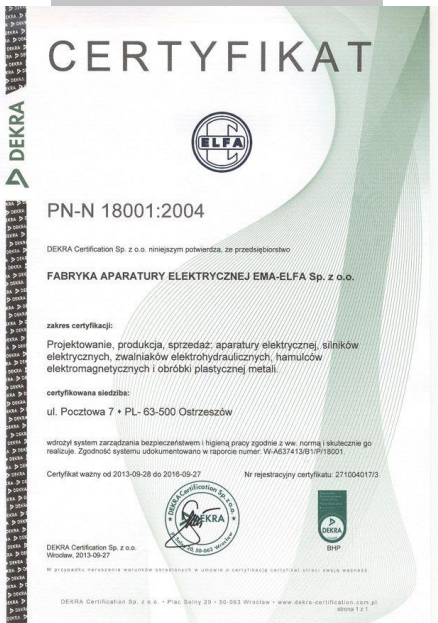
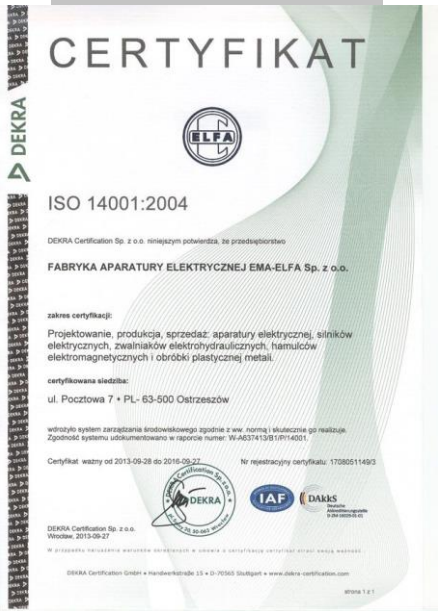


**Cantoni**®  
**GROUP**



**ELECTROMAGNETIC DISC BRAKES**

**FACTORY OF ELECTRIC APPARATUS  
EMA – ELFA Sp. z o.o.**



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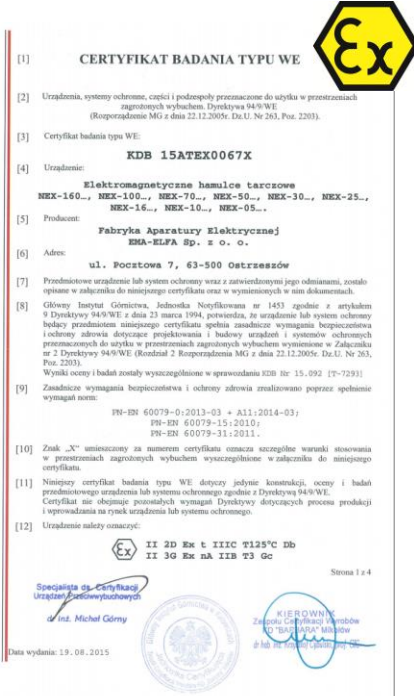
## Electromagnetic disc brakes

- H2SP
- HPS
- 2H2SP
- HPSX
- H2SPX
- HPS...AT (theatrical version)
- H2SP...AT (theatrical version)
- STE and STK (theatrical version)
- 2H2SP...BT (theatrical version)
- HAS, HS(Y)
- HSAX, HSX(Y)
- NE (high level of protection)
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Brakes are designed, built and tested in conformance with requirements of ISO 9001 and ISO 14001 quality management standards. Our products, described in this information sheet, have CE marks, which means that they are compatible with EU safety-related directives. The family of NEX brakes meets essential requirements for protective equipment and systems intended for use in areas subject to gas and dusts explosion hazard (94/9/EC ATEX Directive), which is confirmed by a notified body certificate.





# ELECTROMAGNETIC DISC BRAKES H2SP

H2SP

Spring actuated and electromagnetically released disk brake type H2SP powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters	Unit	Brake type													
		H2SP 56	H2SP 63	H2SP 71	H2SP 80	H2SP 90	H2SP 100	H2SP 112	H2SP 132	H2SP 160	H2SP 180	H2SP 200	H2SP 280	H2SP 315	
Supply voltage	$U_n$ [V]	24, 104, 180, 207												24, 104, 180	
Power	$P_{20^\circ}$ [W]	16	20	25	30	30	40	50	55	65	75	100	250	340	
Braking torque	$M_h$ [Nm]	4	4	8	16	20	32	60	100	150	240	500	1000	1600	
Max. speed	$n_{max}$ $min^{-1}$	3000													
Weight	G [kg]	0,5	0,7	1,8	3,2	3,2	6,6	7,5	11,2	17,0	24,8	29,0	80,0	120	
Ambient temperature	T $^\circ C$	-25 ÷ +40													
Operating time *	On direct voltage side	$t_{0,1}$	20	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	10	17	35	40	40	50	65	90	110	200	270	300	500
	On alternating voltage side	$t_{0,1}$	20	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side												

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

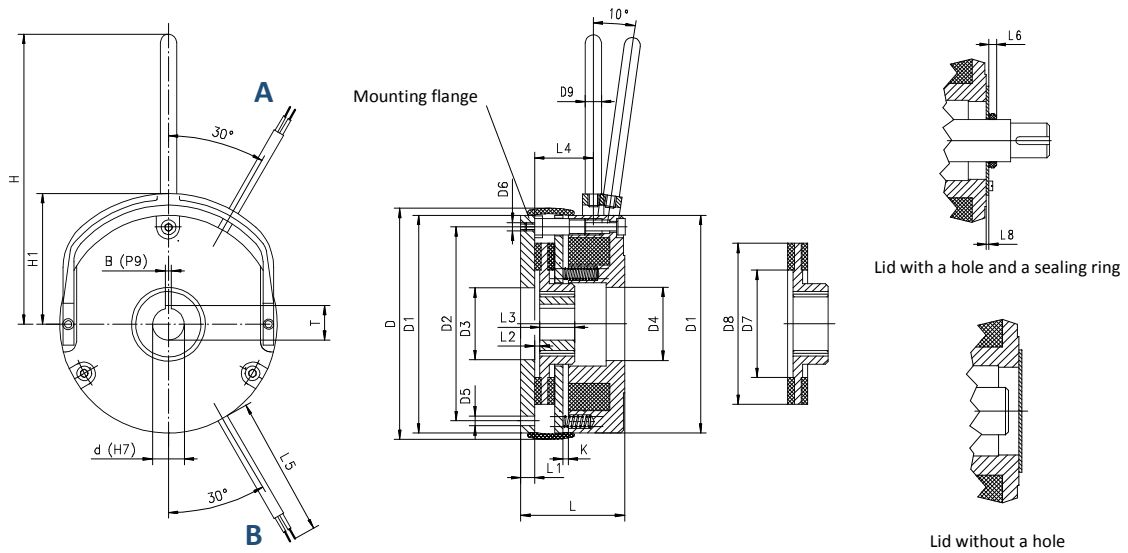
$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

**Cable output:**

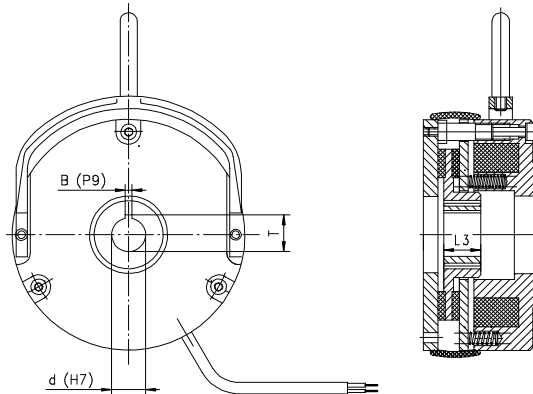
A – H2SP56, H2SP100, H2SP112, H2SP132, H2SP160, H2SP180, H2SP280, H2SP315

B – H2SP63, H2SP71, H2SP80, H2SP90, H2SP200



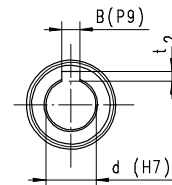
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	L8	K	H	H1
H2SP 56	4	83	74	62	25	13	4,3x3	M4x3	30	50	6	40	6	0,5	18	23	450	6,7	1,0	0,2	90	46
H2SP 63	4	91	84	72	25	23,4	4,5x3	M4x3	47	62	8	41	6	0,5	18	24	450	6,7	1,0	0,2	100	51
H2SP 71	8	110	102	90	30	30,4	5,5x3	M5x3	59	76	8	48	7	1,8	20	29	450	6,7	1,0	0,2	115	61
H2SP 80	16	133	125	112	44	40,4	6,4x3	M6x3	61	95	10	58	9	3,5	20	37	450	9,0	1,0	0,2	170	73
H2SP 90	20	133	125	112	44	40,4	6,4x3	M6x3	61	95	10	58	9	3,5	20	37	450	9,0	1,0	0,2	170	73
H2SP 100	32	156	148	132	45	48,4	6,4x3	M6x3	74	114	10	66	9	3	25	40,5	450	9,0	1,0	0,3	184	94
H2SP 112	60	170	162	145	55	58,3	8,4x3	M8x3	90	124	12	76	11	3	30	41,5	450	9,0	2,0	0,3	191	102
H2SP 132	100	196	188	170	84	66,4	8,4x3	M8x3	100	154	12	83	11	3	30	43,5	450	9,0	2,0	0,3	204	116
H2SP 160	150	223	215	196	104	82,8	9,0x4	M8x6	130	176	12	91	11	3	35	51	450	11,0	2,0	0,3	230	129
H2SP 180	240	262	252	230	134	87,8	11x6	M10x6	148	207	14	110	11	3	40	68	800	11,0	2,0	0,5	339	157
H2SP 200	500	314	302	278	120	132,8	11x6	M10x6	198	255	14	122	12,5	4,5	50	82	800	11,0	2,0	0,5	466	182
H2SP 280	1000	356	342	308	150	150,0	13x6	M12x6	200	270	20	157	25	0	70	90	1500	11,0	3,0	0,6	408	206
H2SP 315	1600	412	400	360	170	170,0	13x6	M12x6	210	300	20	171	25	0	80	98	1500	13,5	3,0	0,6	434	232

**Geared bushing hole diameters**



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
H2SP 56	11	4	12,8	11		18
H2SP 63	15	5	17,3	15		18
H2SP 71	15	5	17,3	15		20
H2SP 80	19	6	21,8	25		20
H2SP 90	19	6	21,8	25		20
H2SP 100	25	8	28,3	25		25
H2SP 112	25	8	28,3	35**		30
H2SP 132	35**	8	38,3	35**		30
H2SP 160	40	12	43,3	45	50	35
H2SP 180	42	12	45,3	45	50	40
H2SP 200	42	12	45,3	45	75	50
H2SP 280	55	16	59,3	75		70
H2SP 315	70	20	74,9	100		80

**Normalized hole diameters ranges**



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9
75 - 85	22	5,4
85 - 95	25	5,4
95 -110	28	6,4

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the H2SP112 and H2SP132 brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# H2SP

MECHANICAL SIZE
56,63,71,80,90,100,112,132, 160,180,200,280,315

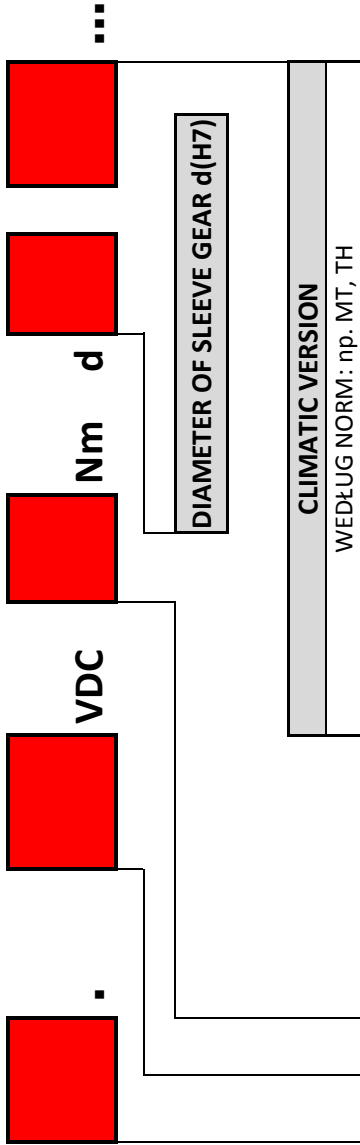
CONFIGURATION	
WITHOUT FITTING / ACCESORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

**Execution options for the customer's request:**

- non-standard diameter of the sleeve gear brake d(H7)
- equipped with heating elements in the winding (need to define the voltage supply) – e.g. **GR\_\_V**
- work at low temperatures -40°C - **Z**
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**
- increased durability of the brake, the brake is guaranteed lifetime 10x10<sup>6</sup> cycles - brake design allows for long-term and reliable operation H2SP56 – H2SP90 - **T**

**EXAMPLE:**

H2SP 100. 10. 104VDC 32Nm d25 GR110V  
H2SP 80. 32. 180VDC 12Nm d19 T  
H2SP 112. 22. 24VDC 60Nm d25 KZ+KO



NOMINAL BRAKING TORQUE [Nm]												
H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP	H2SP
56	63	71	80	90	100	112	132	160	180	200	280	315
4	4	8	16	20	32	60	100	150	240	500	1000	1600
		6	12	16	24	45	80	120	180	360	800	1300
		3	12	16	30	60	60	75	120	270	700	1050
											600	

**OPERATING VOLTAGE [V DC]**

24, 104, 180, 207

**PROTECTION RATING**

BASIC VERSION – WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - WITH HOLE D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - WITH HOLE D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 – WITH HOLE D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# H2SP

## ELECTROMAGNETIC DISC BRAKES

# HPS



Spring actuated and electromagnetically released disk brake type HPS powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Braking torque can be accurately set by means of regulating nut. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters	Unit	Brake type											
		HPS 04	HPS 06	HPS 08	HPS 10	HPS 12	HPS 14	HPS 16	HPS18	HPS 20	HPS 25		
Supply voltage	$U_n$ [V]	24 , 104 , 180 , 207											
Power	$P_{20^\circ}$ [W]	16	20	25	30	40	50	55	65	75	130		
Braking torque	$M_h$ [Nm]	4	4	8	20	32	60	100	150	240	500		
Max. speed	$n_{max}$ $min^{-1}$	3000											
Weight	G [kg]	0,5	0,7	1,8	3,2	6,6	7,5	11,2	17,0	24,8	29,0		
Ambient temperature	T $^\circ C$	-25 ÷ +40											
Operating time *	On direct voltage side	$t_{0,1}$	ms	20	35	65	90	120	150	180	300	400	500
		$t_{0,9}$	ms	10	17	35	40	50	65	90	110	200	270
	On alternating voltage side	$t_{0,1}$	ms	20	35	65	90	120	150	180	300	400	500
		$t_{0,9}$	ms	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side									

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

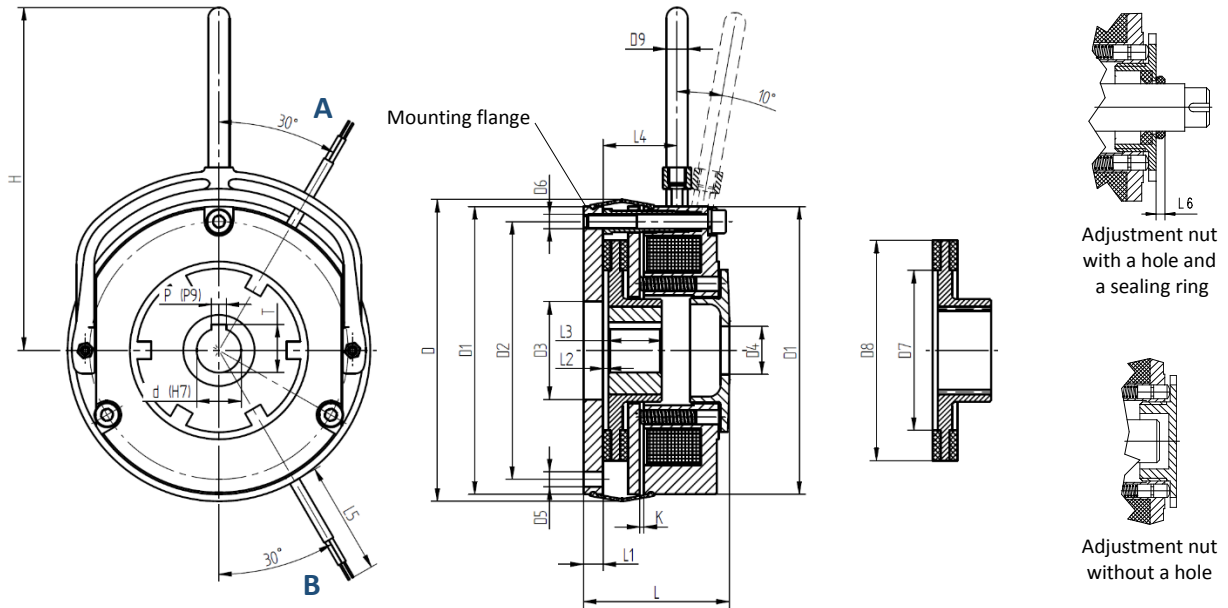
$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

**Cable output:**

**A – HPS12, HPS14, HPS16, HPS18, HPS20**

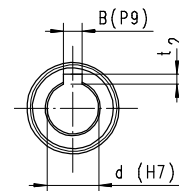
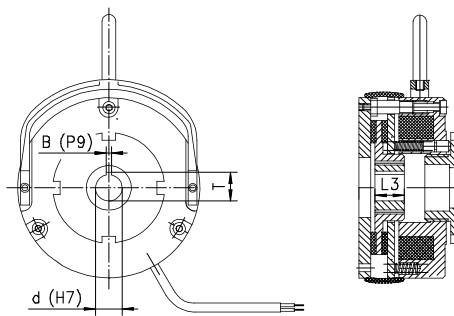
**B – HPS04, HPS 06, HPS08, HPS10, HPS25**



Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	K	H	H1
HPS 04	4	83	74	62	25	13	∅4,3x3	M4x3	30	50	6	45	6	0,5	18	23	450	6,7	0,2	98	46
HPS 06	4	91	84	72	25	17	∅4,5x3	M4x3	47	62	8	45	6	0,5	18	24	450	6,7	0,2	100	51
HPS 08	8	110	102	90	30	17	∅5,5x3	M5x3	59	76	8	53	7	1,8	20	29	450	6,7	0,2	111	61
HPS 10	16	133	125	112	44	21	∅6,4x3	M6x3	61	95	10	65	9	3,5	20	37	450	9,0	0,2	160	73
HPS 12	32	156	148	132	45	27	∅6,4x3	M6x3	74	114	10	74	9	3	25	40,5	450	9,0	0,3	181	94
HPS 14	60	170	162	145	55	27	∅8,4x3	M8x3	90	124	12	82	11	3	30	41,5	450	9,0	0,3	193	102
HPS 16	100	196	188	170	84	38	∅8,4x3	M8x3	100	154	12	89	11	3	30	43,5	450	9,0	0,3	206	116
HPS 18	150	223	215	196	104	43	∅9,0x4	M8x6	130	176	12	100	11	3	35	51	450	11,0	0,3	237	129
HPS 20	240	262	252	230	134	45	∅11x6	M10x6	148	207	14	120	11	3	40	68	800	11,0	0,5	339	157
HPS 25	500	314	302	278	120	45	∅11x6	M10x6	198	255	14	134	12,5	4,5	50	82	800	11,0	0,5	466	182

**Geared bushing hole diameters**

**Normalized hole diameters ranges**



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
HPS 04	11	4	12,8	11		18
HPS 06	15	5	17,3	15		18
HPS 08	15	5	17,3	15		20
HPS 10	19	6	21,8	25		20
HPS 12	25	8	28,3	25		25
HPS 14	25	8	28,3	35**		30
HPS 16	35**	8	38,3	35**		30
HPS 18	40	12	43,3	45	50	35
HPS 20	42	12	45,3	45	50	40
HPS 25	42	12	45,3	45	75	50

Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\* s<sub>max</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the HPS14 and HPS16 brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# HPS

<b>MECHANICAL SIZE</b>	04, 06, 08, 10, 12, 14, 16, 18, 20, 25
------------------------	--

<b>CONFIGURATION</b>	
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear d(H7)
- equipped with heating elements in the winding (need to define the voltage supply) – e.g. **GR\_\_V**
- work at low temperatures -40°C - **Z**
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**
- increased durability of the brake, the brake is guaranteed lifetime 10x10<sup>6</sup> cycles - brake design allows for long-term and reliable operation HPS06 – HPS10 - **T**

### EXAMPLE:

HPS 12. 30. 180 V DC 32 Nm d25 GR104V  
 HPS 10. 11. 104 V DC 16 Nm d19 MT  
 HPS 14. 22. 24VDC 60Nm d25 KZ+KO



<b>CLIMATIC VERSION</b>	ACCORDING TO STANDARDS: e.g. MT, TH
-------------------------	-------------------------------------

<b>NOMINAL BRAKING TORQUE [Nm]</b>										
HPS 04	HPS 06	HPS 08	HPS 10	HPS 12	HPS 14	HPS 16	HPS 18	HPS 20	HPS 25	
4	4	8	6	12	16	20	24	30	40	
		16	24	32	45	60	80	100	120	150
		3	5	6	12	16	24	30	40	60
				12	16	24	30	40	60	75
				16	24	30	40	60	75	120
				30	40	60	75	120	180	270
				40	60	75	120	180	270	180

<b>OPERATING VOLTAGE [V DC]</b>	24, 104, 180, 207
---------------------------------	-------------------

<b>PROTECTION RATING</b>	
BASIC VERSION – NUT WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - NUT WITH D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - NUT WITH D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 - NUT WITH D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
 It is possible to realize special versions.





# ELECTROMAGNETIC DISC BRAKES 2H2SP

2H2SP

**EN 81-1+A3**

Used in lifting mechanisms are mechanical brakes, electrically released spring actuated disk brakes, designed on the basis of brake H2SP. This brake immobilizes the weight during damage, incorrect manoeuvre or breakdown. The brake must transfer all forces occurring in such situations. To meet such requirements while maintaining the drive as simple as possible in the mechanical part, simple asynchronous motor is used controlled by frequency converters, provided with electromagnetic disk brake of design specific for hoisting systems. Safety considerations have required designing a braking mechanism with dual safety circuit and maximum reduction of noise level during dynamic operation of brake unit. Drive system fitted with brake 2H2SP operates very quietly in spite of maintaining all electrical and mechanical parameters.

The specific feature of this brake is that there are two brake discs installed on the common motor shaft, each with independent electromagnetic circuit while ensuring the braking moment necessary for correct operation of the drive. It's simple and compact design permits applications in elevator mechanisms, drive motors, which should ensure smooth operation and redundant safety circuits. An additional feature is that the brake with this design has mechanical specifications necessary for the drive function, whereas the installation dimensions are equal to classic brakes, which allows them to be used in the space available on drive motors.

### Applications:

Passenger elevator drives, platforms, cranes, overhead travelling cranes - wherever one has to keep in mind strict regulations of technical supervisory authorities applicable to elevator equipment. Brakes meet strict safety regulations related to elevator design and installation defined in PN-EN 81-1+A3:2010, EN 81-1+A3:2009 standards.

Parameters	Unit	Brake type												
		2H2SP 63	2H2SP 71	2H2SP 80	2H2SP 90	2H2SP 100	2H2SP 112	2H2SP 132	2H2SP 160	2H2SP 180	2H2SP 200	2H2SP 280	2H2SP 315	
Supply voltage	$U_n$	24, 104, 180, 207										24, 104, 180		
Power	$P_{20^\circ}$	2x20	2x25	2x30	2x30	2x40	2x50	2x55	2x65	2x75	2x100	2x250	2x340	
Braking torque	$M_h$	2x4	2x8	2x16	2x20	2x32	2x60	2x100	2x150	2x240	2x500	2x1000	2x1600	
Max. speed	$n_{max}$	3000												
Weight	$G$	1,7	4,0	7,8	7,8	14,5	16,5	24,0	36,0	50,5	60,0	160,0	240,0	
Ambient temperature	$T$	-25 ÷ +40												
Operating time *	On direct voltage side	$t_{0,1}$	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	17	35	40	40	50	65	90	110	200	270	300	500
	On alternating voltage side	$t_{0,1}$	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side											

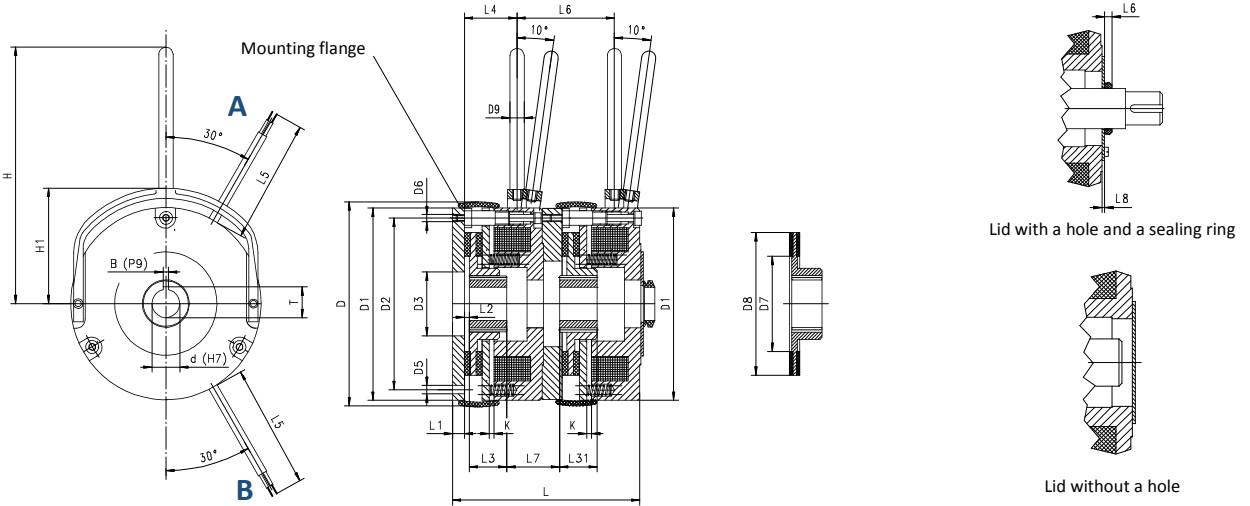
$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

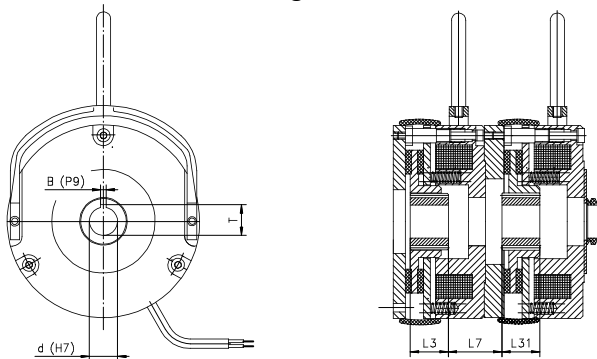
### Cable output:

A – 2H2SP100, 2H2SP112, 2H2SP132, 2H2SP160, 2H2SP180, 2H2SP280, 2H2SP315  
 B – 2H2SP63, 2H2SP71, 2H2SP80, 2H2SP90, 2H2SP200



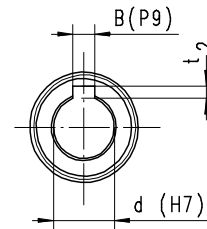
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D5	D6	D7	D8	D9	L	L1	L2	L3	L31	L4	L5	L6	L7	L8	K	H	H1
2H2SP 63	2x4	87	84	72	25	4,5x3	M4x3	47	62	8	86	6	1,8	18	24	25	450	45	23	1,0	0,2	100	51
2H2SP 71	2x8	106	102	90	30	5,5x3	M5x3	59	76	8	97	7	2,5	20	27	28	450	50	25	1,0	0,2	115	61
2H2SP 80	2x16	132	125	112	44	6,4x3	M6x3	61	95	10	118	9	3,5	20	28	34	450	61	32	1,0	0,2	170	73
2H2SP 90	2x20	132	125	112	44	6,4x3	M6x3	61	95	10	118	9	3,5	20	28	34	450	61	32	1,0	0,2	170	73
2H2SP 100	2x32	157	148	132	45	6,4x3	M6x3	74	114	10	133	9	3	25	34	37	450	69	34	1,0	0,3	184	94
2H2SP 112	2x60	169	162	145	55	8,4x3	M8x3	90	124	12	156	11	3	30	42	40	450	80	37	1,0	0,3	191	102
2H2SP 132	2x100	195	188	170	84	8,4x3	M8x3	100	154	12	170	11	3	30	42	40	450	88	45	2,0	0,3	204	116
2H2SP 160	2x150	221	215	196	104	9,0x4	M8x6	130	176	12	190	11	4,5	35	45	52	450	110	55	2,0	0,3	230	129
2H2SP 180	2x240	257	252	230	134	11x6	M10x6	148	207	14	220	11	5	40	55	62	800	115	60	2,0	0,5	339	157
2H2SP 200	2x500	308	302	278	120	11x6	M10x6	198	255	14	250	12,5	6	50	65	80	800	130	70	2,0	0,5	466	182
2H2SP 280	2x1000	356	342	308	150	13x6	M12x6	200	270	20	306	25	0	70	80	90	1500	150	70	2,0	0,6	408	206
2H2SP 315	2x1600	412	400	360	170	13x6	M12x6	210	300	20	340	25	0	80	90	98	1500	180	76	3,0	0,6	434	232

### Geared bushing hole diameters



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3	L31	L7
H2SP 63	15	5	17,3	15		18	24	23
H2SP 71	15	5	17,3	15		20	27	25
H2SP 80	19	6	21,8	25		20	28	32
H2SP 90	19	6	21,8	25		20	28	32
H2SP 100	25	8	28,3	25		25	34	34
H2SP 112	25	8	28,3	35**		30	42	37
H2SP 132	35**	8	38,3	35**		30	42	45
H2SP 160	40	12	43,3	45	50	35	45	55
H2SP 180	42	12	45,3	45	50	40	55	60
H2SP 200	42	12	45,3	45	75	50	65	70
H2SP 280	55	16	59,3	75		70	80	70
H2SP 315	70	20	74,9	100		80	90	76

### Normalized hole diameters ranges



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9
75 - 85	22	5,4
85 - 95	25	5,4
95 - 110	28	6,4

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the 2H2SP112 and 2H2SP132 brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# 2H2SP

## MECHANICAL SIZE

63,71,80,90,100,112,132,  
160,180,200,280,315

## CONFIGURATION

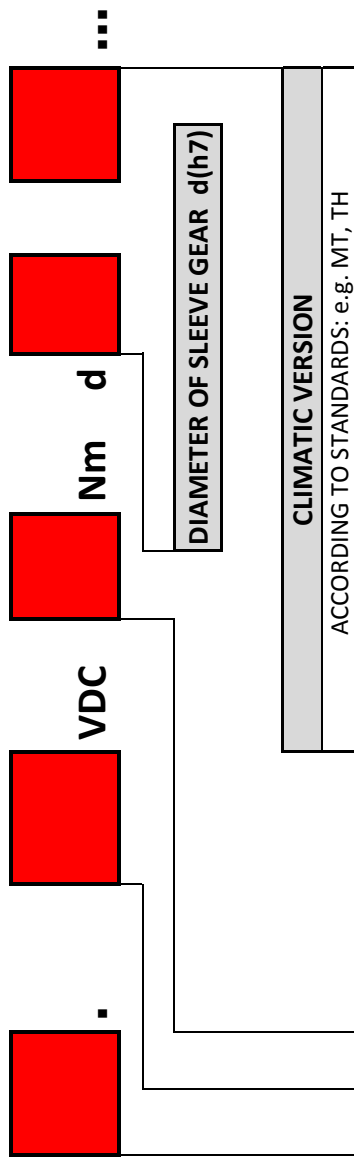
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- equipped with heating elements in the winding (need to define the voltage supply) – e.g. **GR\_V**
- work at low temperatures -40°C - **Z**
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**

### EXAMPLE:

2H2SP 100. 10. 104VDC 2x32Nm d25 GR110V  
2H2SP 80. 32. 180VDC 2x12Nm d19 T  
2H2SP 112. 22. 24VDC 2x60Nm d25 KZ+KO



## NOMINAL BRAKING TORQUE [Nm]

2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP	2H2SP
63	71	80	90	100	112	132	160	180	200	280	315
2x8	2x16	2x16	2x20	2x32	2x60	2x100	2x150	2x240	2x500	2x1000	2x1600
2x4	2x6	2x12	2x16	2x24	2x45	2x80	2x120	2x180	2x360	2x900	2x1300
	2x3	2x12	2x12	2x16	2x30	2x60	2x75	2x120	2x270	2x700	2x1050

## OPERATING VOLTAGE [V DC]

24, 104, 180, 207

## PROTECTION RATING

BASIC VERSION – WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - WITH HOLE D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - WITH HOLE D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 – WITH HOLE D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# 2H2SP

## ELECTROMAGNETIC DISC BRAKES

# HPSX



Spring actuated and electromagnetically released disk brake type HPSX powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Braking torque can be accurately set by means of regulating nut. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type									
			HPSX 06	HPSX 08	HPSX 10	HPSX 12	HPSX 14	HPSX 16	HPSX 18	HPSX 20	HPSX 25	
Supply voltage	$U_n$	[V]	24, 104, 180, 207									
Power	$P_{20^\circ}$	[W]	20	25	30	40	50	55	65	75	130	
Braking torque	$M_h$	[Nm]	7	13	26	50	100	160	240	400	500	
Max. speed	$n_{max}$	$min^{-1}$	3000									
Weight	G	[kg]	0,8	2,0	3,6	6,9	8,0	12,0	18,3	25,5	30,5	
Ambient temperature	T	$^\circ C$	-25 ÷ +40									
Operating time *	On direct voltage side	$t_{0,1}$	ms	35	65	90	120	150	180	300	400	500
		$t_{0,9}$		17	35	40	50	65	90	110	200	270
	On alternating voltage side	$t_{0,1}$	ms	35	65	90	120	150	180	300	400	500
		$t_{0,9}$		Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side								

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

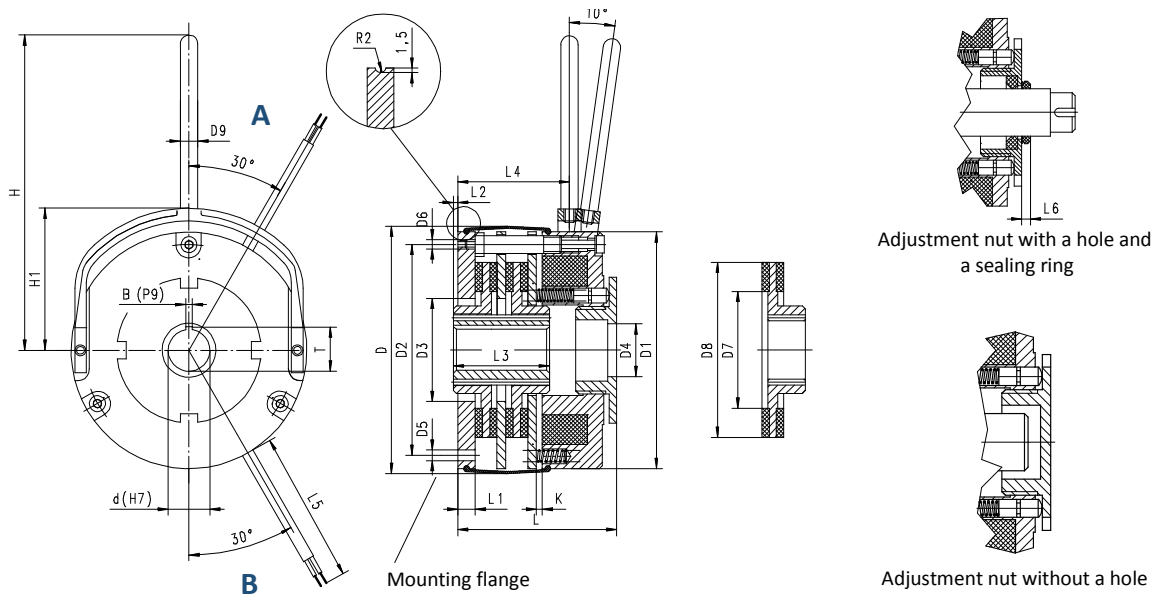
$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

Cable output:

A – HPSX12, HPSX14, HPSX16, HPSX18, HPSX20

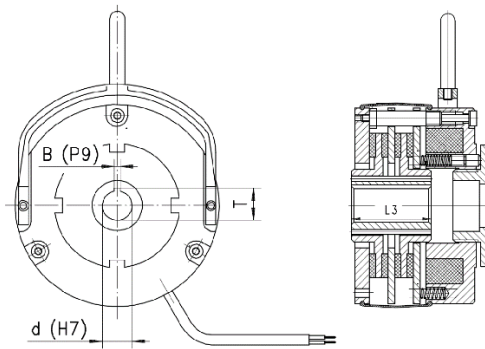
B – HPSX06, HPSX08, HPSX10, HPSX25



**HPSX**

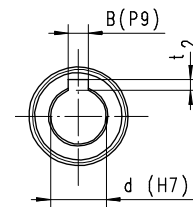
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	K	H	H1
HPSX 06	7	87	84	72	25	17	4,5x3	M4x3	47	62	8	52	6	0	25	37	450	6,7	0,2	100	51
HPSX 08	13	106	102	90	40	17	5,5x3	M5x3	59	76	8	68	7	4	48	40	450	6,7	0,2	111	61
HPSX 10	26	132	125	112	44	21	6,4x3	M6x3	61	95	10	82	9	3	55	53	450	9,0	0,2	160	73
HPSX 12	50	157	148	132	45	27	6,4x3	M6x3	74	114	10	94	9	5	65	59	450	9,0	0,3	181	94
HPSX 14	100	169	162	145	55	27	8,4x3	M8x3	90	124	12	106	11	8	75	63	450	9,0	0,3	193	102
HPSX 16	160	195	188	170	84	38	8,4x3	M8x3	100	154	12	112	11	8	75	63	450	9,0	0,3	206	116
HPSX 18	240	221	215	196	104	43	9,0x4	M8x6	130	176	12	134	11	16	92	82	450	11,0	0,3	237	129
HPSX 20	400	257	252	230	134	45	11x6	M10x6	148	207	14	154	11	16	105	94	450	11,0	0,5	339	157
HPSX 25	800	308	302	278	120	45	11x6	M10x6	198	255	14	168	12,5	19	115	113	450	11,0	0,5	466	182

Geared bushing hole diameters



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
HPSX 06	15	5	17,3	15		25
HPSX 08	15	5	17,3	15		48
HPSX 10	19	6	21,8	25		55
HPSX 12	25	8	28,3	25		65
HPSX 14	25	8	28,3	35**		75
HPSX 16	35**	8	38,3	35**		75
HPSX 18	40	12	43,3	45	50	92
HPSX 20	42	12	45,3	45	50	105
HPSX 25	42	12	45,3	45	75	115

Normalized hole diameters ranges



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the HPSX14 and HPSX16 brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# HPSX

<b>MECHANICAL SIZE</b>
06, 08, 10, 12, 14, 16, 18, 20, 25

## CONFIGURATION

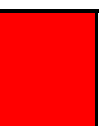
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- equipped with heating elements in the winding (need to define the voltage supply) – e.g. **GR\_\_V**
- work at low temperatures -40°C - **Z**
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**

### EXAMPLE:

HPSX 12. 30. 180 V DC 32 Nm d25 GR104V  
 HPSX 10. 11. 104 V DC 16 Nm d19 MT  
 HPSX 14. 22. 24VDC 100Nm d25 KZ+KO



....

VDC

Nm d

DIAMETER OF SLEEVE GEAR d(H7)

## CLIMATIC VERSION

ACCORDING TO STANDARDS: e.g. MT, TH

NOMINAL BRAKING TORQUE [Nm]									
HPSX 06	HPSX 08	HPSX 10	HPSX 12	HPSX 14	HPSX 16	HPSX 18	HPSX 20	HPSX 25	HPSX 25
7	13	26	50	100	160	240	400	800	800
	10	20	32	80	130	180	300	700	700
		16			10	130	240	600	600

## OPERATING VOLTAGE [V DC]

24, 104, 180, 207

## PROTECTION RATING

BASIC VERSION – NUT WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - NUT WITH D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - NUT WITH D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 - NUT WITH D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.

It is possible to realize special versions.



# ELECTROMAGNETIC DISC BRAKES H2SPX

**H2SPX**

Spring actuated and electromagnetically released disk brake type H2SPX powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type												
			H2SPX 63	H2SPX 71	H2SPX 80	H2SPX 90	H2SPX 100	H2SPX 112	H2SPX 132	H2SPX 160	H2SPX 180	H2SPX 200	H2SPX 280	H2SPX 315	
Supply voltage	$U_n$	[V]	24, 104, 180, 207										24, 104, 180		
Power	$P_{20^\circ}$	[W]	20	25	30	30	40	50	55	65	75	100	250	340	
Braking torque	$M_h$	[Nm]	7	13	26	26	50	100	160	240	400	700	1600	2500	
Max. speed	$n_{max}$	$min^{-1}$	3000												
Weight	G	[kg]	0,7	1,9	3,5	3,5	6,8	7,8	11,8	18,0	25,3	30,0	85,0	126,0	
Ambient temperature	T	$^\circ C$	-25 ÷ +40												
Operating time *	On direct voltage side	$t_{0,1}$	ms	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$		17	35	40	40	50	65	90	110	200	270	300	500
	On alternating voltage side	$t_{0,1}$	ms	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$		Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side											

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

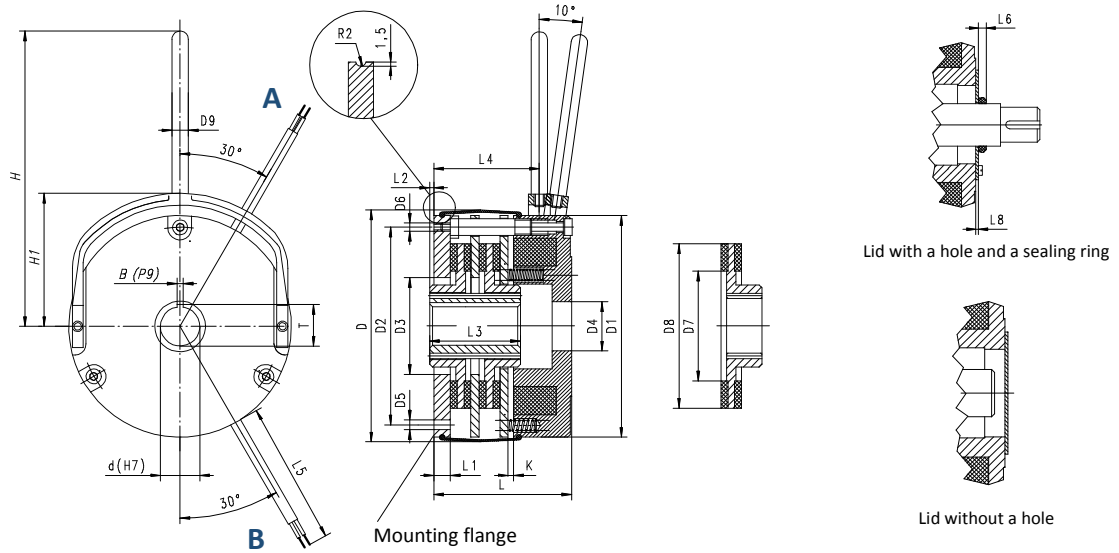
$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

**Cable output:**

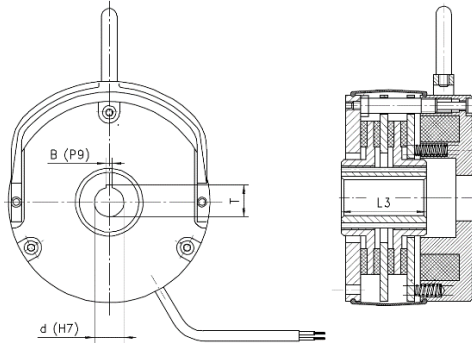
A – H2SPX100, H2SPX112, H2SPX132, H2SPX160, H2SPX180, H2SPX280, 2H2SP315

B – H2SPX63, H2SPX71, H2SPX80, H2SPX90, H2SPX200



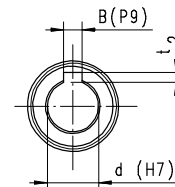
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	L8	K	H	H1
H2SPX 63	7	91	84	72	25	23,4	Ø4,5x3	M4x3	47	62	8	49	6	0	25	46	450	6,7	1,0	0,2	100	51
H2SPX 71	13	110	102	90	30	30,4	Ø5,5x3	M5x3	59	76	8	63	7	4	48	55	450	6,7	1,0	0,2	115	61
H2SPX 80	26	133	125	112	44	40,4	Ø6,4x3	M6x3	61	95	10	75	9	3	55	70	450	9,0	1,0	0,2	170	73
H2SPX 90	26	133	125	112	44	40,4	Ø6,4x3	M6x3	61	95	10	75	9	3	55	70	450	9,0	1,0	0,2	170	73
H2SPX 100	50	156	148	132	45	48,4	Ø6,4x3	M6x3	74	114	10	86	9	5	65	79	450	9,0	1,0	0,3	184	94
H2SPX 112	100	170	162	145	55	58,3	Ø8,4x3	M8x3	90	124	12	100	11	8	75	63	450	9,0	2,0	0,3	191	102
H2SPX 132	160	196	188	170	84	66,4	Ø8,4x3	M8x3	100	154	12	106	11	8	75	86	450	9,0	2,0	0,3	204	116
H2SPX 160	240	223	215	196	104	82,8	Ø9,0x4	M8x6	130	176	12	125	11	16	92	116	450	11,0	2,0	0,3	230	129
H2SPX 180	400	262	252	230	134	87,8	Ø11x6	M10x6	148	207	14	144	11	16	105	128	800	11,0	2,0	0,5	339	157
H2SPX 200	700	314	302	278	120	132,8	Ø11x6	M10x6	198	255	14	156	12,5	19	115	147	800	11,0	2,0	0,5	466	182
H2SPX 280	1600	356	342	308	150	150,0	Ø13x6	M12x6	200	270	20	200	25	42	160	177	1500	11,0	3,0	0,6	408	206
H2SPX 315	2500	412	400	360	170	170,0	Ø13x6	M12x6	210	300	20	214	25	52	180	185	1500	13,5	3,0	0,6	434	232

**Geared bushing hole diameters**



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
H2SPX 63	15	5	17,3	15		25
H2SPX 71	15	5	17,3	15		48
H2SPX 80	19	6	21,8	25		55
H2SPX 90	19	6	21,8	25		55
H2SPX 100	25	8	28,3	25		65
H2SPX 112	25	8	28,3	35**		75
H2SPX 132	35**	8	38,3	35**		75
H2SPX 160	40	12	43,3	45	50	92
H2SPX 180	42	12	45,3	45	50	105
H2SPX 200	42	12	45,3	45	75	115
H2SPX 280	55	16	59,3	75		160
H2SPX 315	70	20	74,9	100		180

**Normalized hole diameters ranges**



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9
75 - 85	22	5,4
85 - 95	25	5,4
95 - 110	28	6,4

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the H2SPX112 and H2SPX132 brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)



# H2SPX

## MECHANICAL SIZE

63,71,80,90,100,112,132,  
160,180,200,280,315

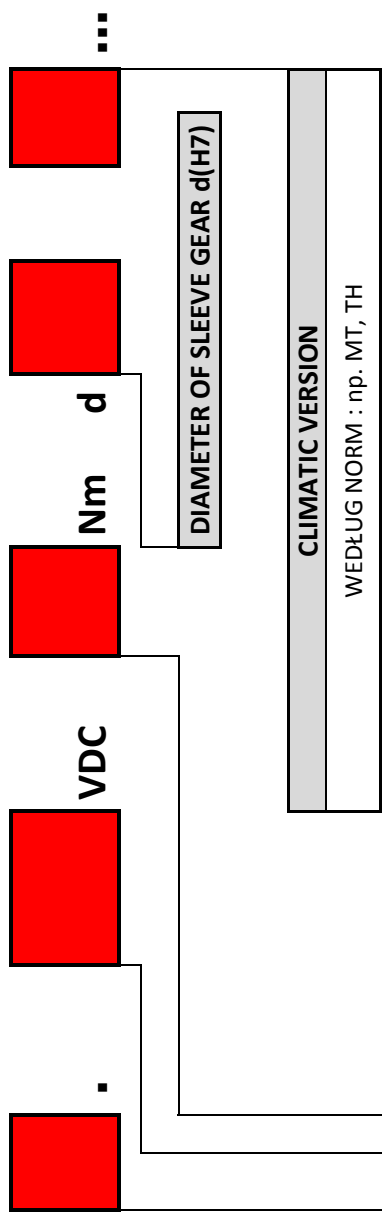
CONFIGURATION	
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- equipped with heating elements in the winding (need to define the voltage supply) – e.g. GR\_\_V
- work at low temperatures -40°C - Z
- posistor thermal protection - P
- bimetallic thermal protection - B
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - KZ
- microswitch of the brake lining control - KO
- microswitches set - KZ+KO

### EXAMPLE:

H2SPX 100. 10. 104VDC 50Nm d25 GR110V  
H2SPX 80. 32. 180VDC 26Nm d19 T  
H2SPX 112. 22. 24VDC 80Nm d25 KZ+KO



## NOMINAL BRAKING TORQUE [Nm]

H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX	H2SPX
63	71	80	90	100	112	132	160	180	200	280	315
7	13	26	26	50	100	160	240	400	800	1600	2500
	10	16	20	32	80	100	130	280	700	1300	2100
						100	130	240	600	1000	1750

## OPERATING VOLTAGE [V DC]

24, 104, 180, 207

## PROTECTION RATING

BASIC VERSION – WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - WITH HOLE D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - WITH HOLE D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 – WITH HOLE D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# H2SPX

# ELECTROMAGNETIC DISC BRAKES

## HPS...AT



Spring actuated and electromagnetically released disk brake type HPS ...AT forms a variation of HPS brake. Designed for braking rotating machine parts and their precision positioning, in all applications where the drive is required to have limited level of noise. The specifics of this type of drive has made us draw up a brake version whose crucial units are so designed that the “quiet operation” requirement demanded by the user is fulfilled. Drives fitted with brake series HPS ...AT can be used in objects where limited level of noise has huge significance, e.g. theatres, concert halls, etc. where, as stage equipment drives, they meet strict safety requirements. Braking torque can be accurately set by means of regulating nut. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type										
			HPS 04AT	HPS 06AT	HPS 08AT	HPS 10AT	HPS 12AT	HPS 14AT	HPS 16AT	HPS 18AT	HPS 20AT	HPS 25AT	
Supply voltage	$U_n$	[V]	24 , 104 , 180 , 207										
Power	$P_{20^\circ}$	[W]	16	20	25	30	40	50	55	65	75	130	
Braking torque	$M_h$	[Nm]	4	4	8	20	32	60	100	150	240	500	
Max. speed	$n_{max}$	$min^{-1}$	3000										
Weight	G	[kg]	0,5	0,7	1,8	3,2	6,6	7,5	11,2	17,0	24,8	29,0	
Ambient temperature	T	$^\circ C$	-25 ÷ +40										
Operating time *	On direct voltage side	$t_{0,1}$	ms	20	35	65	90	120	150	180	300	400	500
		$t_{0,9}$		10	17	35	40	50	65	90	110	200	270
	On alternating voltage side	$t_{0,1}$	ms	20	35	65	90	120	150	180	300	400	500
		$t_{0,9}$		Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side									

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

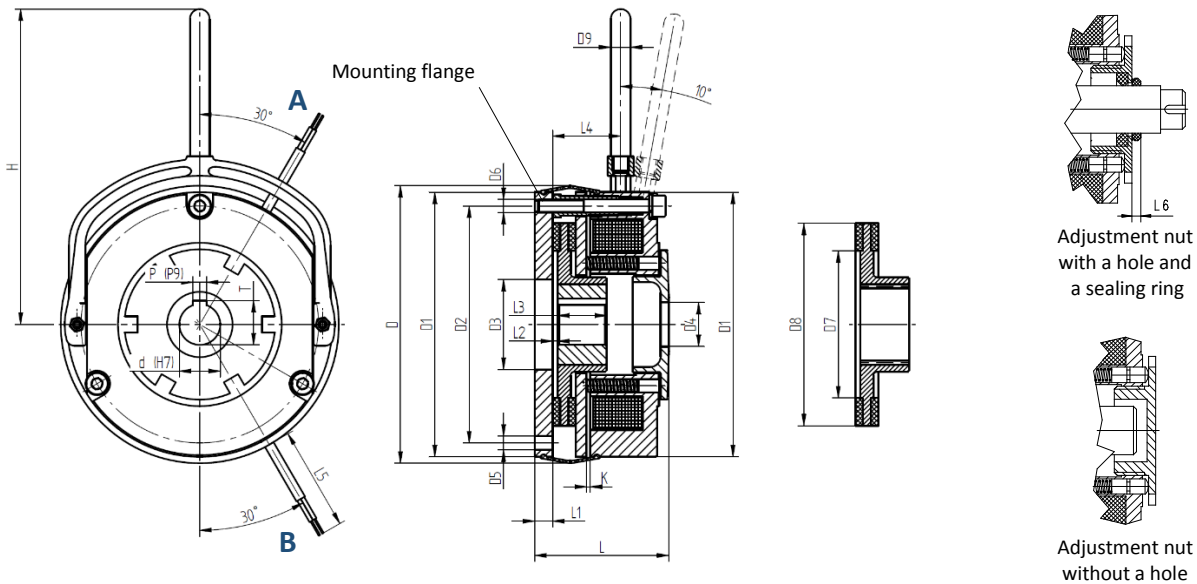
$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply. zasilania elektrycznego.

Cable output:

A – HPS12AT, HPS14AT, HPS16AT, HPS18AT, HPS20AT

B – HPS04AT, HPS 06AT, HPS08AT, HPS10AT, HPS25AT

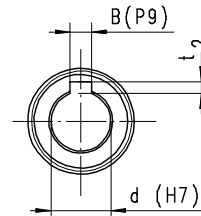
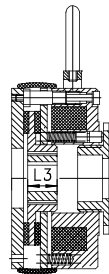
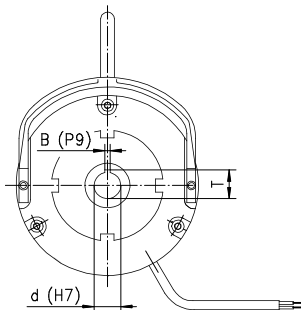


**HPS...AT**

Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	K	H	H1
HPS04 AT	4	83	74	62	25	13	Ø4,3x3	M4x3	30	50	6	45	6	0,5	18	23	450	6,7	0,2	98	46
HPS06 AT	4	91	84	72	25	17	Ø4,5x3	M4x3	47	62	8	45	6	0,5	18	24	450	6,7	0,2	100	51
HPS08 AT	8	110	102	90	30	17	Ø5,5x3	M5x3	59	76	8	53	7	1,8	20	29	450	6,7	0,2	111	61
HPS10 AT	16	133	125	112	44	21	Ø6,4x3	M6x3	61	95	10	65	9	3,5	20	37	450	9,0	0,2	160	73
HPS12 AT	32	156	148	132	45	27	Ø6,4x3	M6x3	74	114	10	74	9	3	25	40,5	450	9,0	0,3	181	94
HPS14 AT	60	170	162	145	55	27	Ø8,4x3	M8x3	90	124	12	82	11	3	30	41,5	450	9,0	0,3	193	102
HPS16 AT	100	196	188	170	84	38	Ø8,4x3	M8x3	100	154	12	89	11	3	30	43,5	450	9,0	0,3	206	116
HPS18 AT	150	223	215	196	104	43	Ø9,0x4	M8x6	130	176	12	100	11	3	35	51	450	11,0	0,3	237	129
HPS20 AT	240	262	252	230	134	45	Ø11x6	M10x6	148	207	14	120	11	3	40	68	800	11,0	0,5	339	157
HPS25 AT	500	314	302	278	120	45	Ø11x6	M10x6	198	255	14	134	12,5	4,5	50	82	800	11,0	0,5	466	182

Geared bushing hole diameters

Normalized hole diameters ranges



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
HPS04 AT	11	4	12,8	11		18
HPS06 AT	15	5	17,3	15		18
HPS08 AT	15	5	17,3	15		20
HPS10 AT	19	6	21,8	25		20
HPS12 AT	25	8	28,3	25		25
HPS14 AT	25	8	28,3	35		30
HPS16 AT	35	8**	38,3	35		30
HPS18 AT	40	12	43,3	45	50	35
HPS20 AT	42	12	45,3	45	50	40
HPS25 AT	42	12	45,3	45	75	50

Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the HPS14AT and HPS16AT brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# HPS AT.

<b>MECHANICAL SIZE</b>
04, 06, 08, 10, 12, 14, 16, 18, 20, 25

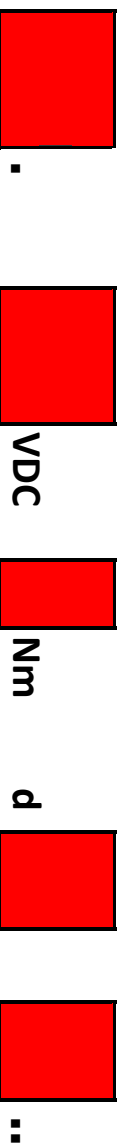
<b>CONFIGURATION</b>	
WITHOUT FITTING / ACCESORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

## Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**
- increased durability of the brake, the brake is guaranteed lifetime 10x10<sup>6</sup> cycles - brake design allows for long-term and reliable operation HPS06AT – HPS10AT - **T**

## PRZYKŁAD:

HPS 12AT. 30. 180 V DC 32 Nm d25 T  
 HPS 10AT. 11. 104 V DC 16 Nm d19 MT  
 HPS 14AT. 22. 24VDC 60Nm d25 KZ+KO



<b>CLIMATIC VERSION</b>
ACCORDING TO STANDARDS: e.g. MT, TH

NOMINAL BRAKING TORQUE [Nm]										
HPS 04AT	HPS 06AT	HPS 08AT	HPS 10AT	HPS 12AT	HPS 14AT	HPS 16AT	HPS 18AT	HPS 20AT	HPS 25AT	HPS 30AT
4	4	8	6	16	12	24	16	30	40	40
		3	6	12	16	32	24	45	60	80
			3	6	12	24	16	30	40	40

<b>OPERATING VOLTAGE [V DC]</b>
24, 104, 180, 207

PROTECTION RATING	
BASIC VERSION – NUT WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - NUT WITH D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - NUT WITH D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 - NUT WITH D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
 It is possible to realize special versions.



# ELECTROMAGNETIC DISC BRAKES H2SP...AT

H2SP...AT

Spring actuated and electromagnetically released disk brake type H2SP ...AT forms a variation of H2SP brake. Designed for braking rotating machine parts and their precision positioning, in all applications where the drive is required to have limited level of noise. The specifics of this type of drive has made us draw up a brake version whose crucial units are so designed that the “quiet operation” requirement demanded by the user is fulfilled. Drives fitted with brake series H2SP ...AT can be used in objects where limited level of noise has huge significance, e.g. theatres, concert halls, etc. where, as stage equipment drives, they meet strict safety requirements. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters	Unit	Brake type														
		H2SP 56AT	H2SP 63AT	H2SP 71AT	H2SP 80AT	H2SP 90AT	H2SP 100AT	H2SP 112AT	H2SP 132AT	H2SP 160AT	H2SP 180AT	H2SP 200AT	H2SP 280AT	H2SP 315AT		
Supply voltage	$U_n$ [V]	24, 104, 180, 207												24, 104, 180		
Power	$P_{20^\circ}$ [W]	16	20	25	30	30	40	50	55	65	75	100	250	340		
Braking torque	$M_h$ [Nm]	4	4	8	16	20	32	60	100	150	240	500	1000	1600		
Max. speed	$n_{max}$ $min^{-1}$	3000														
Weight	G [kg]	0,5	0,7	1,8	3,2	3,2	6,6	7,5	11,2	17,0	24,8	29,0	80,0	120		
Ambient temperature	T $^\circ C$	-25 ÷ +40														
Operating time *	On direct voltage side	$t_{0,1}$	ms	20	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$		10	17	35	40	40	50	65	90	110	200	270	300	500
	On alternating voltage side	$t_{0,1}$	ms	20	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$		Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side												

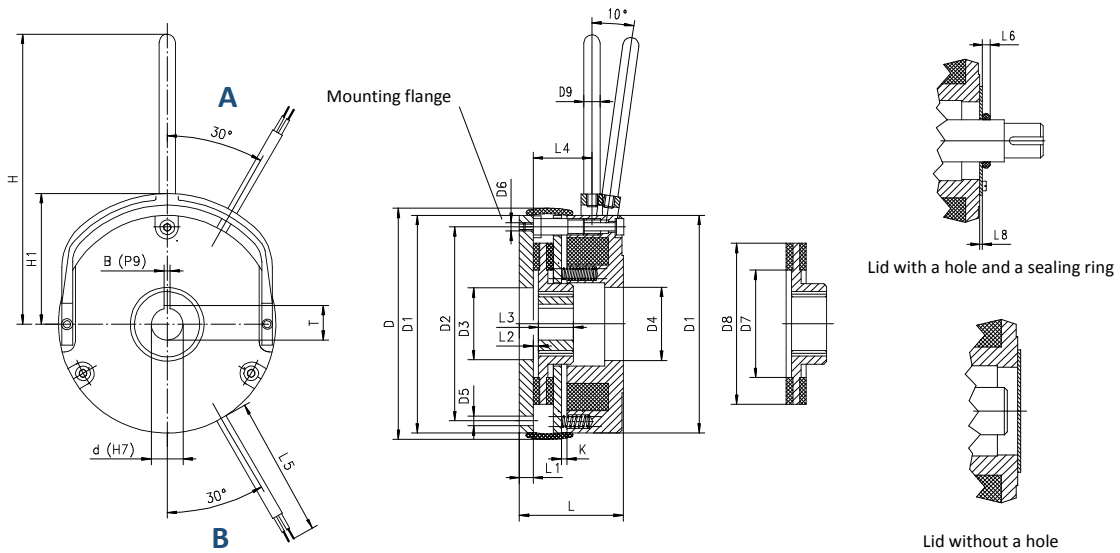
$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

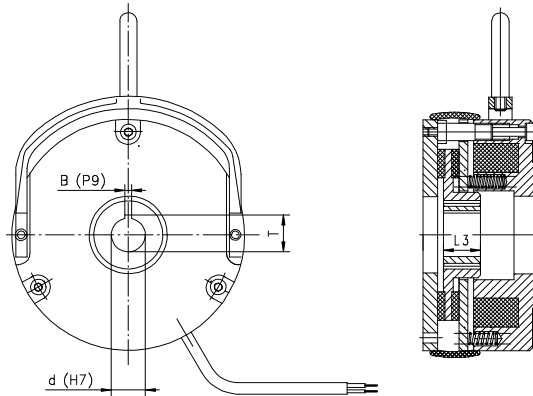
**Cable output:**

A – H2SP56AT, H2SP100AT, H2SP112AT, H2SP132AT, H2SP160AT, H2SP180AT, H2SP280AT, H2SP315AT  
 B – H2SP63AT, H2SP71AT, H2SP80AT, H2SP90AT, H2SP200AT



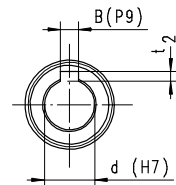
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L2	L3	L4	L5	L6	L8	K	H	H1
H2SP 56AT	4	83	74	62	25	13	4,3x3	M4x3	30	50	6	40	6	0,5	18	23	450	6,7	1,0	0,2	90	46
H2SP 63AT	4	91	84	72	25	23,4	4,5x3	M4x3	47	62	8	41	6	0,5	18	24	450	6,7	1,0	0,2	100	51
H2SP 71AT	8	110	102	90	30	30,4	5,5x3	M5x3	59	76	8	48	7	1,8	20	29	450	6,7	1,0	0,2	115	61
H2SP 80AT	16	133	125	112	44	40,4	6,4x3	M6x3	61	95	10	58	9	3,5	20	37	450	9,0	1,0	0,2	170	73
H2SP 90AT	20	133	125	112	44	40,4	6,4x3	M6x3	61	95	10	58	9	3,5	20	37	450	9,0	1,0	0,2	170	73
H2SP 100AT	32	156	148	132	45	48,4	6,4x3	M6x3	74	114	10	66	9	3	25	40,5	450	9,0	1,0	0,3	184	94
H2SP 112AT	60	170	162	145	55	58,3	8,4x3	M8x3	90	124	12	76	11	3	30	41,5	450	9,0	2,0	0,3	191	102
H2SP 132AT	100	196	188	170	84	66,4	8,4x3	M8x3	100	154	12	83	11	3	30	43,5	450	9,0	2,0	0,3	204	116
H2SP 160AT	150	223	215	196	104	82,8	9,0x4	M8x6	130	176	12	91	11	3	35	51	450	11,0	2,0	0,3	230	129
H2SP 180AT	240	262	252	230	134	87,8	11x6	M10x6	148	207	14	110	11	3	40	68	800	11,0	2,0	0,5	339	157
H2SP 200AT	500	314	302	278	120	132,8	11x6	M10x6	198	255	14	122	12,5	4,5	50	82	800	11,0	2,0	0,5	466	182
H2SP 280AT	1000	356	342	308	150	150,0	13x6	M12x6	200	270	20	157	25	0	70	90	1500	11,0	3,0	0,6	408	206
H2SP 315AT	1600	412	400	360	170	170,0	13x6	M12x6	210	300	20	171	25	0	80	98	1500	13,5	3,0	0,6	434	232

**Geared bushing hole diameters**



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3
H2SP 56AT	11	4	12,8	11		18
H2SP 63AT	15	5	17,3	15		18
H2SP 71AT	15	5	17,3	15		20
H2SP 80AT	19	6	21,8	25		20
H2SP 90AT	19	6	21,8	25		20
H2SP 100AT	25	8	28,3	25		25
H2SP 112AT	25	8	28,3	35**		30
H2SP 132AT	35**	8	38,3	35**		30
H2SP 160AT	40	12	43,3	45	50	35
H2SP 180AT	42	12	45,3	45	50	40
H2SP 200AT	42	12	45,3	45	75	50
H2SP 280AT	55	16	59,3	75		70
H2SP 315AT	70	20	74,9	100		80

**Normalized hole diameters ranges**



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9
75 - 85	22	5,4
85 - 95	25	5,4
95 - 110	28	6,4

- d - standard geared bushing hole diameters
- d<sub>smax</sub> - maximum geared bushing hole diameters
- d\*<sub>smax</sub> - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub
- \*\* - for the H2SP112AT and H2SP132AT brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# H2SP

# AT

## MECHANICAL SIZE

56,63,71,80,90,100,112,132,  
160,180,200,280,315

## CONFIGURATION

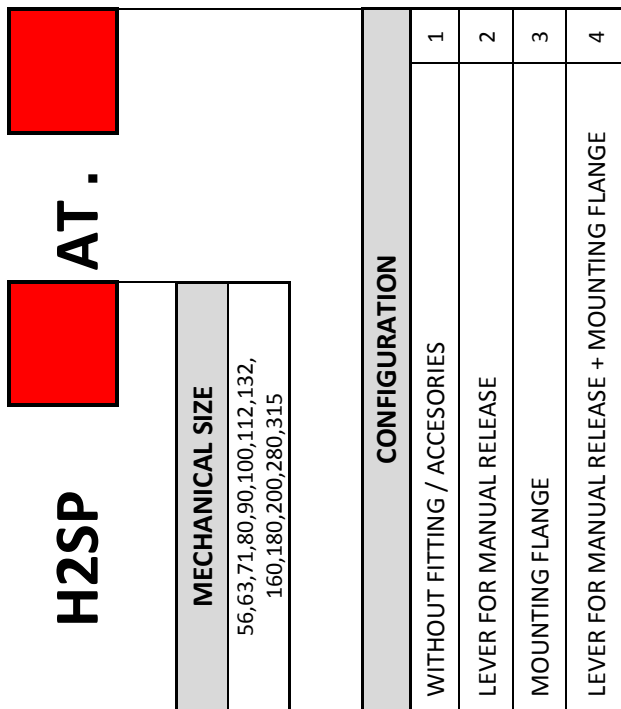
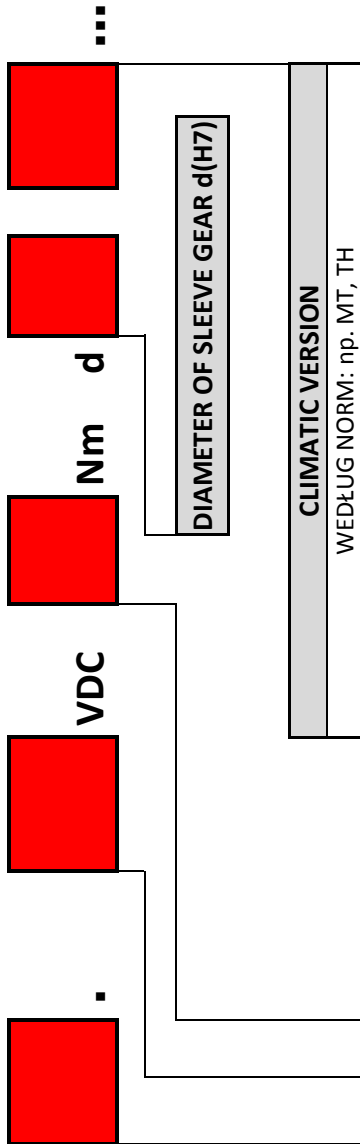
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- resistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**
- increased durability of the brake, the brake is guaranteed lifetime 10x10<sup>6</sup> cycles - brake design allows for long-term and reliable operation H2SP56AT – H2SP90AT - **T**

### EXAMPLE:

H2SP 100AT. 10. 104VDC 32Nm d25 T  
H2SP 80AT. 32. 180VDC 12Nm d19 P  
H2SP 112AT. 22. 24VDC 60Nm d25 KZ+KO



## NOMINAL BRAKING TORQUE [Nm]

H2SP 56AT	H2SP 63AT	H2SP 71AT	H2SP 80AT	H2SP 90AT	H2SP 100AT	H2SP 112AT	H2SP 132AT	H2SP 160AT	H2SP 180AT	H2SP 200AT	H2SP 280AT	H2SP 315AT
4	4	8	16	20	32	60	100	150	240	500	1000	1600
		6	12	16	24	45	80	120	180	360	800	1300
		3		12	16	30	60	75	120	270	700	1050

## OPERATING VOLTAGE [V DC]

24, 104, 180, 207

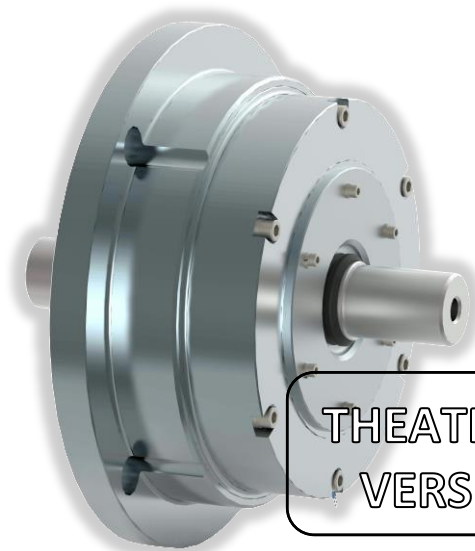
## PROTECTION RATING

BASIC VERSION – WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - WITH HOLE D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - WITH HOLE D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 – WITH HOLE D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# ELECTROMAGNETIC DISC BRAKES

## STE and STK



**THEATRICAL  
VERSION**

Spring actuated and electromagnetically released disk brake type STE and STK. Designed for braking rotating machine parts and their precision positioning, in all applications where the drive is required to have limited level of noise. The specifics of this type of drive has made us draw up a brake version whose crucial units are so designed that the “quiet operation” requirement demanded by the user is fulfilled. Drives fitted with brake series STE or STK can be used in objects where limited level of noise has huge significance, e.g. theatres, concert halls, etc. where, as stage equipment drives, they meet strict safety requirements. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 104V, 180V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type							
			STE 10 STK 10	STE 15 STK 15	STE 25 STK 25	STE 50 STK 50	STE 100 STK 100	STE 160 STK 160	STE 250 STK 250	
Supply voltage	Un	[V]	104, 180							
Power	P <sub>20°</sub>	[W]	55	65	75	140	250	340	400	
Max. speed	n <sub>max</sub>	min-1	3000							
Braking torque	M <sub>h</sub>	Nm	100	150	250	500	1000	1600	2500	
Weight	m	kg	18	25	35	45	100	140	180	
Ambient temperature		°C	-20 ÷ +40							
Level of protection		-	IP54, IP55, IP65, IP66							
Operating time *	On direct voltage side	t <sub>01</sub>	ms	180	300	400	500	500	600	600
		t <sub>09</sub>	ms	90	110	200	270	300	500	50
	On alternating voltage side	t <sub>01</sub>	ms	180	300	400	500	500	600	300
		t <sub>09</sub>	Brake disconnection on alternating current side causes about five-times growth in braking time t <sub>09</sub> with respect to disconnection on direct current side							

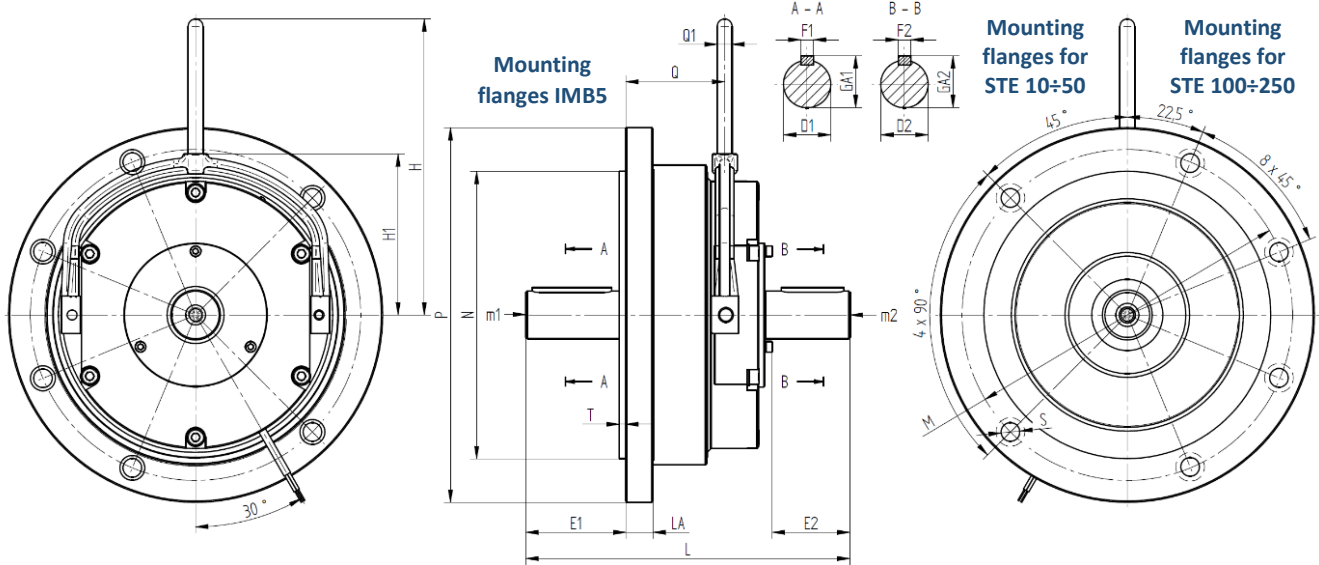
t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)

t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

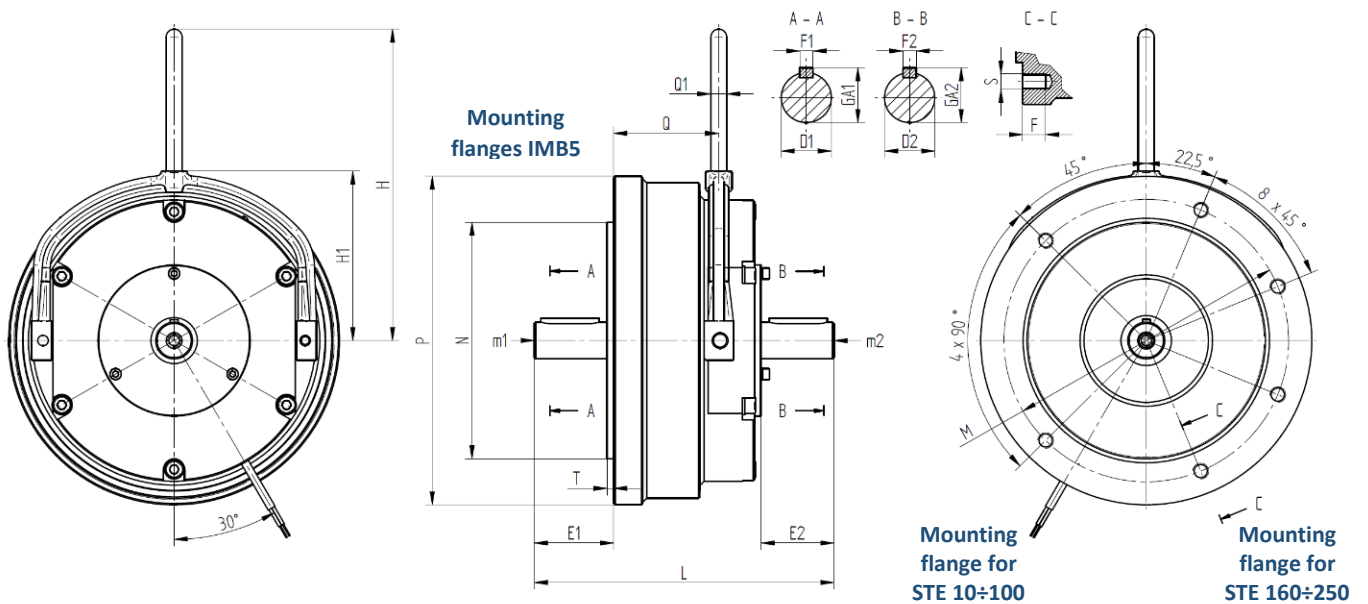


**STE – hole „S” in the mounting flange**



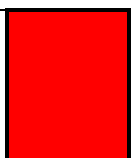
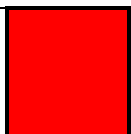
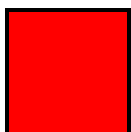
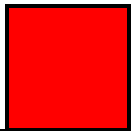
Type	P	N	M	T	S	D1	GA1	F1	E1	D2	GA2	F2	E2	L	LA	H	H1	m1	m2	Q	Q1
STE 10	300	230 j6	265	4	4 x 15	38 k6	41	10 h9	80	28 k6	31	8 h9	60	250	22	205	116	M12	M10	71	12
STE 15	300	230 j6	265	4	4 x 15	38 k6	41	10 h9	80	38 k6	41	10 h9	60	260	22	230	130	M12	M12	78	12
STE 25	350	250 j6	300	5	4 x 18	42 k6	45	12 h9	110	38 k6	41	10 h9	60	315	25	340	160	M16	M12	88	14
STE 50	400	300 j6	350	5	4 x 18	55 m6	59	16 h9	110	55 m6	59	16 h9	80	350	30	466	182	M16	M16	102	14
STE 100	450	350 j6	400	5	8 x 18	60 m6	64	18 h9	140	60 m6	64	18 h9	100	440	30	408	206	M16	M16	140	20
STE 160	550	450 j6	500	5	8 x 18	65 m6	69	18 h9	140	65 m6	69	18 h9	120	470	30	440	232	M20	M20	150	20
STE 250	550	450 j6	500	5	8 x 18	65 m6	69	18 h9	140	65 m6	69	18 h9	120	520	30	530	250	M20	M20	165	20

**STK – rifled hole „S” in the mounting flange**

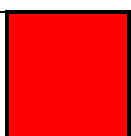


Type	P	N	M	T	S	F	D1	GA1	F1	E1	D2	GA2	F2	E2	L	H	H1	m1	m2	Q	Q1
STK 10	250	180 j6	215	4	4 x M12	20	28 j6	31	8 h9	60	28 j6	31	8 h9	50	220	205	116	M10	M10	71	12
STK 15	250	180 j6	215	4	4 x M12	20	28 j6	31	8 h9	60	28 j6	31	8 h9	50	230	230	130	M10	M10	78	12
STK 25	300	230 j6	265	4	4 x M12	20	38 k6	41	10 h9	80	38 k6	41	10 h9	60	315	340	160	M12	M12	88	14
STK 50	350	250 j6	300	5	4 x M16	25	42 k6	45	12 h9	110	42 k6	45	12 h9	80	350	466	182	M16	M16	102	14
STK 100	400	300 j6	350	5	4 x M16	25	55 m6	59	16 h9	110	55 m6	59	16 h9	80	390	408	206	M16	M16	140	20
STK 160	450	350 j6	400	5	8 x M16	25	60 m6	64	18 h9	140	60 m6	64	18 h9	100	450	440	232	M16	M16	150	20
STK 250	550	450 j6	500	5	8 x M16	30	65 m6	69	18 h9	140	65 m6	69	18 h9	120	520	530	250	M20	M20	165	20

**STE**  
**STK**



**VDC**



**Nm**



...

**MECHANICAL SIZE**

10, 15, 25, 50, 100, 160, 250

**CONFIGURATION**

WITHOUT FITTING / ACCESSORIES	0
LEVER FOR MANUAL RELEASE	1

**Execution options for the customer's request:**

- non-standard diameter of the sleeve gear brake d(H7)
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**

**EXAMPLE:**

- STE 100. 11. 104VDC. 900Nm P
- STE 10. 03. 180VDC. 100Nm KZ+KO
- STK 250. 13. 104VDC. 2500Nm MT
- STK 50. 02. 180VDC. 360Nm B

<b>CLIMATIC VERSION</b>
WEDŁUG NORM: np. MT, TH

<b>NOMINAL BRAKING TORQUE [Nm]</b>							
STE 10	STE 15	STE 25	STE 50	STE 100	STE 160	STE 250	
STK 10	STK 15	STK 25	STK 50	STK 100	STK 160	STK 250	
100	150	250	500	1000	1600	2500	
80	120	180	360	900	1300	2100	
60	75	120	270	800	1050	1800	
				700			
				600			

<b>OPERATING VOLTAGE [V DC]</b>	104, 180
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<b>PROTECTION RATING</b>	
VERSION IP 54	0
VERSION IP 55	1
VERSION IP 65	2
VERSION IP 66	3

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

SCENE  
TECHNIQUE

THEATRICAL  
VERSION

# ELECTROMAGNETIC DISC BRAKES 2H2SP...BT

2H2SP...BT

EN 81-1+A3

The lifting mechanisms are used mechanical brakes - disc brakes electric loosened spring applied brakes developed based on 2H2SP. Designed for use wherever the drive from a restricted level of noise. The specificity of this type of drive meant that we developed a version of the brakes, the trouble spots have been redesigned so that the requirement imposed by the quiet work has been met. Drives equipped with brakes 2H2SP...BT can be used in places where a limited level of noise is of great importance, such as theaters, concert halls, where a scenic drive devices meet the stringent safety requirements. These brakes immobilize the burden in cases of damage, incorrect maneuvers and crashes. Brake must be able to move all the existing forces in such situations. To meet such requirements as possible while maintaining a simple mechanical part and one of the drive motors are used instead of the multi-speed, relatively simple asynchronous motors controlled frequency inverters are equipped with electromagnetic disc brakes with specific construction crane systems. Safety considerations required of such brakes forced to develop a braking mechanism for double safety circuit, also used damping allows for maximum noise reduction during the team's dynamic brakes. The drive system equipped with brakes 2H2SP...BT is a very quiet spite of all electrical and mechanical parameters.

The specific feature of this brake is that there are two brake discs installed on the common motor shaft, each with independent electromagnetic circuit while ensuring the braking moment necessary for correct operation of the drive. It's simple and compact design permits applications in elevator mechanisms, drive motors, which should ensure smooth operation and redundant safety circuits. An additional feature is that the brake with this design has mechanical specifications necessary for the drive function, whereas the installation dimensions are equal to classic brakes, which allows them to be used in the space available on drive motors.

## Applications:

Passenger elevator drives, platforms, cranes, overhead travelling cranes - wherever one has to keep in mind strict regulations of technical supervisory authorities applicable to elevator equipment. Brakes meet strict safety regulations related to elevator design and installation defined in PN-EN 81-1+A3:2010, EN 81-1+A3:2009 standards.

Parameters	Unit	Brake type												
		2H2SP 63BT	2H2SP 71BT	2H2SP 80BT	2H2SP 90BT	2H2SP 100BT	2H2SP 112BT	2H2SP 132BT	2H2SP 160BT	2H2SP 180BT	2H2SP 200BT	2H2SP 280BT	2H2SP 315BT	
Supply voltage	$U_n$ [V]	24, 104, 180, 207											24, 104, 180	
Power	$P_{20^\circ}$ [W]	2x20	2x25	2x30	2x30	2x40	2x50	2x55	2x65	2x75	2x100	2x250	2x340	
Braking torque	$M_h$ [Nm]	2x4	2x8	2x16	2x20	2x32	2x60	2x100	2x150	2x240	2x500	2x1000	2x1600	
Max. speed	$n_{max}$ $min^{-1}$	3000												
Weight	G [kg]	1,7	4,0	7,8	7,8	14,5	16,5	24,0	36,0	50,5	60,0	160,0	240,0	
Ambient temperature	T $^\circ C$	-25 ÷ +40												
Operating time *	On direct voltage side	$t_{0,1}$	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	17	35	40	40	50	65	90	110	200	270	300	500
	On alternating voltage side	$t_{0,1}$	35	65	90	90	120	150	180	300	400	500	500	600
		$t_{0,9}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side											

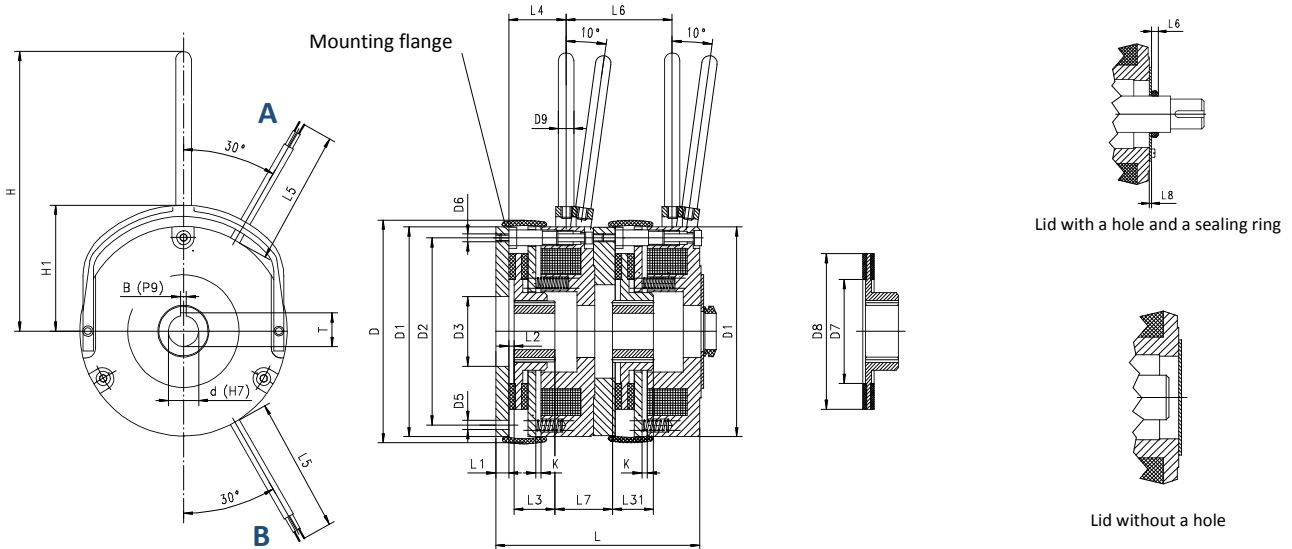
$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

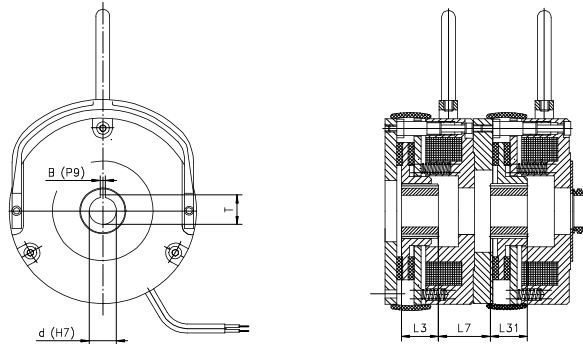
### Cable output:

- A – 2H2SP100BT, 2H2SP112BT, 2H2SP132BT, 2H2SP160B, 2H2SP180BT, 2H2SP280BT, 2H2SP315BT  
 B – 2H2SP63BT, 2H2SP71BT, 2H2SP80BT, 2H2SP90BT, 2H2SP200BT



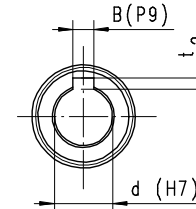
Type	M <sub>h</sub> [Nm]	D	D1	D2	D3	D5	D6	D7	D8	D9	L	L1	L2	L3	L31	L4	L5	L6	L7	K	H	H1
2H2SP 63BT	2x4	87	84	72	25	4,5x3	M4x3	47	62	8	86	6	1,8	18	24	25	450	45	23	0,2	100	51
2H2SP 71BT	2x8	106	102	90	30	5,5x3	M5x3	59	76	8	97	7	2,5	20	27	28	450	50	25	0,2	115	61
2H2SP 80BT	2x16	132	125	112	44	6,4x3	M6x3	61	95	10	118	9	3,5	20	28	34	450	61	32	0,2	170	73
2H2SP 90BT	2x20	132	125	112	44	6,4x3	M6x3	61	95	10	118	9	3,5	20	28	34	450	61	32	0,2	170	73
2H2SP 100BT	2x32	157	148	132	45	6,4x3	M6x3	74	114	10	133	9	3	25	34	37	450	69	34	0,3	184	94
2H2SP 112BT	2x60	169	162	145	55	8,4x3	M8x3	90	124	12	156	11	3	30	42	40	450	80	37	0,3	191	102
2H2SP 132BT	2x100	195	188	170	84	8,4x3	M8x3	100	154	12	170	11	3	30	42	40	450	88	45	0,3	204	116
2H2SP 160BT	2x150	221	215	196	104	9,0x4	M8x6	130	176	12	190	11	4,5	35	45	52	450	110	55	0,3	230	129
2H2SP 180BT	2x240	257	252	230	134	11x6	M10x6	148	207	14	220	11	5	40	55	62	800	115	60	0,5	339	157
2H2SP 200BT	2x500	308	302	278	120	11x6	M10x6	198	255	14	250	12,5	6	50	65	80	800	130	70	0,5	466	182
2H2SP 280BT	2x1000	356	342	308	150	13x6	M12x6	200	270	20	306	25	0	70	80	90	1500	150	70	0,6	408	206
2H2SP 315BT	2x1600	412	400	360	170	13x6	M12x6	210	300	20	340	25	0	80	90	98	1500	180	76	0,6	434	232

### Geared bushing hole diameters



Type	d	B	T	d <sub>max</sub>	d <sub>smax</sub> *	L3	L31	L7
2H2SP 63BT	15	5	17,3	15		18	24	23
2H2SP 71BT	15	5	17,3	15		20	27	25
2H2SP 80BT	19	6	21,8	25		20	28	32
2H2SP 90BT	19	6	21,8	25		20	28	32
2H2SP 100BT	25	8	28,3	25		25	34	34
2H2SP 112BT	25	8	28,3	35**		30	42	37
2H2SP 132BT	35**	8	38,3	35**		30	42	45
2H2SP 160BT	40	12	43,3	45	50	35	45	55
2H2SP 180BT	42	12	45,3	45	50	40	55	60
2H2SP 200BT	42	12	45,3	45	75	50	65	70
2H2SP 280BT	55	16	59,3	75		70	80	70
2H2SP 315BT	70	20	74,9	100		80	90	76

### Normalized hole diameters ranges



Hole diameter [mm]	B	t <sub>2</sub>
above - to		
10 - 12	4	1,8
12 - 17	5	2,3
17 - 22	6	2,8
22 - 30	8	3,3
30 - 38	10	3,3
38 - 44	12	3,3
44 - 50	14	3,8
50 - 58	16	4,3
58 - 65	18	4,4
65 - 75	20	4,9
75 - 85	22	5,4
85 - 95	25	5,4
95 - 110	28	6,4

d - standard geared bushing hole diameters

d<sub>smax</sub> - maximum geared bushing hole diameters

d\* smax - at extra charge it is possible to manufacture the brakes with the specially increased diameter of the gear hub

\*\* - for the 2H2SP112BT and 2H2SP132BT brakes and for the geared bushing hole diameters from 32 to 35mm, the key groove with the width of 8 mm (the width of the groove is incompatible with PN/M-85005 and DIN 6885 standards)

# 2H2SP

# BT

MECHANICAL SIZE
63,71,80,90,100,112,132, 160,180,200,280,315

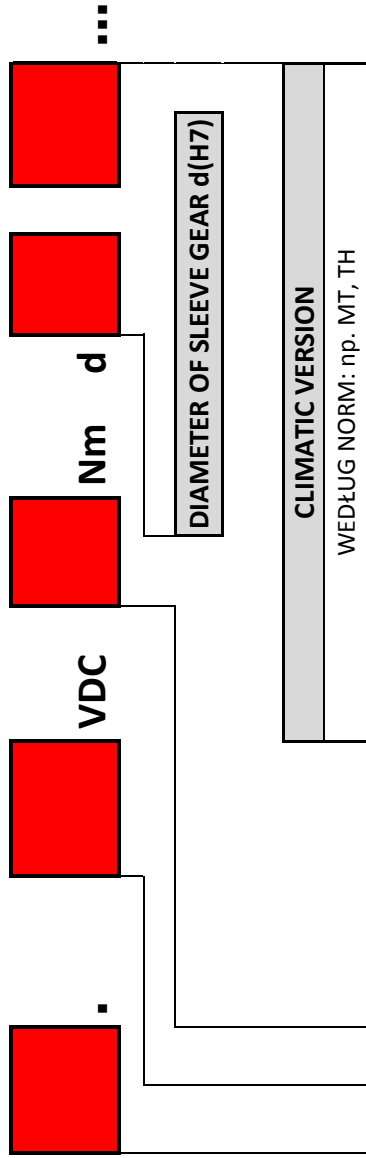
CONFIGURATION	
WITHOUT FITTING / ACCESSORIES	1
LEVER FOR MANUAL RELEASE	2
MOUNTING FLANGE	3
LEVER FOR MANUAL RELEASE + MOUNTING FLANGE	4

### Execution options for the customer's request:

- non-standard diameter of the sleeve gear brake d(H7)
- posistor thermal protection - **P**
- bimetallic thermal protection - **B**
- other voltage brake
- response monitoring microswitch (engaged, disengaged) - **KZ**
- microswitch of the brake lining control - **KO**
- microswitches set - **KZ+KO**

### EXAMPLE:

- 2H2SP 100BT. 10. 104VDC 2x32Nm d25 GR24V
- 2H2SP 80BT. 32. 180VDC 2x12Nm d19 T
- 2H2SP 112BT. 22. 24VDC 2x 60Nm d25 KZ+KO



NOMINAL BRAKING TORQUE [Nm]												
2H2SP 63BT	2H2SP 71BT	2H2SP 80BT	2H2SP 80BT	2H2SP 90BT	2H2SP 100BT	2H2SP 112BT	2H2SP 132BT	2H2SP 160BT	2H2SP 180BT	2H2SP 200BT	2H2SP 280BT	2H2SP 315BT
2x4	2x8 2x6 2x3	2x16 2x12 2x12	2x20 2x16 2x12	2x32 2x24 2x16	2x60 2x45 2x30	2x100 2x80 2x60	2x240 2x180 2x120	2x500 2x360 2x270	2x1000 2x900 2x800 2x700 2x600	2x1600 2x1300 2x1050		
OPERATING VOLTAGE [V DC]												
24, 104, 180, 207												

PROTECTION RATING	
BASIC VERSION – WITH HOLE D4	0
VERSION IP 54 - WITHOUT HOLE D4	1
VERSION IP 54 - WITH HOLE D4 + V-RING SEALING	2
VERSION IP 55 - WITHOUT HOLE D4	3
VERSION IP 55 - WITH HOLE D4 + V-RING SEALING	4
VERSION IP 56 - WITHOUT HOLE D4 + IP56 BRAKE COVER	5
VERSION IP 56 – WITH HOLE D4 + SPECIAL SEALING + IP56 BRAKE COVER	6

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# ELECTROMAGNETIC DISC BRAKES

## HSA, HS(Y)



Spring actuated and electromagnetically released disk brake type HSA and HS(Y) powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

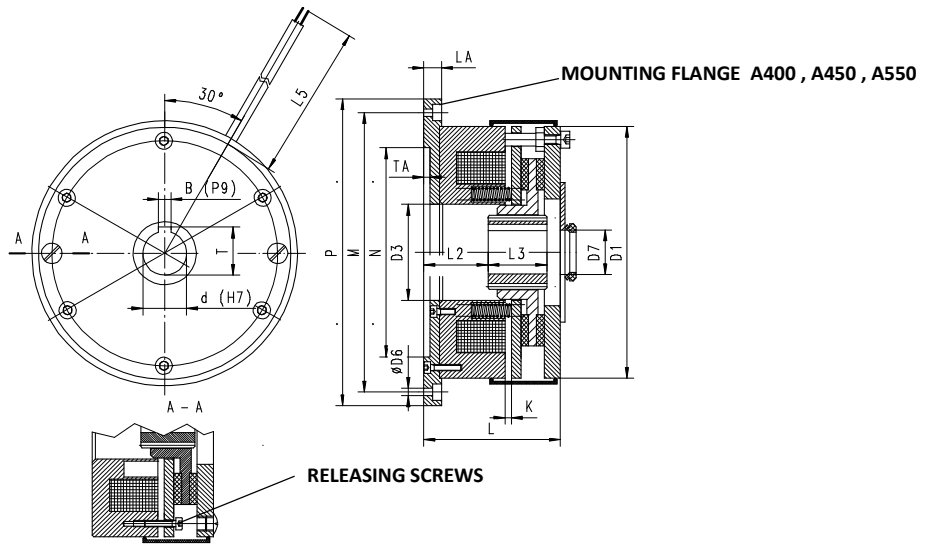
Parameters		Unit	Brake type	
			HSA900 , HS(Y)900	HSA1600 , HS(Y)1600
Supply voltage	$U_n$	[V]	104 , 180	
Power	$P_{20^\circ}$	[W]	250	340
Max. speed	$n_{max}$	$min^{-1}$	3000	
Braking torque	$M_h$	[Nm]	1000	1600
Weight	G	[kg]	90	130
Ambient temperature	T	$^\circ C$	-25 ÷ +40	
* Operating time	On direct voltage side	$t_{0,1}$	400	600
		$t_{0,9}$	300	500
	On alternating voltage side	$t_{0,1}$	400	600
		$t_{0,9}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side	

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

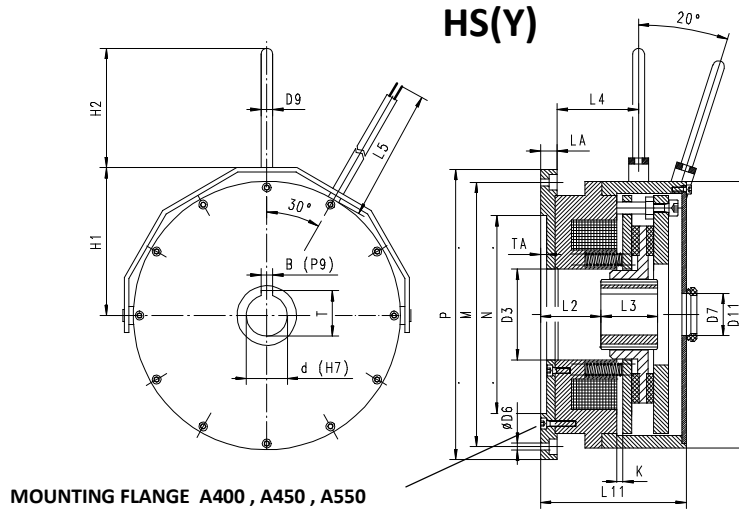
\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

**HSA**



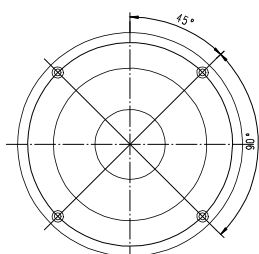
Type	D1	D3	D7	L	L2	L3	L5	d	dmax	B	T	K
HSA 900	340	146	58	174	80	70	1500	55	75	16	59,3	0,5
HSA 1600	374	170	74	193	80	90	1500	70	100	20	74,9	0,5

**HS(Y)**

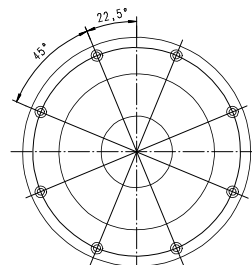


Type	D11	D3	D7	D9	L2	L3	L4	L5	L11	H1	H2	d	d <sub>max</sub>	T	T	K
HS(Y) 900	380	146	58	20	80	70	104	1500	190	233	433	55	75	16	59,3	0,5
HS(Y)1600	430	170	74	24	80	90	125	1500	208	260	470	70	100	20	74,9	0,5

**MOUNTING FLANGES**



MOUNTING FLANGE A400



MOUNTING FLANGE A450, A550

Type	M	N	P	D6	TA	LA	POSSIBLE EXECUTION IN BRAKES				
A400	350	300	400	4 x $\phi 18$	6	30	HSA900	HS(Y)900			
A450	400	350	450	8 x $\phi 18$	6	30	HSA900	HS(Y)900	HSA1600	HS(Y)1600	
A550	500	450	550	8 x $\phi 18$	6	30	HSA900	HS(Y)900	HSA1600	HS(Y)1600	







# ELECTROMAGNETIC DISC BRAKES HSAX, HSX(Y)

HSAX, HSX(Y)

Spring actuated and electromagnetically released disk brake type HSAX and HSX(Y) powered by direct current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

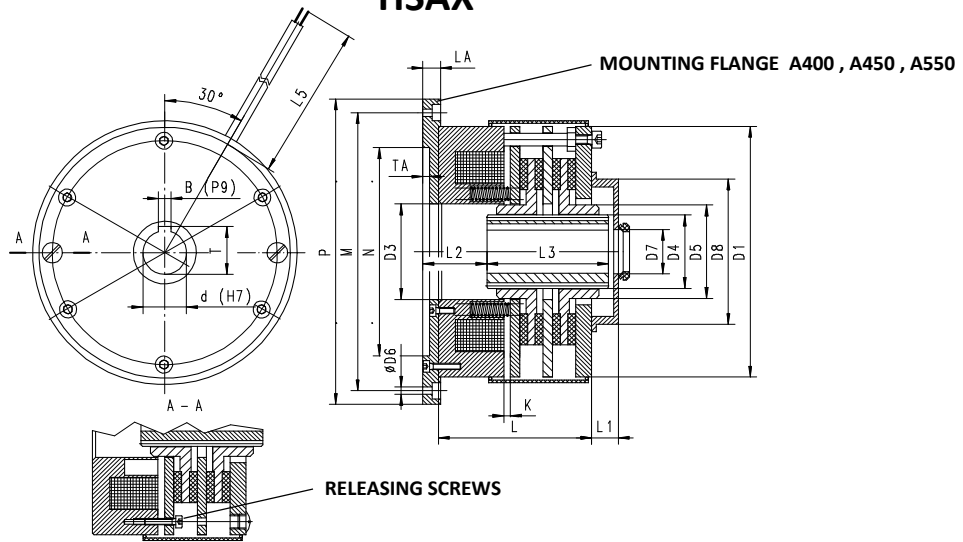
Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters			Brake type		
			HSAX630 HSX(Y)630	HSAX1000 HSX(Y)1000	HSAX2500 HSX(Y)2500
Supply voltage	$U_n$	V	104, 180		
Power	$P_{20^\circ}$	W	100	250	340
Max. speed	$n_{max}$	$min^{-1}$	3000		
Braking torque	$M_h$	[Nm]	800	1500	2500
Weight	G	kg	60	100	145
Ambient temperature	T	$^\circ C$	-25 ÷ +40		
Operating time *	On direct voltage side	$t_{0,1}$	500	600	890
		$t_{0,9}$	300	500	500
	On alternating voltage side	$t_{0,1}$	500	600	890
		$t_{0,9}$	Brake disconnection on alternating current side causes about five-times growth in braking time $t_{0,9}$ with respect to disconnection on direct current side		

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )  
 $t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

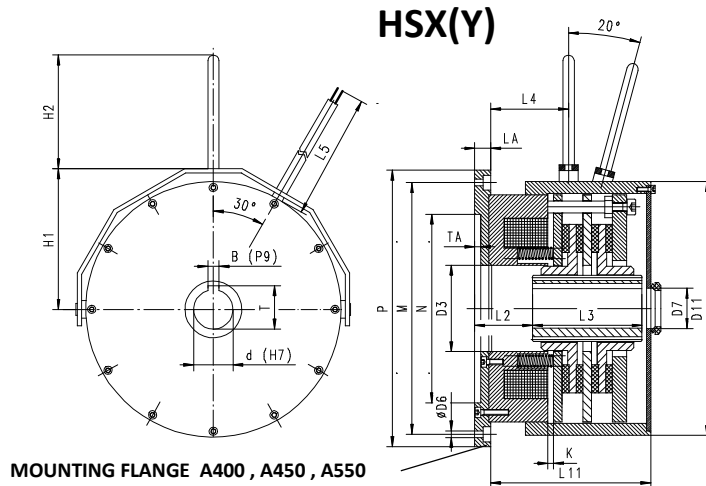
\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

**HSAX**



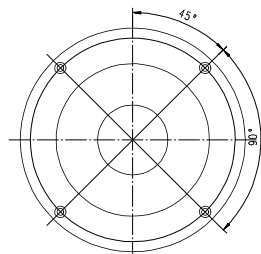
Type	D1	D3	D4	D5	D8	L	L1	L2	L3	L5	d	d <sub>max</sub>	B	T	K
<b>HSAX 630</b>	302	138	110	128	144	156	30	70	115	1500	55	75	16	59,3	0,7
<b>HSAX 1000</b>	340	150	100	130	152	188	50	80	160	1500	55	75	16	59,3	0,7
<b>HSAX 2500</b>	374	170	140	165	200	205	50	80	180	1500	70	100	20	74,9	0,8

**HSX(Y)**

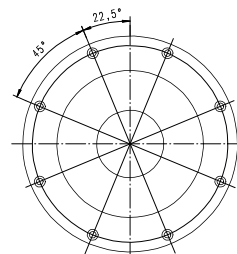


Type	D7	D11	L11	L4	H1	H2
<b>HSXY 630</b>	58	342	187	94	208	280
<b>HSXY 1000</b>	58	380	230	100	220	390
<b>HSXY 2500</b>	74	420	260	125	260	470

**MOUNTING FLANGES**



**MOUNTING FLANGE A400**



**MOUNTING FLANGE A450, A550**

Type	M	N	P	D6	TA	LA	TA	POSSIBLE EXECUTION IN BRAKES		
<b>A400</b>	350	300	400	4 x Ø18	6	30	6	HSAX(Y)630	HSAX(Y)1000	-
								HSX(Y)630	HSX(Y)1000	-
<b>A450</b>	400	350	450	8 x Ø18	6	30	6	HSAX(Y)630	HSAX(Y)1000	HSAX(Y)2500
								HSX(Y)630	HSX(Y)1000	HSX(Y)2500
<b>A550</b>	500	450	550	8 x Ø18	6	30	6	-	HSAX(Y)1000	HSAX(Y)2500
								-	HSX(Y)1000	HSX(Y)2500



# ELECTROMAGNETIC DISC BRAKES

## NE



HIGH LEVEL OF  
PROTECTION

NE series is direct current electromagnetic brakes, spring-loaded with electromagnetic release. Intended for rotating machine parts stopping and precise positioning. Can be used for positioning and as safety brakes. These brakes are designed, built and tested in conformance with requirements of ISO 9001 and ISO 14001 quality management standards. Our products, described in this information sheet, have CE marks, which means that they are compatible with EU safety-related directives. NE series brakes feature high repeatability, also at high operating rates. They can be powered from alternating current sources through a rectifier, which can be delivered with the brake if so requested by the customer. Brakes are equipped with releasing screws and optionally can be fitted with manual release levers to allow their emergency releasing. An additional feature is their stable operation, which is particularly important if a machine is powered by several drives, working at high on-off rates. The design of the brake ensures simple and trouble-free installation. Various versions are available with different equipment, brake power supply types, allowing users to select the right option for their needs. When coupled with electric motors, a self-locking device can be created, i.e. a drive unit meeting safe drive positioning and operation requirements.

### They are designed for braking rotating parts of machines and their task is:

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

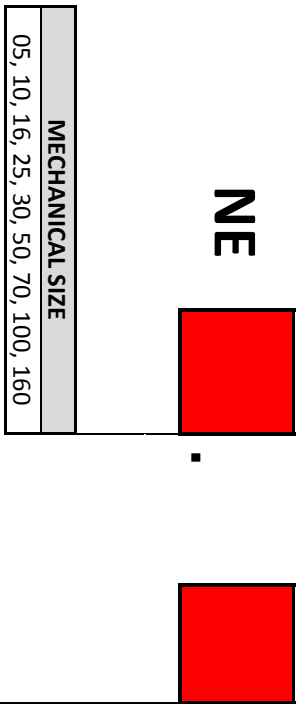
Parameters		Unit	Brake type								
			NE 05	NE 10	NE 16	NE 25	NE 30	NE 50	NE 70	NE 100	NE 160
Supply voltage	Un	[V]	24 ,104, 180								
Power	P <sub>20°</sub>	[W]	30	50	65	75	110	140	250	250	300
Max. speed	n <sub>max.</sub>	min <sup>-1</sup>	3000								
Braking torque	M <sub>h</sub>	Nm	50	100	160	250	360	500	700	1000	1600
Weight	m	kg	14	20	30	35	39	40	95	140	160
Ambient temperature		°C	-20 ÷ +45								
Level of protection		-	IP 67								
Operating time *	On direct voltage side	t <sub>01</sub>	90	150	300	400	500	500	500	500	600
		t <sub>09</sub>	40	65	110	200	270	270	300	300	500
	On alternating voltage side	t <sub>01</sub>	90	150	300	400	500	500	500	500	600
		t <sub>09</sub>	Brake disconnection on alternating current side causes about five-times growth in braking time t <sub>09</sub> with respect to disconnection on direct current side								

t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)

t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

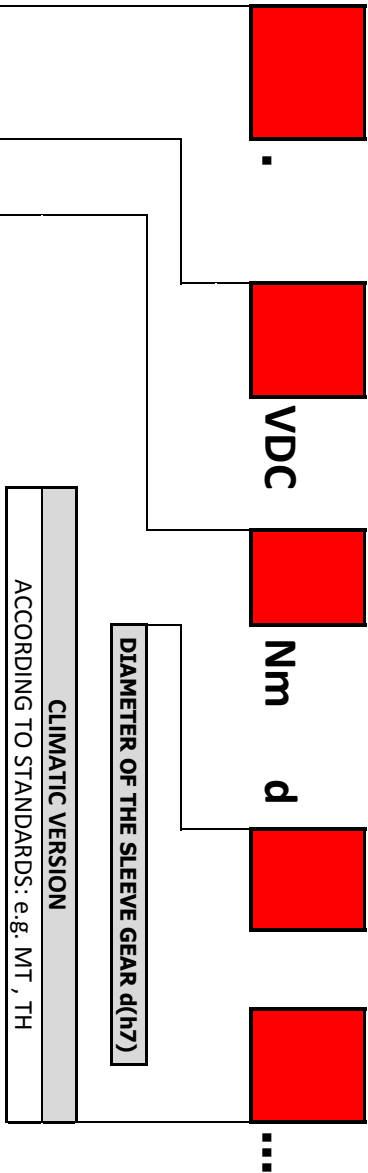




CONFIGURATION	
BASE (CABLE GUIDED THROUGH THE D7 HOLE)	0
CABLE GUIDED THROUGH A GLAND	1
BASIC + HOLE WITH V-RING	2
CABLE GUIDED THROUGH A GLAND + HOLE WITH V-RING	3

- Execution options for the customer's request:**
- non-standard diameter of the sleeve gear brake d(H7)
  - equipped with heating elements in the winding (need to define the voltage supply) – e.g. **GR\_\_V**
  - work at low temperatures -40°C - **Z**
  - posistor thermal protection - **P**
  - bimetallic thermal protection - **B**
  - other voltage brake
  - response monitoring microswitch (engaged, disengaged) - **KZ**
  - microswitch of the brake lining control - **KO**
  - microswitches set - **KZ+KO**

**EXAMPLE:**  
 NE 25 . 30 . 104VDC 180Nm d42 KZ+KO  
 NE 160. 23 . PTC 180VDC 1600Nm d75 MT



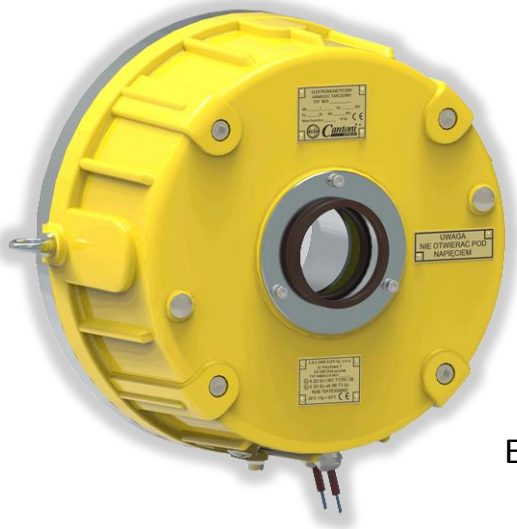
NOMINAL BRAKING TORQUE [Nm]									
NE 05	NE 10	NE 16	NE 25	NE 30	NE 50	NE 70	NE 100	NE 160	
50	100	160	250	360	500	700	1000	1600	
35	75	120	180	270	420	600	900	1300	
25	50	75	120	270	360	600	800	1050	

OPERATING VOLTAGE [V DC]
24 , 104 , 180

OPTION	
STANDARD CONFIGURATION	0
MANUAL RELEASE LEVER	1

The producer reserves the right to modify as a result of developing the product.  
 It is possible to realize special versions.





# ELECTROMAGNETIC DISC BRAKES

## NEX

II 2D Ex t IIIC T125°C Db

II 3G Ex nA IIB T3 Gc

EC-Type Examination Certificate: KDB 15ATEX0067X



NEX

NEX series explosion-proof, direct current electromagnetic brakes, spring-loaded with electromagnetic release. Intended for rotating machine parts stopping and precise positioning. Can be used for positioning and as safety brakes. These brakes are designed, built and tested in conformance with requirements of ISO 9001 and ISO 14001 quality management standards. Our products, described in this information sheet, have CE marks, which means that they are compatible with EU safety-related directives. The family of NEX brakes meets essential requirements for protective equipment and systems intended for use in areas subject to gas and dusts explosion hazard (94/9/EC ATEX Directive), which is confirmed by a notified body certificate.

NEX series brakes feature high repeatability, also at high operating rates. They can be powered from alternating current sources through a rectifier, which can be delivered with the brake if so requested by the customer. Brakes are equipped with releasing screws and optionally can be fitted with manual release levers to allow their emergency releasing. An additional feature is their stable operation, which is particularly important if a machine is powered by several drives, working at high on-off rates. The design of the brake ensures simple and trouble-free installation. Various versions are available with different equipment, brake power supply types, allowing users to select the right option for their needs. When coupled with electric motors, a self-locking device can be created, i.e. a drive unit meeting safe drive positioning and operation requirements.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

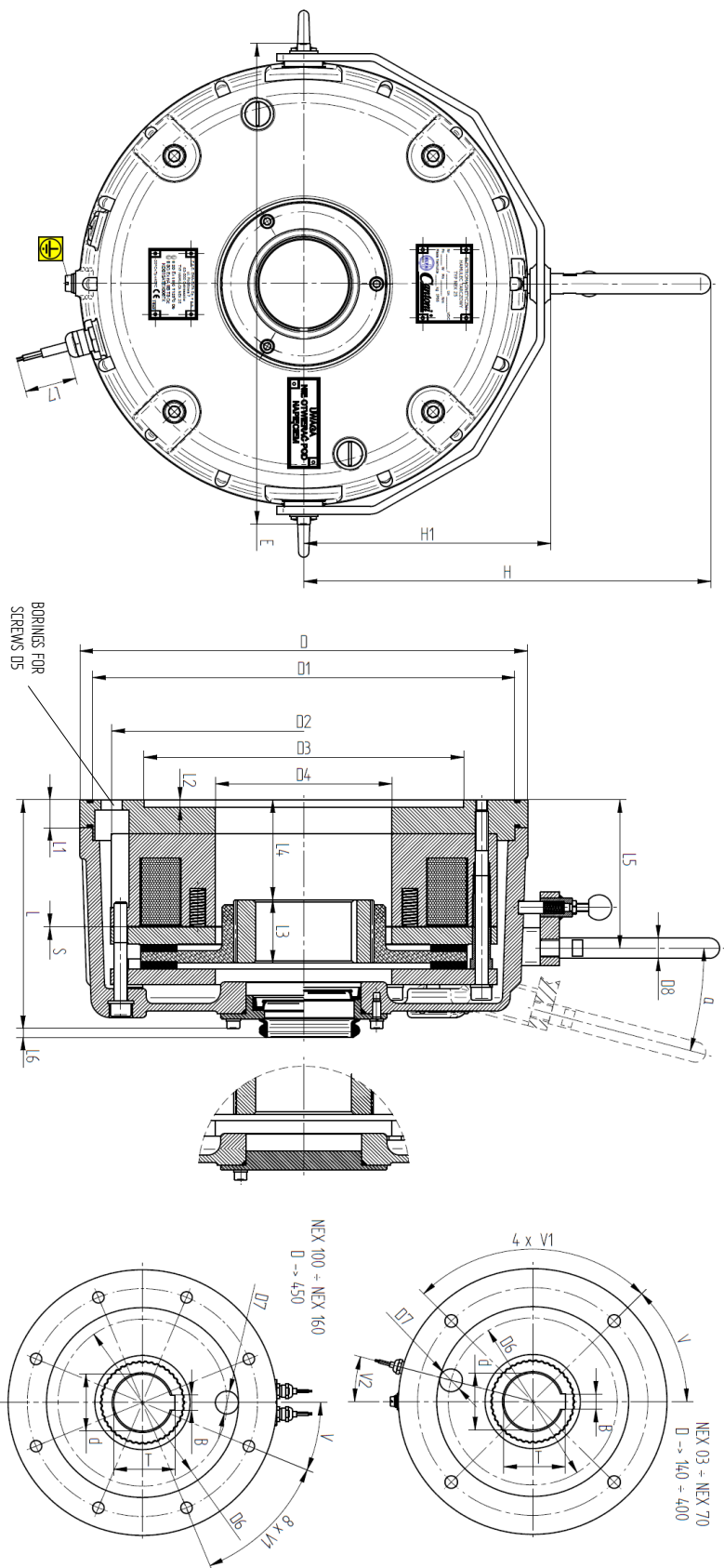
Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type								
			NEX 05	NEX 10	NEX 16	NEX 25	NEX 30	NEX 50	NEX 70	NEX 100	NEX 160
Supply voltage	U <sub>n</sub>	[V]	24, 104, 180								
Power	P <sub>20°</sub>	[W]	30	50	65	75	110	140	250	250	300
Max. speed	n <sub>max.</sub>	min <sup>-1</sup>	3000								
Braking torque	M <sub>h</sub>	Nm	50	100	160	250	360	500	700	1000	1600
Weight	m	kg	14	20	30	35	39	40	95	110	150
Ambient temperature		°C	-20 ÷ +45								
Level of protection		-	IP 66								
Operating time *	On direct voltage side	t <sub>01</sub>	90	150	300	400	500	500	500	500	600
		t <sub>09</sub>	40	65	110	200	270	270	300	300	500
	On alternating voltage side	t <sub>01</sub>	90	150	300	400	500	500	500	500	600
		t <sub>09</sub>	Brake disconnection on alternating current side causes about five-times growth in braking time t <sub>09</sub> with respect to disconnection on direct current side								

t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)

t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.

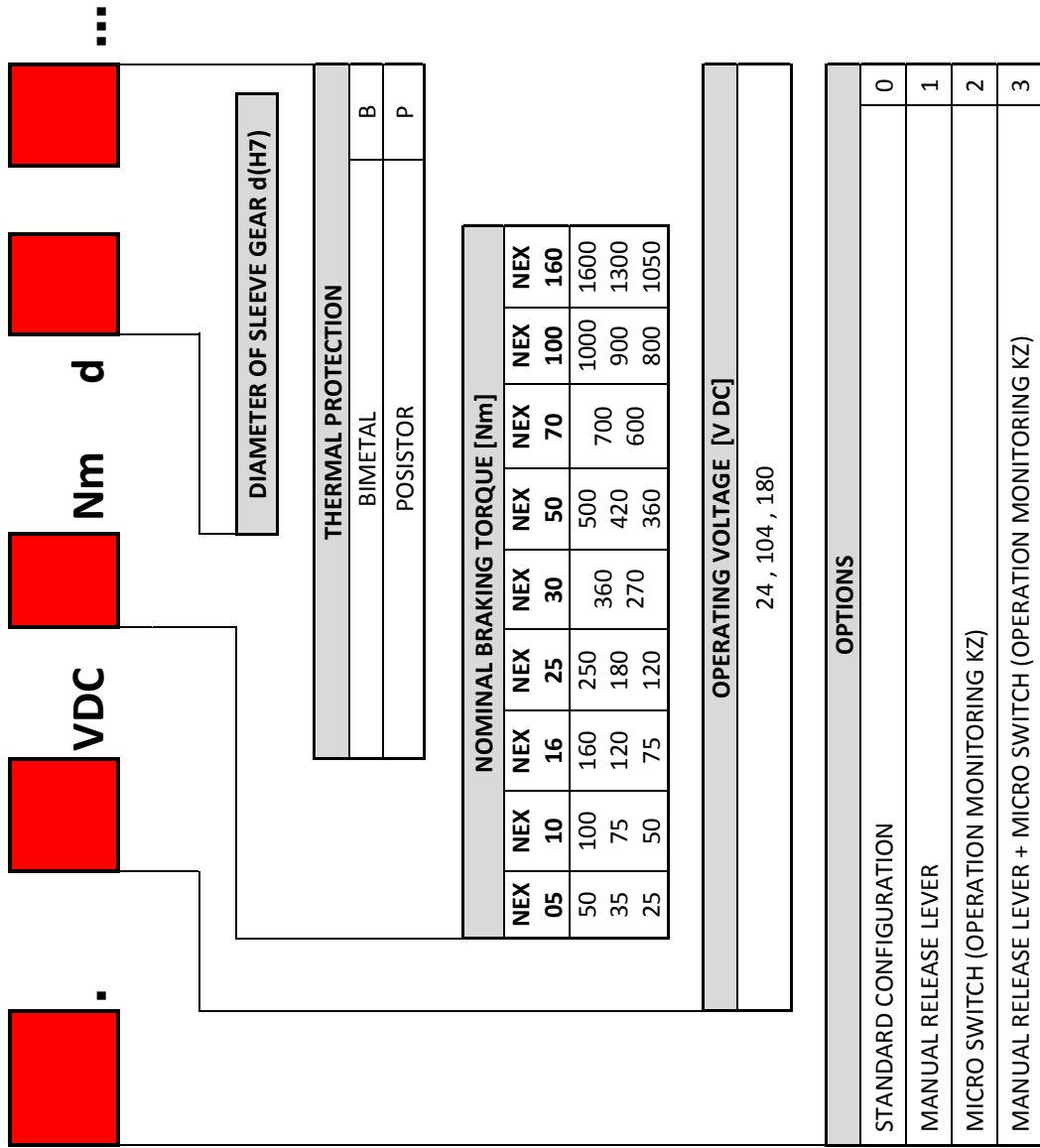


Type	D	D1	D2	D3	D4	D5	D6	D7	D8	L	L1	L2	L3	L4	L5	L6	L7	H	H1	α	E	V	V1	V2	S <sub>0.05</sub>	S <sub>max</sub>	d	d <sub>max</sub>	B	T
NEX 05	160	145	130	110 H7	44	4 x M8	80	18	10	118	18	4	35	50	57	6	400	180	98	15°	186	45°	90°	20°	0,2 <sup>+0,05</sup>	0,5	25 H7	25 H7	8 P9	28,3
NEX 10	200	180	165	130 H7	62	4 x M10	110	18	12	146	18	5	75	44	70	5	400	210	116	15°	225	45°	90°	15°	0,3 <sup>+0,05</sup>	0,8	35 H7	35 H7	10 P9	38,3
NEX 16	250	232	215	180 H7	87	4 x M12	144	30	12	140	18	5	35	56	79,5	4	600	245	145	15°	278	45°	90°	15°	0,4 <sup>+0,05</sup>	1,0	40 H7	50 H7	12 P9	43,3
NEX 25	300	285	265	230 H7	92	4 x M12	194	30	16	165	20	5	40	76	104	4	850	320	170	15°	332	45°	90°	15°	0,4 <sup>+0,05</sup>	1,2	42 H7	50 H7	12 P9	45,3
NEX 30	350	330	300	250 H7	138	4 x M16	194	30	18	181	22	6	50	79	116	4	850	442	194	15°	380	45°	90°	15°	0,5 <sup>+0,05</sup>	1,4	42 H7	75 H7	12 P9	45,3
NEX 50	350	330	300	250 H7	138	4 x M16	194	30	18	181	22	6	50	79	116	4	850	442	194	15°	380	45°	90°	15°	0,5 <sup>+0,05</sup>	1,4	55 H7	75 H7	16 P9	59,3
NEX 70	400	380	350	300 H7	146	4 x M16	264	30	20	210	24	6	70	79	132	4	1500	580	225	15°	440	45°	90°	15°	0,6 <sup>+0,05</sup>	1,1	55 H7	75 H7	16 P9	59,3
NEX 100	450	430	400	350 H7	146	8 x M16	320	30	20	210	30	6	70	80	134	6	1500	670	246	20°	445	45°	15°	15°	0,6 <sup>+0,05</sup>	1,1	55 H7	75 H7	16 P9	59,3
NEX 160	450	430	400	350 H7	170	8 x M16	320	30	20	235	30	6	80	85	152	6	1500	750	480	20°	480	45°	15°	15°	0,6 <sup>+0,05</sup>	1,5	70 H7	75 H7	20 P9	74,9

\*d<sub>max</sub> - at an extra charge, brakes can be produced with custom maximum diameter of the toothed bus







MECHANICAL SIZE	
05, 10, 16, 25, 30, 50, 70, 100, 160	

CONFIGURATION	
BASE (CABLE GUIDED THROUGH THE D7 HOLE)	0
CABLE GUIDED THROUGH A GLAND	1
BASIC + HOLE WITH V-RING	2
CABLE GUIDED THROUGH A GLAND + HOLE WITH V-RING	3

**Custom manufacturing options:**  
 -non-standard diameters of the brake toothed bush d(h7)  
 -different operating voltages (max. 225V)

**EXAMPLE:**  
 NEX 25 . 30 . 104VDC 180Nm d42 B  
 NEX 160 . 23 . 180VDC 1600Nm d75 P

OPERATING VOLTAGE [V DC]	
24 , 104 , 180	

OPTIONS	
STANDARD CONFIGURATION	0
MANUAL RELEASE LEVER	1
MICRO SWITCH (OPERATION MONITORING KZ)	2
MANUAL RELEASE LEVER + MICRO SWITCH (OPERATION MONITORING KZ)	3

The producer reserves the right to modify as a result of developing the product.  
 It is possible to realize special versions.



# ELECTROMAGNETIC DISC BRAKES HZg



Spring actuated and electromagnetically released disk brake type HZg powered by alternating current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

They are distinguished by dynamic operation characteristic for alternating current electromagnetic equipment, hence acquiring very short operating time (braking and releasing), and in spite of complicated structure of the electromagnet, they provide simple control circuit – connection with alternating current source, e.g. with motor connecting box terminals, forming a mechanically and electrically compact structure.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

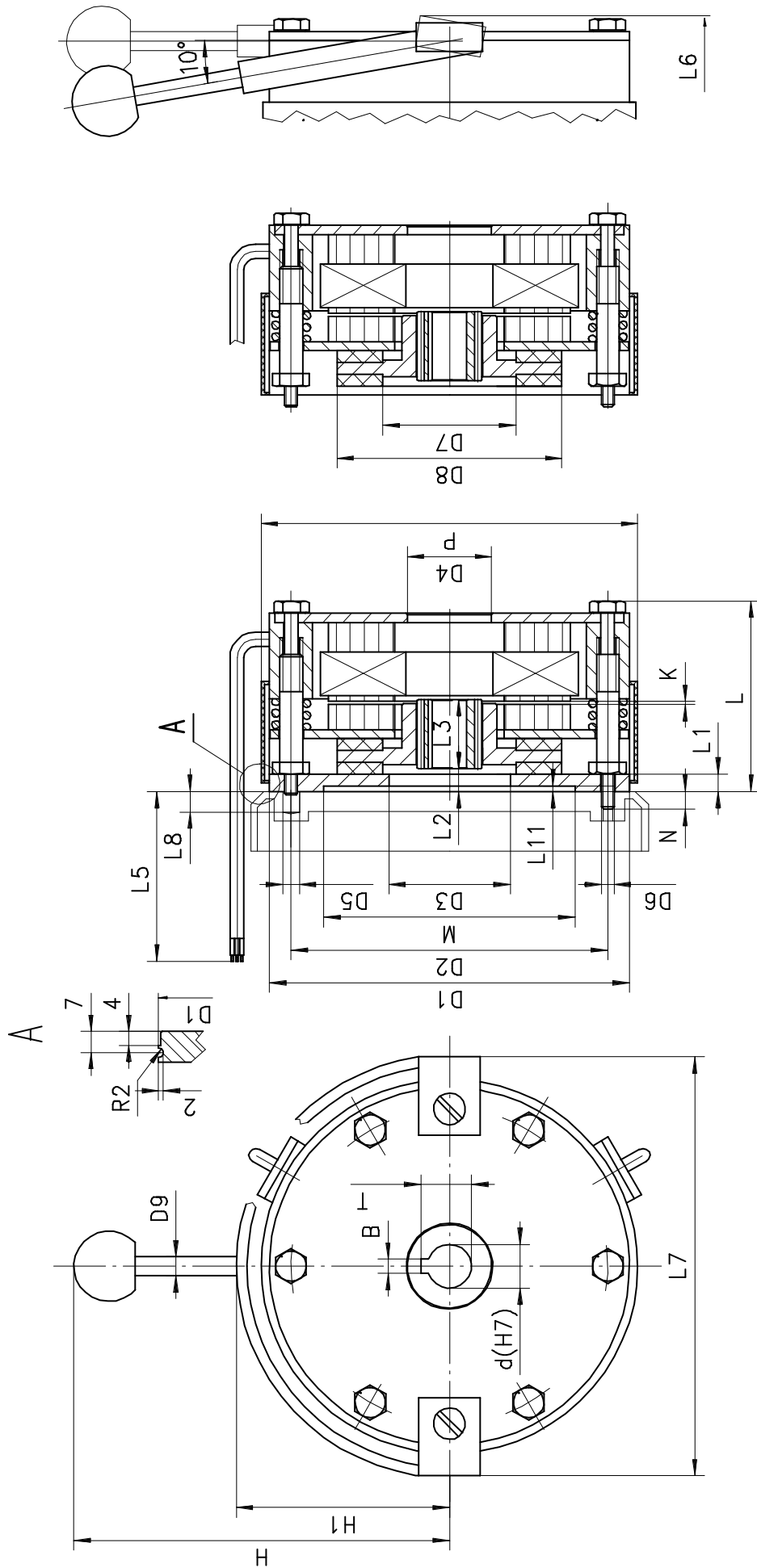
Brakes can be manufactured in variants suitable for various alternating-current voltages: 3x230, 3x400, 3x500, 3x690V which allows them to be supplied from standard alternating current sources.

Parameters		Unit	Brake type				
			H(Z,Y)g 90	H(Z,Y)g 100	H(Z,Y)g112	H(Z,Y)g 132	H(Z,Y)g 160
Supply voltage	Un	[V]	3x230, 3x400, 3x500, 3x690 50 or 60 Hz				
Power	P <sub>20°</sub>	[W]	35	40	60	80	130
Braking torque	M <sub>h</sub>	[Nm]	20	40	60	100	200
Max. speed	n <sub>max.</sub>	min <sup>-1</sup>	3000				
Weight	G	kg	4,7	6,8	10,4	14,5	27,0
Ambient temperature	T	°C	- 25 ÷ + 40				
Operating time *	t <sub>0,1</sub>	ms	10	10	11	15	10
	t <sub>0,9</sub>	ms	10	20	35	30	100

t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)

t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.



Type	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L11	L2	L3	L5	L6	L7	L8	H	H1	M	N	d	d <sub>max</sub>	T	B	K	P
H(Z,Y)g 90	142	138	119	54	25	7	3xM6	74	104	6	93	10	4	11	26	450	97	159	6	146	78	108	12	24	26	27,3	8	0,4	142
H(Z,Y)g 100	159	156	136	54	27	7	3xM6	84	119	6	93	10	4	11	26	450	97	177	6	155	88	118	12	26	26	29,3	8	0,4	159
H(Z,Y)g 112	192	189	164	80	29	9	3xM8	88	144	8	108	10	4	11	34	650	111	210	8	225	108	136	14	28	35	31,3	8	0,4	192
H(Z,Y)g 132	212	209	184	106	36	9	3xM8	110	164	8	123	10	4	11	38	650	126	232	8	295	115	148	14	35	40	38,3	10	0,4	212
H(Z,Y)g 160	270	266	234	134	41	11	3xM10x1,25	140	210	10	137	14	5	14	47	800	144	298	10	330	152	164	16	40	45	43,3	12	0,4	270

# HZg

<b>Z</b>	MOUNTING FLANGE
<b>Y</b>	LEVER FOR MANUAL RELEASE
<b>S</b>	RELEASING SCREWS
<b>ZV</b>	MOUNTING FLANGE, LEVER FOR MANUAL RELEASE
<b>ZS</b>	MOUNTING FLANGE, RELEASING SCREWS

<b>MECHANICAL SIZE</b>
90 , 100 , 112 , 132 , 160

<b>A</b>	<b>BRAKE WITHOUT HOLE D4 IN ELEKTROMAGNET</b>
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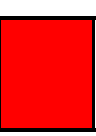
<b>OPERATING VOLTAGE [V AC]</b>
3x230, 3x400, 3x500V, 3x690 50 or 60 Hz

<b>NOMINAL BRAKING TORQUE [Nm]</b>				
H(Z,Y)g 90	H(Z,Y)g 100	H(Z,Y)g 112	H(Z,Y)g 132	H(Z,Y)g 160
20	40	60	100	200
13	26	40	66	133
10	20	30	50	100
6,6	13	20	33	66
4,4	9	13	22	44
3,4	7	11	17	33

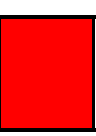
<b>PROTECTION RATING</b>	
<b>IP 44</b>	Basic version
<b>IP 54</b>	V-ring sealing
<b>IP 55</b>	Additional sealing + V-ring
<b>IP 56</b>	Special sealing + brake cover

<b>CLIMATIC VERSION</b>
ACCORDING TO STANDARDS : e.g. MT, TH

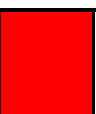
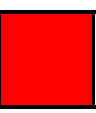
**H**



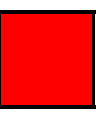
**g**



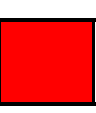
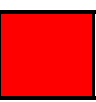
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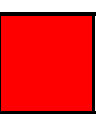
**V**



**Nm**



**d**



**DIAMETER OF SLEEVE GEAR d(H7)**

**EXAMPLE:**

HZg 132 . 3x400V 50Hz 100Nm IP54 d35

The producer reserves the right to modify as a result of developing the product. It is possible to realize special versions.



# ELECTROMAGNETIC DISC BRAKES 2HZg

8ZHZg

Spring actuated and electromagnetically released disk brake type HZg powered by alternating current. Designed for braking rotating machine parts and their precision positioning. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

They are distinguished by dynamic operation characteristic for alternating current electromagnetic equipment, hence acquiring very short operating time (braking and releasing), and in spite of complicated structure of the electromagnet, they provide simple control circuit – connection with alternating current source, e.g. with motor connecting box terminals, forming a mechanically and electrically compact structure.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

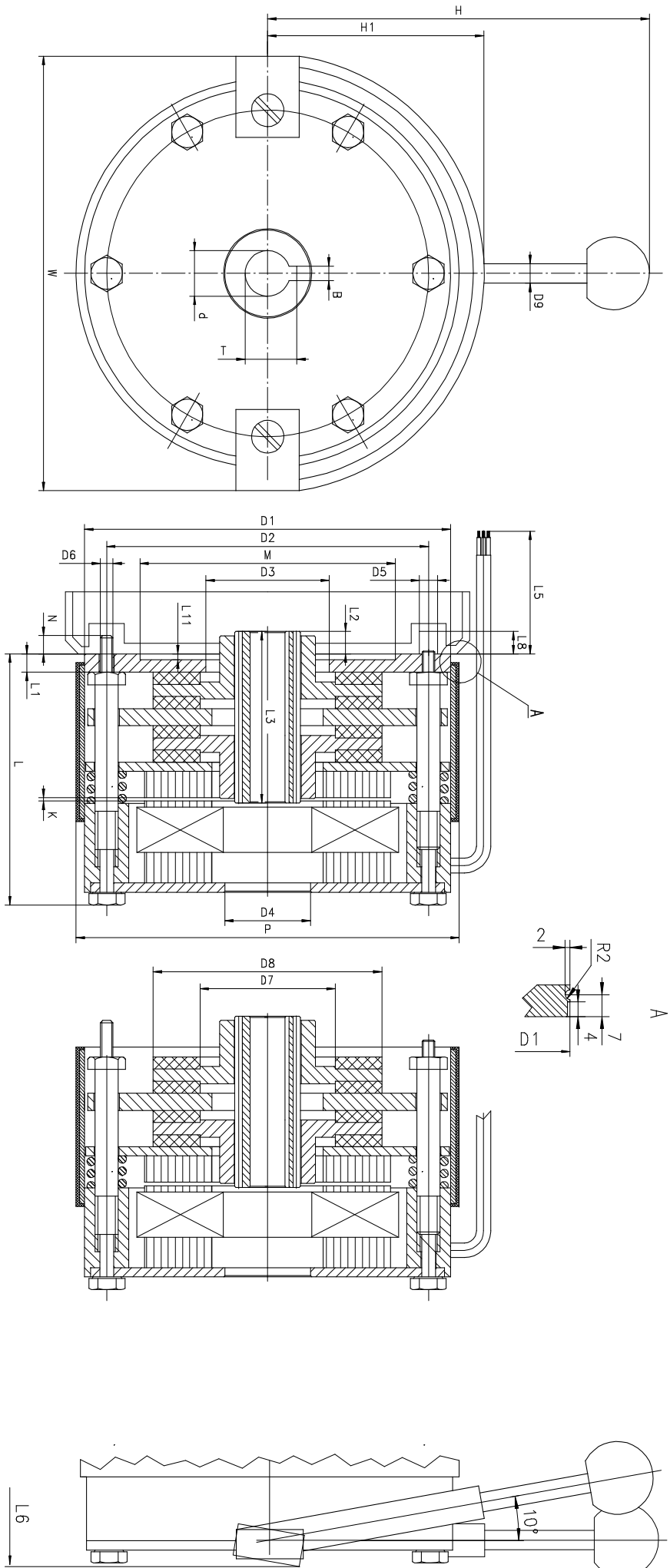
Brakes can be manufactured in variants suitable for various alternating-current voltages: 3x230, 3x400, 3x500, 3x690V which allows them to be supplied from standard alternating current sources.

Parameters		Unit	Brake type				
			2H(Z,Y)g 90	2H(Z,Y)g 100	2H(Z,Y)g112	2H(Z,Y)g 132	2H(Z,Y)g 160
Supply voltage	Un	[V]	3x230, 3x400, 3x500, 3x690 50 or 60 Hz				
Power	P <sub>20°</sub>	[W]	35	40	60	80	130
Braking torque	M <sub>h</sub>	[Nm]	40	80	120	200	300
Max. speed	n <sub>max.</sub>	min <sup>-1</sup>	3000				
Weight	G	kg	5,5	7,8	11,4	15,5	27,0
Ambient temperature	T	°C	- 25 ÷ + 40				
Operating time *	t <sub>0,1</sub>	ms	10	10	11	15	10
	t <sub>0,9</sub>	ms	10	20	35	30	100

t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)

t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.



Type	D	D1	D2	D3	D4	D5	D6	D7	D8	D9	L	L1	L11	L2	L3	L5	L6	L8	H	H1	M	N	d	d <sub>max</sub>	T	B	K	P
2H(Z,Y)g 90	142	138	119	54	25	7	3xM6	74	104	6	125	10	4	11	26	450	135	6	146	78	108	12	24	26	27,3	8	0,4	142
2H(Z,Y)g 100	159	156	136	54	27	7	3xM6	84	119	6	125	10	4	11	26	450	135	6	155	88	118	12	26	26	29,3	8	0,4	159
2H(Z,Y)g 112	192	189	164	80	29	9	3xM8	88	144	8	135	10	4	11	34	650	145	8	225	108	136	14	28	35	31,3	8	0,4	192
2H(Z,Y)g 132	212	209	184	106	36	9	3xM8	110	164	8	146	10	4	11	38	650	155	8	295	115	148	14	35	40	38,3	10	0,4	212
2H(Z,Y)g 160	270	266	234	134	41	11	3xM10x1,25	140	210	10	166	14	5	14	47	800	180	10	330	152	164	16	40	45	43,3	12	0,4	270

**2 H****g**

<b>Z</b>	MOUNTING FLANGE
<b>Y</b>	LEVER FOR MANUAL RELEASE
<b>S</b>	RELEASING SCREWS
<b>ZY</b>	MOUNTING FLANGE, LEVER FOR MANUAL RELEASE
<b>ZS</b>	MOUNTING FLANGE, RELEASING SCREWS

**MECHANICAL SIZE**

90 , 100 , 112 , 132 , 160

**A BRAKE WITHOUT HOLE D4 IN ELEKTROMAGNET****OPERATING VOLTAGE [V AC]**

3x230, 3x400, 3x500V, 3x690 50 or 60 Hz

**NOMINAL BRAKING TORQUE [Nm]**

2H(Z,Y)g 90	2H(Z,Y)g 100	2H(Z,Y)g 112	2H(Z,Y)g 132	2H(Z,Y)g 160
40	80	120	200	300
20	40	60	100	150

**EXAMPLE:**

2HZg 132 . 3x400V 50Hz 200Nm IP54 d35

**d**DIAMETER OF SLEEVE  
GEAR d(H7)**Nm****V****PROTECTION RATING**

<b>IP 44</b>	Basic version
<b>IP 54</b>	V-ring sealing
<b>IP 55</b>	Additional sealing + V-ring
<b>IP 56</b>	Special sealing + brake cover

**CLIMATIC VERSION**

ACCORDING TO STANDARDS : e.g. MT, TH

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

**2HZg**

## ELECTROMAGNETIC DISC BRAKES

# H2S



Direct current brake series H2S characterizes relatively simple construction, facility for regulating brake parameters such as braking torque (reduction of springs), braking time (by way of appropriate electrical connection) and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. An additional feature is quiet operation, particularly important when the equipment is operated by a number of drives operating additionally with high frequency of actuations. Brake parameters regarding time for actuating and releasing in spite of simplicity do not differ from brake series H2SP and should be considered as comparable. The fact should be stressed that parameters of loading and braking energy that can be transferred are comparable with series H2SP in spite of its considerably simplified construction. It is characterized by high reliability of operation, stability of technical parameters as well as short braking and releasing times.

Brake design guarantees simple and problem-free installation. Various options of executions are at disposal with respect to fittings/accessories, brake supply, climatic conditions of utilization, enabling selection of appropriate option for definite utilization conditions.

**They are designed for braking rotating parts of machines and their task is:**

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators, acting as a positioning device,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

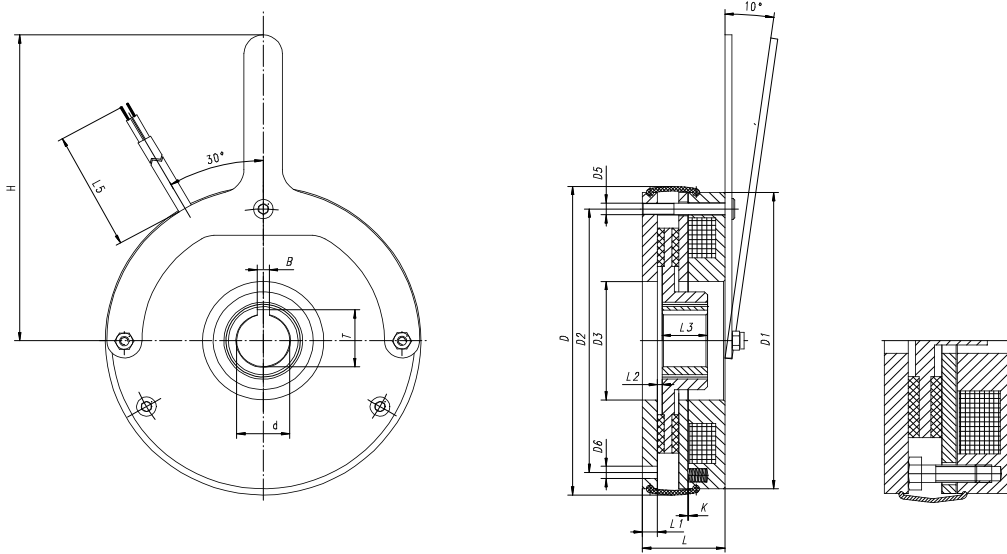
Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type						
			H2S 71	H2S 80	H2S 90	H2S 100	H2S 112	H2S 132	H2S 160
Supply voltage	Un	[V]	24, 104, 180, 207 VDC						
Power	P <sub>20°</sub>	[W]	18	25	25	35	35	35	60
Max. speed	n <sub>max.</sub>	min <sup>-1</sup>	3000						
Braking torque	M <sub>h</sub>	Nm	8	14	14	26	26	26	60
Weight	G	kg	0,8	1,2	1,2	1,9	1,9	1,9	3,5
Level of protection			IP44						
Ambient temperature		°C	-25 ÷ +40						
Operating time *	On direct voltage side	t <sub>0,1</sub>	40	50	40	80	80	80	100
		t <sub>0,9</sub>	25	45	45	65	65	65	85
	On alternating voltage side	t <sub>0,1</sub>	40	50	40	80	80	80	100
		t <sub>0,9</sub>	Brake disconnection on alternating current side causes about five-times growth in braking time t <sub>0,9</sub> with respect to disconnection on direct current side						

t<sub>0,1</sub> - releasing time (from switching on current to drop in braking torque to 10% M<sub>nom</sub>)  
t<sub>0,9</sub> - braking time (from switching off current to attaining 90% M<sub>nom</sub>)

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.





Type	D	D1	D2	D3	D5	D6	L	L1	L2	L3	L5	H	d	B	T	K
H2S 71	110	103	93	30	3xM5	3x5,5	35	7	2,5	20	450	115	15	5	17,3	0,2
H2S 80	133	126	116	45	3xM5	3x5,5	38	8	2,5	20	450	135	19	6	21,8	0,2
H2S 90	133	126	116	45	3xM5	3x5,5	38	8	2,5	20	450	135	24	6	27,3	0,2
H2S 100	162	154	139	60	3xM6	3x6,4	49	10	3,0	30	450	250	24	8	27,3	0,2
H2S 112	162	154	139	60	3xM6	3x6,4	49	10	3,0	30	450	250	25	8	28,3	0,2
H2S 132	162	154	139	60	3xM6	3x6,4	49	10	3,0	30	450	250	30	8	33,3	0,2
H2S 160	208	200	178	80	3xM8	3x8,4	58	10	3,0	30	450	290	35	10	38,3	0,2

**Order denotation:**

**H2S** [Red Box] . [Red Box] V DC [Red Box] Nm d [Red Box] [Red Box]

LEVER FOR MANUAL RELEASE      y

MECHANICAL SIZE  
71 , 80 , 90 , 100 , 112 , 132 , 160

CLIMATIC VERSION  
ACCORDING TO STANDARDS:  
e.g. MT , TH

DIAMETER OF THE SLEEVE GEAR d(h7)

NOMINAL BRAKING TORQUE [Nm]						
H2S 71	H2S 80	H2S 90	H2S 100	H2S 112	H2S 132	H2S 160
8	14	14	26	26	26	60

OPERATING VOLTAGE [V DC]  
24 , 104 , 180 , 207

**EXAMPLE:**

H2S 112 . 104VDC 26Nm d25

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# ELECTROMAGNETIC DISC BRAKES

## H



Spring actuated and electromagnetically released disk brake type H powered by direct current. Designed for braking rotating machine parts. Utilized as safety brake. High repeatability even with large number of actuations. The brake characterizes relatively simple construction, facility for regulating brake parameters such as braking torque, braking time and also possibility of supply from alternating current source after connecting up a rectifier circuit delivered at customer's request along with the brake. Direct current disk brake – consisting of electromagnet, armature with friction lining and iron fan. When the brake is actuated, the armature moves forward, simultaneously releasing the fan keyed to the shaft to rotate freely. When the electromagnet is switched off, the armature gets moved by a spring to the fan stopping the shaft of the cooperating machine. Used wherever rotating part of machine is to be immobilized for safety reasons, e.g. woodworking machine.

### Advantages:

-Compact construction, gentle braking, quiet work, simple installation, easy operation

### They are designed for braking rotating parts of machines and their task is:

- emergency stopping, in order to ensure drive safety functions,
- immobilizing machine actuators,
- minimizing run-on times of drives to meet safety requirements according to Office of Technical Inspection (UDT) regulations,
- built onto an electric motor, the brake provides a self-braking motor, a drive unit meeting the requirements of utilisation safety and positioning.

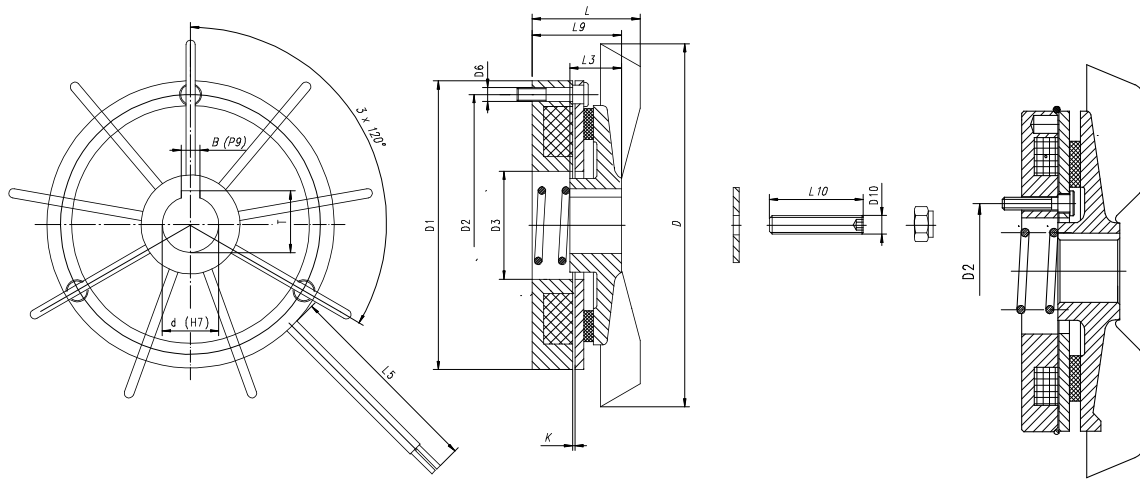
Brakes can be manufactured in variants suitable for various direct-current voltages: 24V, 104V, 180V, 207V which allows them to be supplied from standard alternating current sources, through appropriate rectifier.

Parameters		Unit	Brake type							
			H 63	H 71	H 80	H 90	H100	H112	H132	H160
Supply voltage	$U_n$	[V]	24, 104, 180, 207							
Power	$P_{20^\circ}$	[W]	18	18	25	25	40	40	40	60
Max. speed	$n_{max.}$	$min^{-1}$	3000							
Braking torque	$M_h$	Nm	3	4	7	7	13	13	13	30
Weight	G	kg	0,6	0,8	1,3	1,6	2,1	3,4	4,2	5,8

$t_{0,1}$  - releasing time (from switching on current to drop in braking torque to 10%  $M_{nom}$ )

$t_{0,9}$  - braking time (from switching off current to attaining 90%  $M_{nom}$ )

\*) Values of releasing and braking times are given as approximations, since they depend on mode of assembly/installation, temperature and power supply.



Brake type H63

Type	D	D1	D2	D3	D6	D10	L	L3	L5	L9	L10	d	B	T	K
H63	102	92	43	30	3xM5	M8	31	17	430	25	25	15	5	17,3	0,2
H71	116	103	93	30	3xM5	M8	37	20	430	32	25	17	5	19,3	0,2
H80	143	126	116	45	3xM5	M8	40	22	430	35	40	20	6	22,8	0,2
H90	155	126	116	45	3xM5	M8	41	22	430	35	40	25	8	28,3	0,2
H100	170	154	139	60	3xM6	M10	45	26	430	38	40	30	8	33,3	0,2
H112	182	154	139	60	3xM6	M10	46	28	430	41	40	35	10	38,3	0,2
H132	213	154	139	60	3xM6	M10	52	30	430	45	40	35	10	38,3	0,2
H160	250	200	178	80	3xM8	M10	65	40	430	55	40	35	10	38,3	0,2

Order denotation:

H [ ] . [ ] Nm [ ] d [ ]

MECHANICAL SIZE

63, 71, 80, 90, 100, 112, 132, 160

OPERATING VOLTAGE

24, 104, 180, 207 VDC

NOMINAL BRAKING TORQUE [Nm]

H63	H71	H80	H90	H100	H112	H132	H160
3	4	7		13			30

EXAMPLE:

H100. 13Nm 180VDC d30

DIAMETER OF SLEEVE GEAR  
d(H7) \*

\*) standard diameter **d** listed in the table, other diameter after consultation with the producer

The producer reserves the right to modify as a result of developing the product.  
It is possible to realize special versions.

# ELECTRICAL EQUIPMENT

A number of modules, ranging from simple circuits with classic designs, to complex assemblies ensuring quick action and drives positioning have been designed to drive the brakes. Relevant brake applications with switching in the primary or secondary circuits are ensured by half- or full-wave rectifiers and fast electronic circuits. The manufacturer recommends to use as low alternating current voltages as possible to supply the brakes. Appropriate choice of the control voltage will prevent or at least limit surges that may occur in power supply circuits. It is not recommended to use extensively long control wiring, which would be a source of harmful surges.

## Rectifier B2-1P

The B2-1P rectifiers series forms a complete wave rectifier unit for direct installation. The terminal strip provided facilitates installation and connection to the circuit.

RECTIFIER PARAMETERS			
		B2-1P-400	B2-1P-600
Maximum input voltage (alternating voltage AC)	$U_{IN}$	400 VAC	600 VAC
Maximum output voltage (direct voltage DC)	$U_{OUT}$	$0,45 U_{IN}$	$0,45U_{IN}$
Maximum continuous output current rectifier	$I_{OUT}$	2A	2A

### For example

Maximum input voltage (alternating voltage) -  $U_{IN} = 230VAC$ ,  
The resulting output voltage of the rectifier (direct voltage) -  $0,45U_{IN} = 0,45 \times 230 = 104VDC$

## Rectifier B5-1P

The B2-1P rectifiers series forms a complete wave rectifier unit for direct installation. The terminal strip provided facilitates installation and connection to the circuit.

RECTIFIER PARAMETERS			
		B5-1P-400	B5-1P-600
Maximum input voltage (alternating voltage AC)	$U_{IN}$	400 VAC	600 VAC
Maximum output voltage (direct voltage DC)	$U_{OUT}$	$0,45 U_{IN}$	$0,45U_{IN}$
Maximum continuous output current rectifier	$I_{OUT}$	5A	5A

### For example

Maximum input voltage (alternating voltage) -  $U_{IN} = 230VAC$ ,  
The resulting output voltage of the rectifier (direct voltage) -  $0,45U_{IN} = 0,45 \times 230 = 104VDC$

## Rectifier B2-2P

The B2-2P rectifiers series forms a complete full-wave rectifier unit for direct installation. The terminal strip provided facilitates installation and connection to the circuit. The rectifier allows feeding input voltage max. 400VAC, 2A which after rectification provides DC voltage of value equal to 0,9 input voltage.

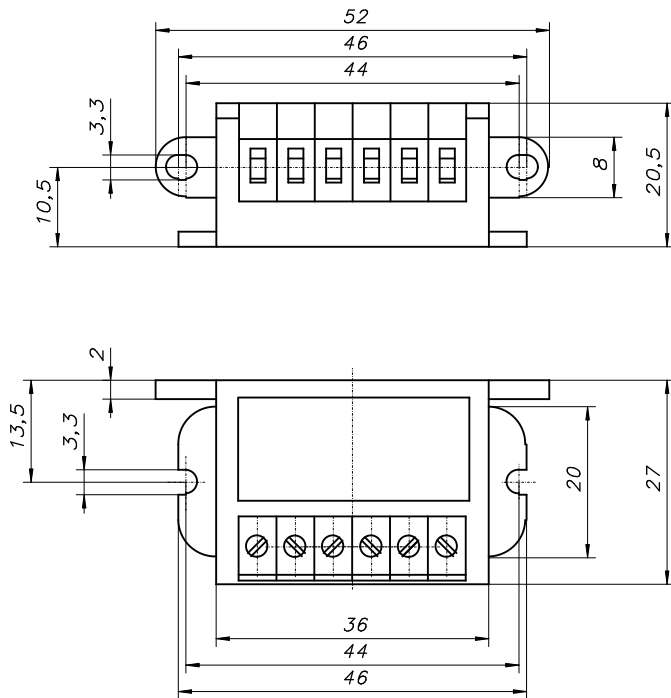
RECTIFIER PARAMETERS		
Maximum input voltage (alternating voltage AC)	$U_{IN}$	250 VAC
Maximum output voltage (direct voltage DC)	$U_{OUT}$	$0,9U_{IN}$
Maximum continuous output current rectifier	$I_{OUT}$	2A

### For example

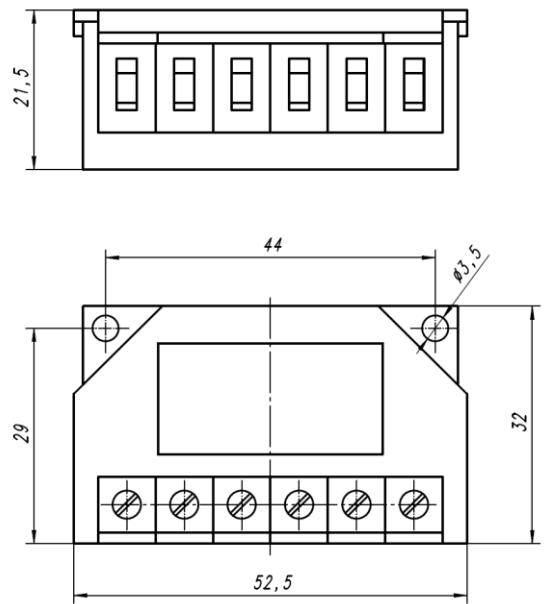
Maximum input voltage (alternating voltage) -  $U_{IN} = 230VAC$ ,  
The resulting output voltage of the rectifier (direct voltage) -  $0,9U_{IN} = 0,9 \times 230 = 207VDC$

## Rectifiers dimensions

B2-1P-400,  
B5-1P-400,  
B2-2P

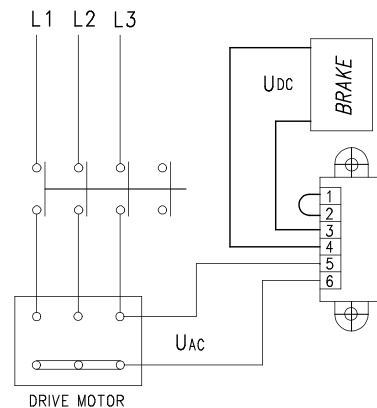


B2-1P-600,  
B5-1P-600



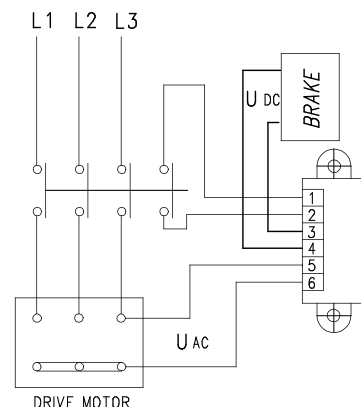
## Disconnection of power supply on AC side

The diagram presents connection of rectifiers to supply circuit of motor. When disconnecting the voltage, the magnetic field causes the coil current to flow further through the rectifying diodes and drops slowly. The magnetic field reduces gradually causing prolonged time of braking action and consequently delayed increase of braking torque. If action time is irrelevant, brake should be connected on the AC side. When switching off, the supply circuits act as rectifying diodes.



## Disconnection of power supply on DC side

The diagram presents connection of rectifiers into electric motor circuit. The coil current is interrupted between the coil and supply (rectifier) circuit. The magnetic field reduces very quickly, **giving short time of braking action and consequently rapid growth of braking torque.** When switching off on DC voltage side, a high peak voltage is generated in the coil causing faster wear of contacts due to sparking. For protecting the coil against peak voltages and protecting the contacts against excessive wear, the rectifier circuit is provided with protective facility allowing brake connection on DC voltage side.



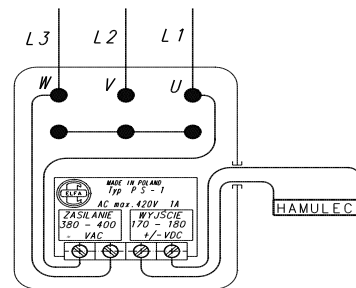
## Rectifier PS-1

Circuit PS-1 is built on the basis of MOSFET type semiconductor technique which enabled achieving effects not available in traditional designs. The brake electromagnet energized through circuit of this construction enables the brake to achieve connection and disconnection time parameters analogous to breaking of circuit on direct current side. The parameters obtained are not however gained through utilization of additional electrical circuits and switches.

Simplicity of installation and parameters achieved enable very wide application, particularly in cases requiring positioning of drives, operation with high frequency of actuations compounded with repeatability of brake connecting and disconnecting times.

Supply circuit PS-1 forms a complete unit for direct installation. Provided with a four-terminal strip, it enables unhindered adaptation in every cooperating circuit. The circuit is adapted for supply from alternating current source of 380-400 VAC max. 420 VAC which after rectification and appropriate formation enables obtaining direct voltage of 170-180 VDC for brake supply.

The diagram below shows the method of connecting the circuit PS 1 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.



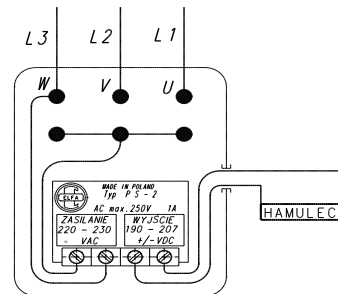
## Rectifier PS-2

Circuit PS-2 is built on the basis of MOSFET type semiconductor technique which enabled achieving effects not available in traditional designs. The brake electromagnet energized through circuit of this construction enables the brake to achieve connection and disconnection time parameters analogous to breaking of circuit on direct current side. The parameters obtained are not however gained through utilization of additional electrical circuits and switches.

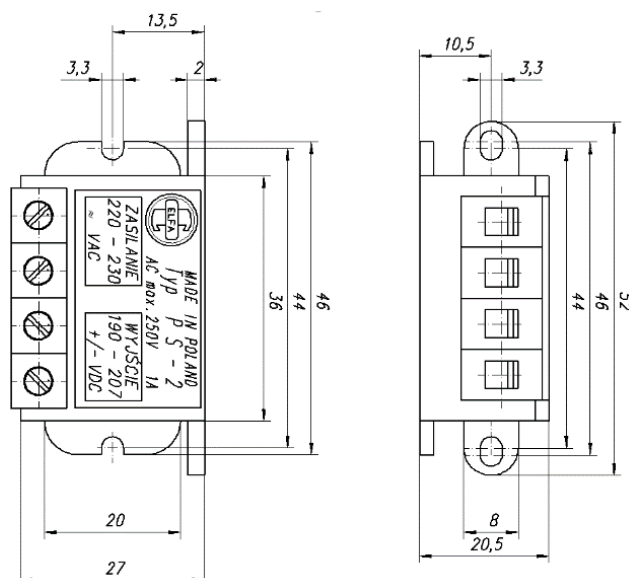
Simplicity of installation and parameters achieved enable very wide application, particularly in cases requiring positioning of drives, operation with high frequency of actuations compounded with repeatability of brake connecting and disconnecting times.

Supply circuit PS 2 forms a complete unit for direct installation. Provided with a four-terminal strip, it enables unhindered adaptation in every cooperating circuit. The circuit is adapted for supply from alternating current source of 220-230 VAC max. 250 VAC which after rectification and appropriate formation enables obtaining direct voltage of 190-207 VDC for brake supply.

The diagram below shows the method of connecting the circuit PS 2 into supply circuit of brake cooperating with 3x400 VAC electric motor with star-connected winding.



## Rectifier PS-1, PS-2 dimensions

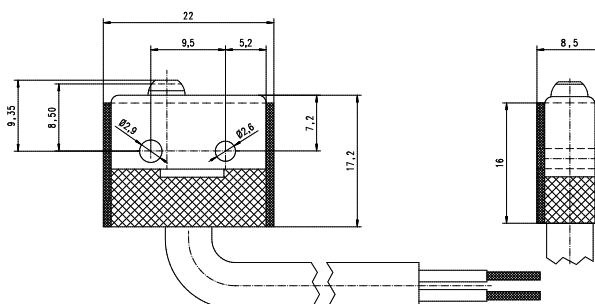


## CONTROL AND SIGNALING CIRCUITS – microswitches

Having in mind the user who requires the control of the brake, we have designed special signaling and control circuits, which enable to control the state of the brake (engaged, disengaged) and the wear of the plate lining. The usage of these circuits enables to control the brake with the use of automatic elements, which ensure high level of safety and reliability. Due to its compact design, the microswitch can be used in any other applications, as long as its parameters meet design requirements.

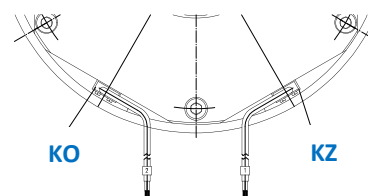
MICROSWITCHES – ELECTRIC PARAMETERS		
Switch parameter	Switch KZ	Switch KO
Max. voltage AC	250 V AC	250 V AC
Max. AC switching current	5 A	6 A
Max. Voltage DC	28V DC	220V DC
Max. DC switching current	3 A / 28V DC	6 A / 12V DC 3A / 24V DC 1A / 60V DC 0,5A / 110V DC 0,25 A / 220V DC
Protection rating	IP 66	IP 66
Terminals	NO /NC	NO /NC

### MICROSWITCH DIMENSIONS



**Response monitoring microswitch – KZ** – control of the state of brake (engaged, disengaged),

**Microswitch of the brake lining control – KO** – the microswitch indicates approaching the maximum wear of the brake disc and the necessity of the brake's regulation or replacement of the disc brake, which enables further work of the brake. The regulation procedure is described in the brake operating manual.



SAMPLE INSTALATION

**Response monitoring microswitch and microswitch of the brake lining control – KZ+KO**

## PROTECTIVE CIRCUITS – thermal protection

To protect electromagnet windings against heat build-up (slow-changing overloads) thermal sensor are used. In our offer we have PTC thermistors, which feature high resistance gradients when their rated temperature is reached - posistors - P or bimetallic thermal sensor - B.

Posistor-based sensors are made in the form of an insulated pill with connecting wires extending inside a teflon insulation, installed directly on the electromagnet windings. Sensor circuit terminals are routed outside the brake to the terminal box and connected to a separate connection block or terminal strip. So-called resistance relays are intended for thermistor-based PTC temperature sensors. When temperature of at least one of the sensors rises above the rated value, the circuit resistance suddenly increases triggering the relay.

**Posistor thermal protection – P**

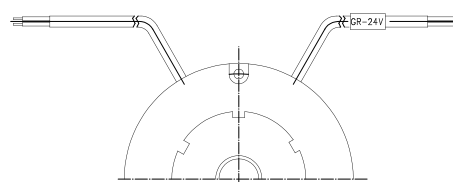
Note! PTC sensor terminals must not be connected directly to the contactor.

The brake protection has the form of a bimetallic sensor. Brake operation is controlled by a sensor or by a set of sensors, which ensure its safe operation; excessive temperature indication is obtained from the thermal switch installed inside the brake electromagnet's housing rated for a specific temperature. When the limit temperature for the sensor is exceeded, the information for the automatic control equipment is sent or the brake circuit is disconnected.

**Bimetallic thermal protection – B**

## AUXILIARY CIRCUITS – anti-condensation heaters

The so-called parking heating is used to prevent vapours condensation inside the brake. The equipment is particularly useful in negative temperatures or in high humidity environments. The heater is supplied through its dedicated pair of wires. The heater power supply voltage matches customer requirements. – the need to define the voltage during order.



SAMPLE INSTALATION

**Anti-condensation heaters – GR - \_\_\_ V**

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