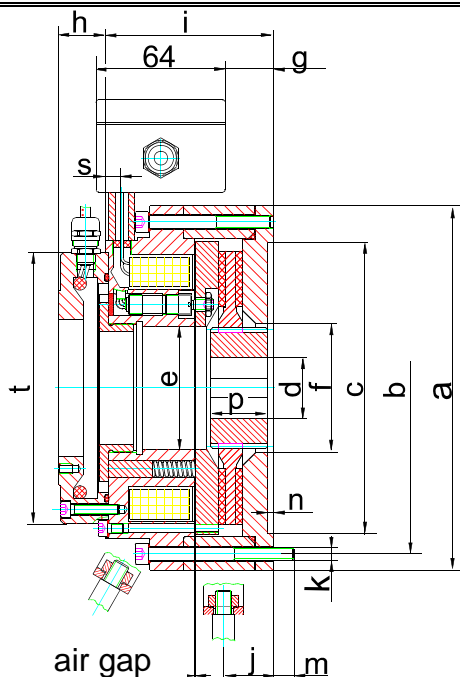
Motor = 15 kW; 1500 rpm

J = Total inertia of load + motor = 2.04 kgm²

T_L = Load Torque = 20 Nm

$$\text{Stopping Time} = \frac{2.04 \times 1500}{9.55 \times (100 + 20)}$$

Stopping Time = 2.67 seconds + Brake response time

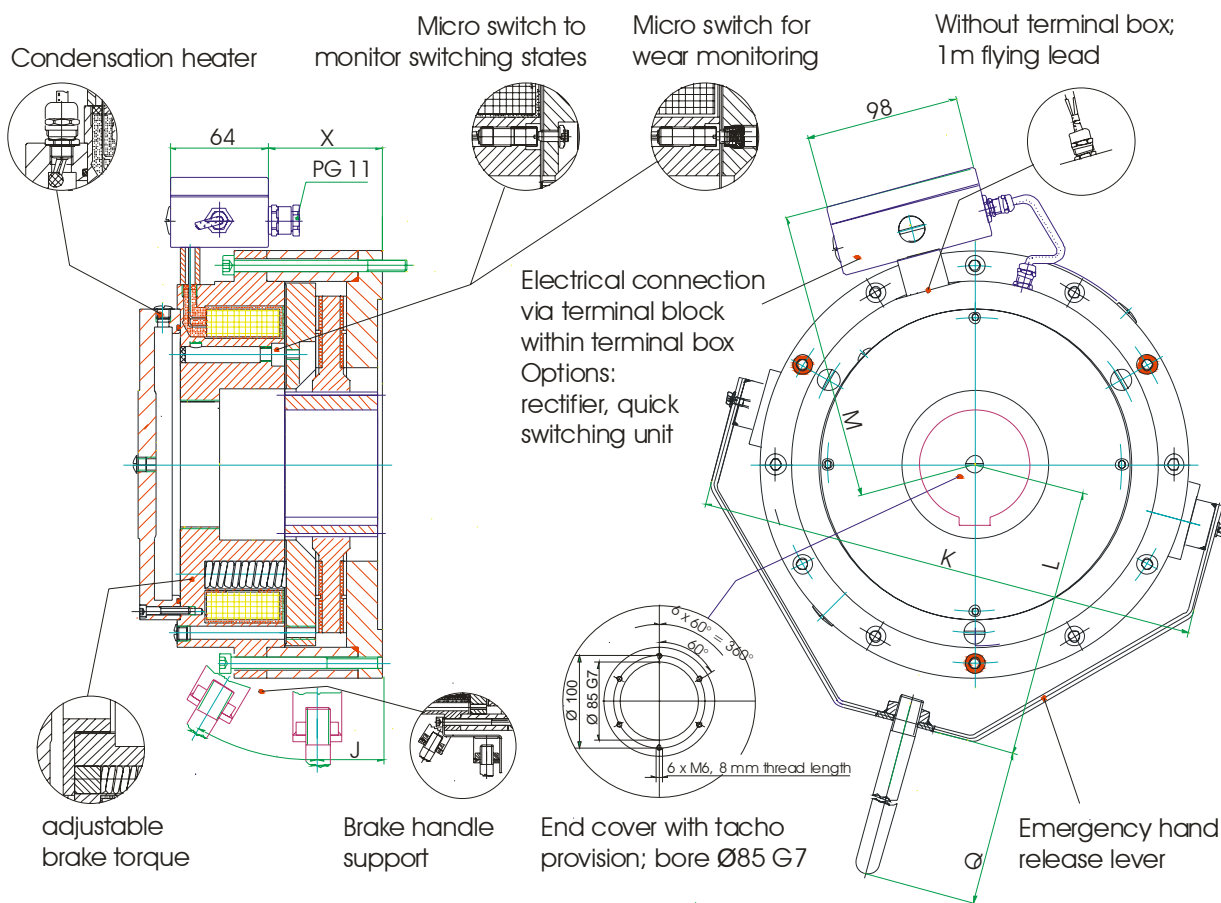


Brake size		2	4	6.3	10	16	25	40	63	100	160	250	400	630	1000
Brake torque	Nm	20	40	63	100	160	250	400	630	1000	1600	2500	4000	6300	10000
Nom. speed	min ⁻¹	5300	4900	4500	4100	3800	3500	3200	3000	2800	2200	1900	1600	1400	1200
Moment of Inertia B side	kgm ²	0.0004	0.00043	0.00080	0.00125	0.00340	0.00430	0.01212	0.01463	0.04171	0.14821	0.23515	0.43412	1.0161	1.5610
Weight	kg	6.3	10.4	13	14	21	30	40	68	85,5	133	167	278	367	491
Nom. voltage	V DC	103	103	103	103	103	103	103	103	103	103	207	207	207	207
Nom. power	W	89,9	90,7	113,9	110,4	115,8	136,6	212,9	227,3	277,6	353,5	367	400,9	489,6	535,5
Nom. current	A	0,87	0,88	1,11	1,07	1,12	1,37	2,07	2,21	2,70	3,43	357	3,89	4,75	5,2
Air gap norm.	mm	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Air gap max.	mm	1	1	1.2	1.2	1.2	1.2	1.3	1.5	1.6	1.6	1.8	1.8	1.6	1.6
a	mm	150	165	175	190	225	250	270	314	350	440	500	560	650	750
b	mm	135	152	162	175	205	225	250	292	325	418	472	530	620	710
c H8	mm	120	140	140	160	180	200	220	240	270	340	390	460	530	600
d max H7	mm	25	30	40	40	45	50	60	60	80	110	120	130	140	160
e	mm	53	55	55	65	76	78.5	90	96	100	200	215	240	270	300
f	mm	47	80	80	65	80	90	105	120	158	220	255	280	320	330
g	mm	19	33,7	33,75	38	48	62	83	86	113	125,5	133,5	168	172	182
h	mm	30	33	31	26	29	30	32	32	32	33	33	33	33	32
i	mm	73.5	89.6	92.8	95.3	104	121	141	145	168	182.6	191	226	225	265
j	mm	20,9	28	29	29	32	39	40	45	54	On request				
6 screws k	mm	M5	M6	M6	M6	M8	M8	M8	M10	M10	M12	M16	M16	M16	M20
l	mm	95	110	110	123	140	150	170	200	220	On request				
m	mm	10.5	7.8	13	14	14	13	14.2	19.5	19	24.4	21.4	26.3	30	30
n	mm	2.5	2.5	2.5	3.5	3.5	3.5	4	4	5	5.5	5	5	6	6
p	mm	24	28	30	30	35	45	45	55	75	125	130	150	185	210
q	mm	110	110	110	110	110	150	150	250	500	On request				
r	mm	115,5	128,5	128	125	151	165	179	196	238	260	290	327	364	420
s	mm	8.5	10.5	10	10	10	10	10	12	10	10	10	10	10	10
t	mm	123	140	150	146	168	172	184	230	255	255	255	320	320	400
u	mm	179,5	198	201	216	251	276	300	343	408	On request				

With keyways to DIN 6885 /1

other voltages available

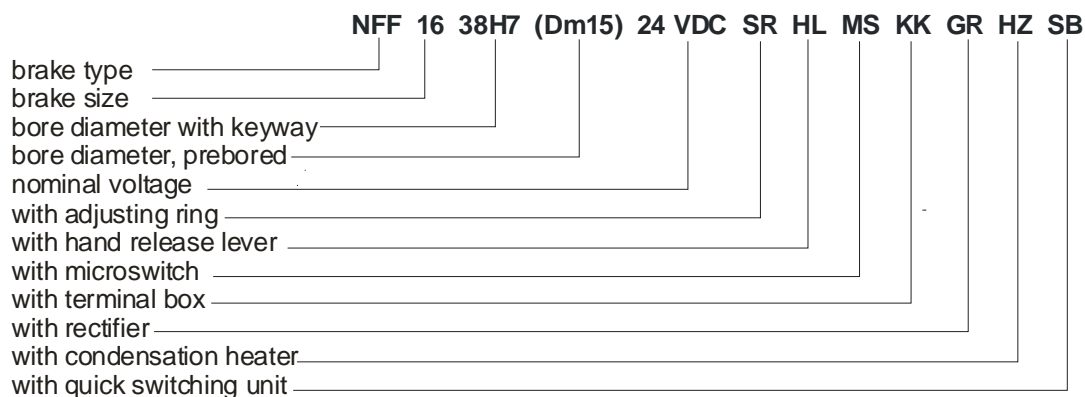
Optional Accessories



Brake Size	2	4	6.3	10	16	25	40	63	100	160	250	400	630	1000
M	115.5	128.5	128	125	151	165	179	196	238	260	290	327	364	420
K	179.5	198	201	216	251	276	300	343	408	Refer to Stromag Dessau				
J	20.9	28	29	29	32	39	40	45	54					
L	95	110	110	123	140	150	170	200	220					
X	19	33.75	33.75	38	48	62	83	86	113	125.5	133.5	168	172	182
Q	110	110	110	110	110	150	150	250	500					

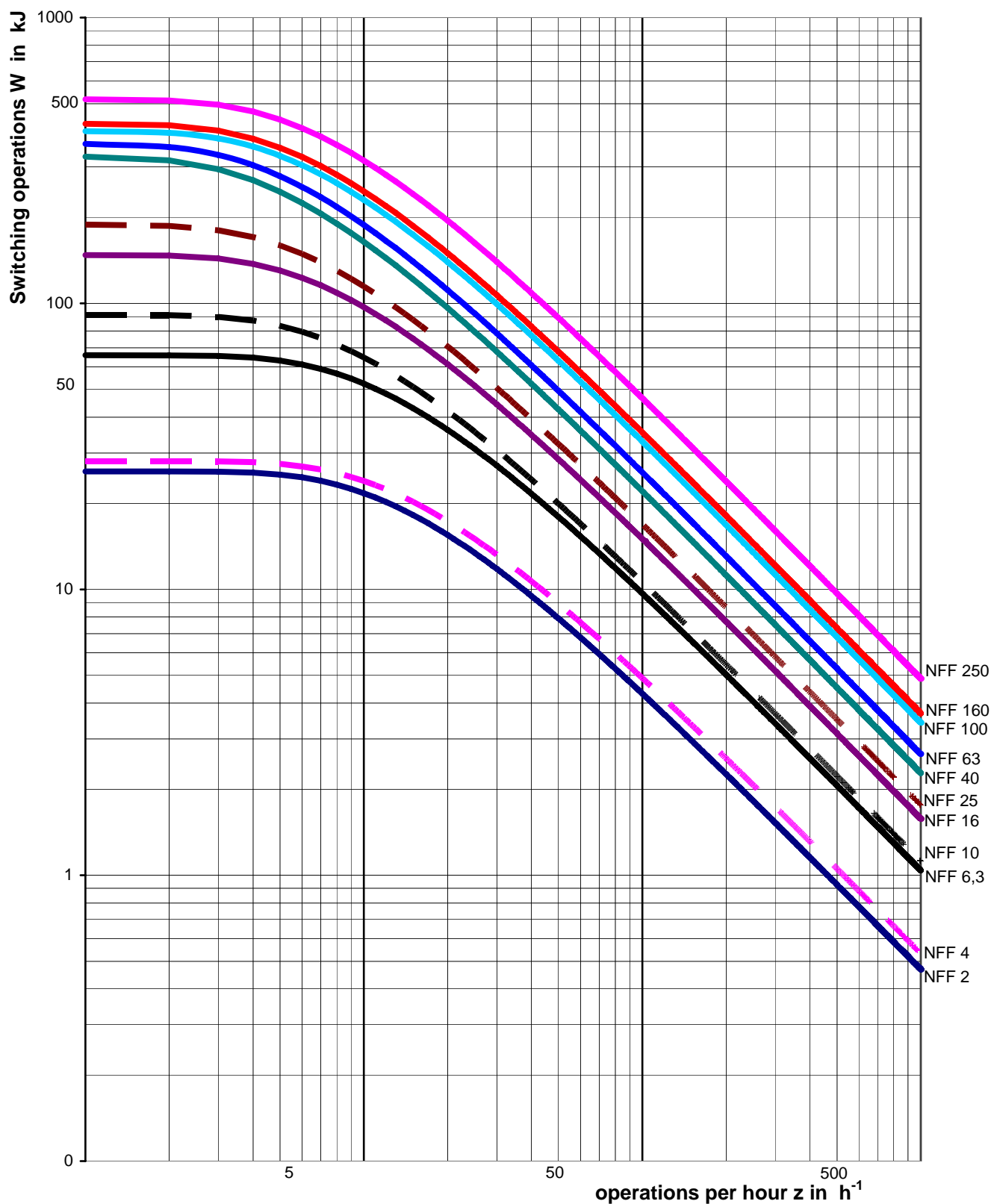
Dimensions not given are available

Example of designation



Permissible Heat Capacity

Switching operations per switching in relation to the number of switchings
 $W = f(z)$ for $n = 1500 \text{ rpm}$ **



** permissible switching operations per switching at other speed ratings on request

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