HITEX CLUTCHES & BRAKES

HEM CLUTCHES & BRAKES

HITEX
POWER TRANSMISSION COMPONENTS

Selection

Proper dimensioning of the HEM 115 brake or 105 clutch should be done to ensure that the permissible load never is exceeded in any operating condition.

The largest possible required torque (T_N) should be used as a basis. Verify the required torque of the application by the following formula:

$$T_N\,(Nm) = 9550 \cdot \frac{P\,(kW)}{n\,(rpm)}$$

The rated torque of the brake (T_{BN}) or clutch (T_{KN}) should be equal or higher to the application required torque (T_N) taking a safety factor (S_B) in consideration.

$$T_{BN} \text{ or } T_{KN} \geq T_N \bullet S_B$$

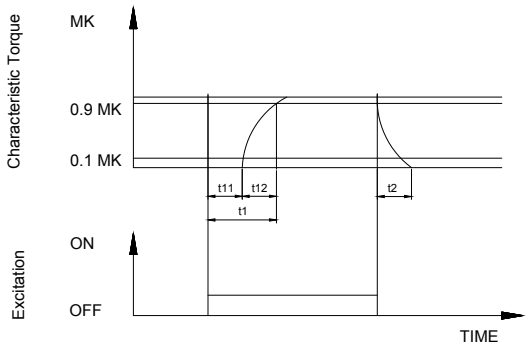
In event of extreme or critical working conditions please contact the technical department of the manufacturer.

Servicefactors

Guidelines for servicefactor S_B	
Operating factor	S_B
Low masses, equal loading & non - intermittent operation	2,0
Low masses, light shock load & intermittent operation	2,5
Medium masses, light shock load & intermittent operation	3,0
Large masses, light shock load & intermittent operation	3,0
Compressor drive	5 - 6
Non overhauling Loads	2 - 3
Overhauling Loads	3 - 4

Operating Times

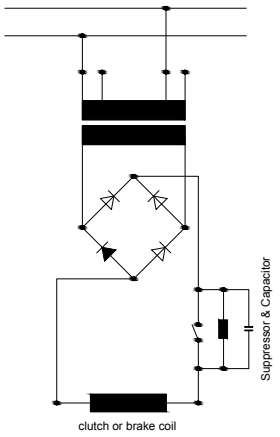
The operating times are guide values appliable for DC switching with nominal air gap, coil at nominal temperature and standard rated torque. Torque time ratings are dependent on excitation voltage. The engagement time (t_1) is prolonged by approximately factor 10 for AC switching. The disengagement time (t_2) is the same for AC and DC switching.



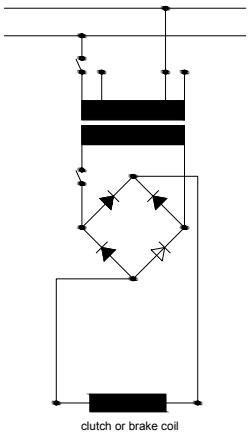
t11 = Delay time when connecting
t12 = Rise time of braking torque

t1 = Engagement time
t2 = Disengagement time
t3 = Slipping time

1. DC Side Switching

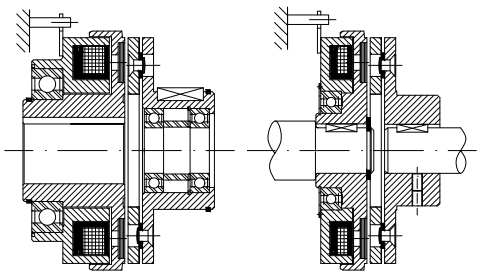


2. AC Side Switching

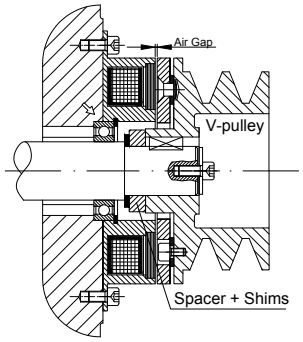


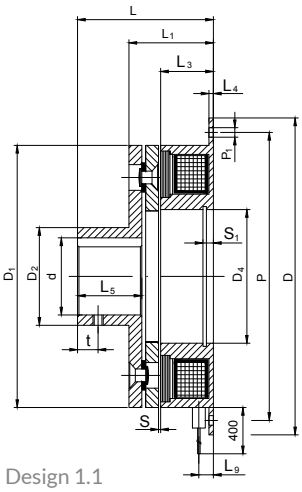
Installation example

Electromagnetic clutch HEM 105
When supplied with DC voltage the armature is attracted towards the friction material of the rotor and transmits the torque free of back-lash. When the supply is interrupted, the pre-stressed spring pulls the armature back into its original position free of residual torque even when mounted vertically.

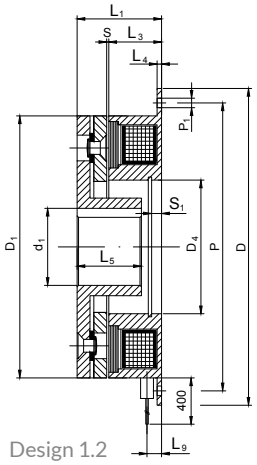


Electromagnetic brake HEM 115
When supplied with DC voltage the armature is attracted towards the friction material of the stator and the friction causes the rotating component to stop. When the supply is interrupted, the prestressed spring pulls the armature back into its original position free of residual torque even when mounted vertically.

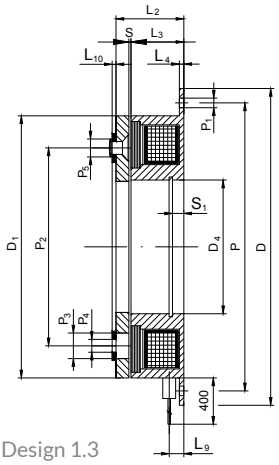




Design 1.1



Design 1.2



Design 1.3

Specifications

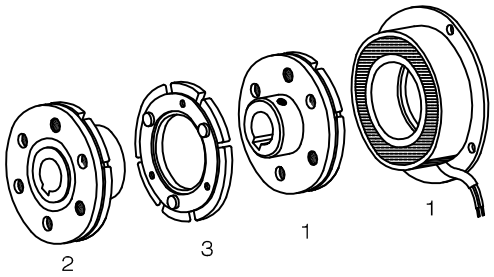
- Torque range 7,5 – 480 Nm
- Available in 24, 96 and 190 VDC
- DC Electromagnetic brake
- Flange Mounted
- Backlash-free
- Maintenance free

Technical data HEM 115 Brake

Size	Rated torque T_{KN} (Nm)	Max. speed n_{kmax} (1/min)	Input power $P_{20°C}$ (W)	Operating times (ms) t_{11}	t_{12}	t_1	t_2	Max. displacements Axial Δka (mm)	Radial Δkr (mm)	Mass moment of inertia J (kg cm²) Armature 1 & 2	Armature 3
6	7,5	8.000	11.5	10	20	35	10	0,08	0,2	0,6	0,42
8	15	6.000	16	15	25	40	20	0,08	0,2	1,71	1,18
10	30	5.000	21	20	40	60	30	0,08	0,2	6,64	4,72
12	60	4.000	28	25	55	80	45	0,10	0,2	18	13
16	120	3.000	38	30	70	100	60	0,10	0,3	63,3	48
20	240	3.000	45	35	80	115	70	0,10	0,3	190	137
25	480	2.000	70	40	90	130	80	0,15	0,3	480	358

HEM 115 Brake design 1

Size	Rated torque T_{KN} (Nm)	Finish bore d (H7) Min.	Max.	Std.	Dimensions (mm) L	L_1	L_2	L_3	L_4	D	D_1	D_2	D_3
6	7,5	10	17	10,12,15	37	25,5	22	18	2	80	63	27	35
8	15	10	20	15,17, 20	44,5	28,5	24,5	20	2,5	100	80	32	42
10	30	14	30	20, 25, 28	52,9	32,9	27,9	22	3	125	100	42	52
12	60	14	35	25, 28, 30	61	37	31	24	3,5	150	125	49	62
16	120	20	42	30, 35, 40	73	42	35	26	4	190	160	65	80
20	240	25	60	40, 50, 55	89,4	50,4	41,4	30	5	230	200	83	100
25	480	25	60	40, 50, 60	102,9	58,9	47,9	35	6	290	250	105	125

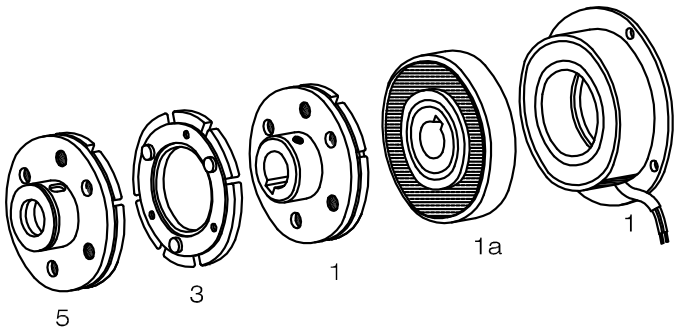


HEM 115 Brake design 1

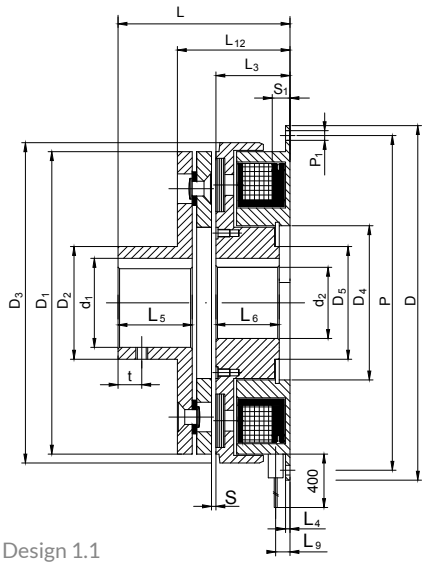
Size	Dimensions (mm) P	P_1	P_2	P_3	P_4	P_5	L_5	L_9	L_{10}	S	S_1	t
6	72	4 x 4,5	46	3 x 6,3	3 x 3,1	3 x 5,5	15	6,3	1,4	0,2	3,5	5
8	90	4 x 5,5	60	3 x 8	3 x 4,1	3 x 7	20	6,3	1,7	0,2	4,3	6
10	112	4 x 6,6	76	3 x 10,5	3 x 5,1	3 x 5,1	25	6,3	2,1	0,2	5	6
12	137	4 x 6,6	95	3 x 12	3 x 6,1	3 x 10	30	6,8	2,5	0,3	5,5	10
16	175	4 x 9	120	3 x 15	3 x 8,2	3 x 13	38	8,8	3	0,3	6	10
20	215	4 x 9	158	3 x 18	3 x 10,2	3 x 16	48	12,4	4	0,5	7	15
25	270	4 x 11	210	4 x 22	4 x 12,2	4 x 20	55	14,9	4,3	0,5	8	20

Specifications

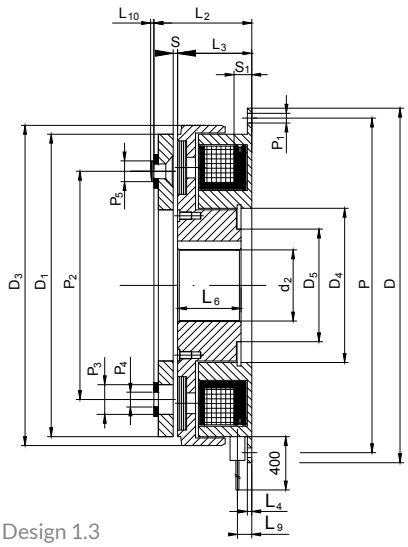
- Torque range 7,5 – 480 Nm
- Available in 24, 96 and 190 VDC
- DC Electromagnetic clutch
- Flange mounted
- Backlash-free
- Maintenance free



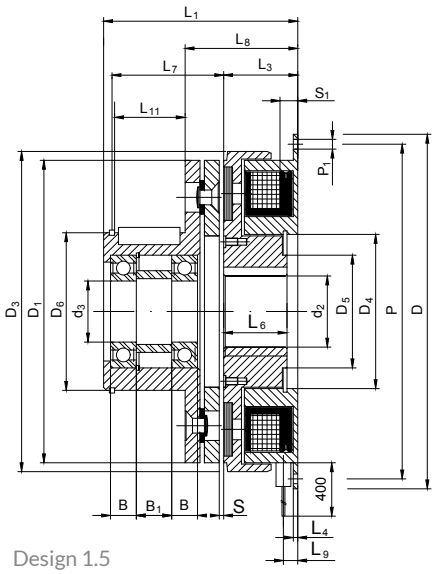
Technical data HEM 105 Clutch design 1													
	Rated torque	Max. speed	Input power	Operating times (ms)				Max. displacements		Mass moment of inertia J (kg cm²)			
								Axial	Radial	Rotor	Armature		
Size	T_{KN} (Nm)	n_{kmax} (1/min)	$P_{20°C}$ (W)	t_{11}	t_{12}	t_1	t_2	Δka (mm)	Δkr (mm)	1a	1	3	5
6	7,5	8.000	15	15	30	45	10	0,05	0,10	1,19	0,6	0,42	0,92
8	15	6.000	20	20	55	75	15	0,05	0,15	2,66	1,71	1,18	2,82
10	30	5.000	25	25	85	110	25	0,05	0,15	7,8	6,64	4,72	9,2
12	60	4.000	35	35	105	140	40	0,05	0,10	22,6	18	13	25,8
16	120	3.000	50	45	125	170	50	0,10	0,20	63	63,3	48	86,8
20	240	3.000	68	60	140	200	60	0,10	0,20	205	190	137	258
25	480	2.000	85	75	155	230	70	0,10	0,25	547	480	358	720



Design 1.1



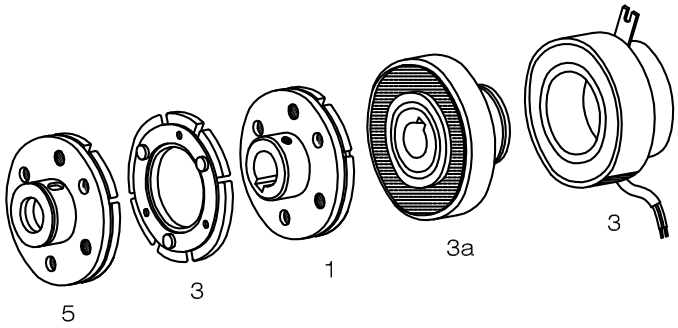
Design 1.3



Design 1.5

HEM 105 Clutch design 1																			
	Rated torque	Finish bore d (H7)				Dimensions (mm)													
Size	T_{KN} (Nm)	Min.	Max.	Std.	d_3	L	L_1	L_2	L_3	L_4	L_5	L_6	D	D_1	D_2	D_3	D_4	D_5	D_6
6	7,5	10	17	11,14,15	12	43	51	28	24	2	15	22	80	63	38	68	35	23	27
8	15	10	22	14,19, 20	15	51	60	31	26,5	2,5	20	24	100	80	45	85,5	42	28,5	32
10	30	14	30	19, 24, 28	20	60,9	70,9	35,9	30	3	25	27	125	100	55	107	52	40	42
12	60	14	40	24, 34, 38	25	70,5	86,5	40,5	33,5	3,5	30	30	150	125	64	134,3	62	45	49
16	120	20	50	28, 38, 42	30	84,5	103,5	46,5	37,5	4	38	34	190	160	75	170	80	62	65
20	240	25	65	38,42, 48	40	103,4	125,4	55,4	44	5	48	40	230	200	90	214,3	100	77	83
25	480	25	80	50, 60, 70	45	118,9	144,9	63,9	51	6	55	47	290	250	115	266,5	125	100	105

HEM 105 Clutch design 1																
	Dimensions (mm)															
Size	P	P_1	P_2	P_3	P_4	P_5	L_7	L_8	L_9	L_{10}	L_{11}	L_{12}	S	S_1	t	B	B_1
6	72	4 x 4,5	46	3 x 6,3	3 x 3,1	3 x 5,5	22,7	31	5,7	1,4	17	31,5	0,2	3,5	5	8	4
8	90	4 x 5,5	60	3 x 8	3 x 4,1	3 x 7	32,2	35	6,5	1,7	22	35	0,2	4,3	6	9	5,5
10	112	4 x 6,6	76	3 x 10,5	3 x 5,15	3 x 9	39,4	40,9	7,9	2,1	27	40,9	0,2	5	6	12	6,5
12	137	4 x 6,6	96	3 x 12	3 x 6,1	3 x 10	51,5	46,5	7,1	2,5	36,5	46,5	0,3	5,5	10	12	18
16	175	4 x 9	120	3 x 15	3 x 8,2	3 x 13	63	53,5	9,1	3	44,4	53,5	0,3	6	10	13	28
20	215	4 x 9	158	3 x 18	3 x 10,2	3 x 16	77,9	65,4	12,4	4	53,4	64,5	0,5	7	15	15	34
25	270	4 x 11	210	4 x 22	4 x 12,2	4 x 20	91,9	74,9	14,9	4,3	63,5	74,9	0,5	8	20	19	38

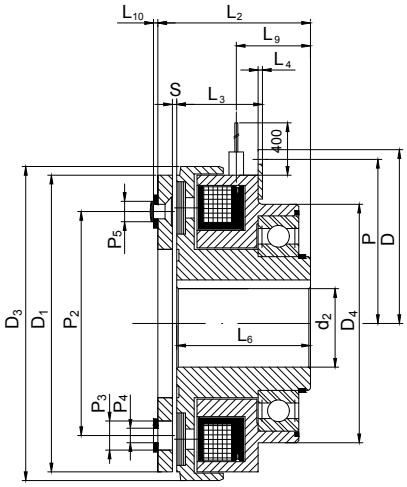


Specifications

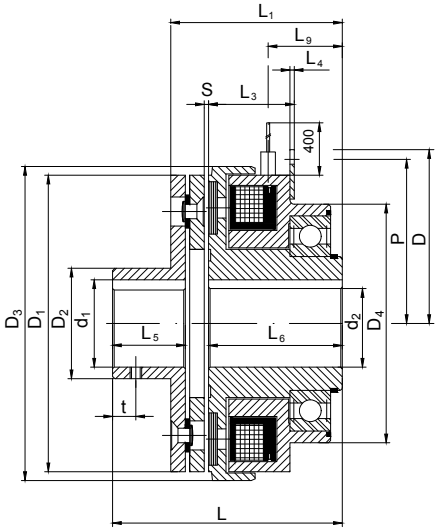
- Torque range 7,5 – 480 Nm
- Available in 24, 96 and 190 VDC
- DC Electromagnetic clutch
- Bearing supported
- Shaft mounted
- Backlash-free
- Maintenance free

Technical data HEM 105 Clutch design 3

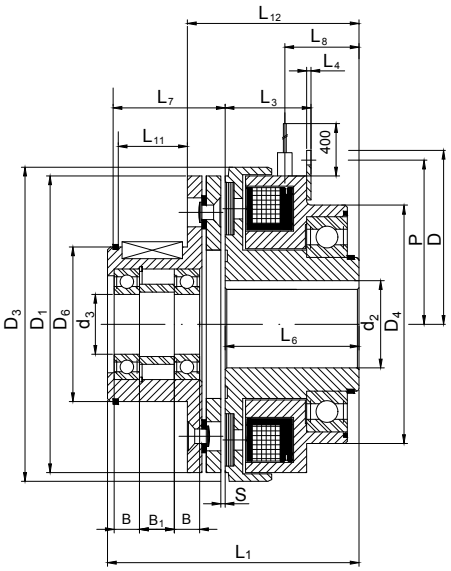
	Rated torque	Max. speed	Input power	Operating times (ms)				Max. displacements	Mass moment of inertia J (kg cm²)			
								Axial	Rotor	Armature		
Size	T_{KN} (Nm)	n_{kmax} (1/min)	$P_{20\,°C}$ (W)	t_{11}	t_{12}	t_1	t_2	Δka (mm)	3a	1	3	5
6	7,5	8.000	15	15	30	45	10	0,05	1,33	0,6	0,42	0,92
8	15	6.000	20	20	55	75	15	0,05	2,94	1,71	1,18	2,82
10	30	5.000	25	25	85	110	25	0,05	8,66	6,64	4,72	9,2
12	60	4.000	35	35	105	140	40	0,05	24,6	18	13	25,8
16	120	3.000	50	45	125	170	50	0,10	69	63,3	48	86,8
20	240	3.000	68	60	140	200	60	0,10	215	190	137	258
25	480	2.000	85	75	155	230	70	0,10	566	480	358	720



Design 3.1



Design 3.3



Design 3.5

HEM 105 Clutch design 3																		
	Rated torque	Finish bore d (H7)				Dimensions (mm)												
Size	T_{KN} (Nm)	Min.	Max.	Std.	d_3	L	L_1	L_2	L_3	L_4	L_5	L_6	D	D_1	D_2	D_3	D_4	D_6
6	7,5	10	17	11,14,15	12	59	47,5	44	26	1,5	15	40	41	63	27	68	64	38
8	15	10	22	14,19, 20	15	68	52	48	28	1,5	20	43,5	50	80	32	85,5	68	45
10	30	14	30	19, 24, 28	20	90	60	54,9	32,5	2,5	25	49	61	100	42	107	85	55
12	60	14	40	24, 34, 38	25	92	68	62	36	2,5	30	55	72,5	125	49	134,3	100	64
16	120	20	50	28, 38, 42	30	108,5	77,5	70,5	41,7	3,5	38	61,5	99	160	65	170	127	75
20	240	25	65	38,42, 48	40	133,5	94,4	85,4	48,1	3,5	48	74	119	200	83	214,3	151,5	90
25	480	25	80	50, 60, 70	45	149	105	93,9	55,2	3,5	55	81	145	250	105	266,5	152,4	115

HEM 105 Clutch design 3														
	Dimensions (mm)													
Size	P	P_2	P_3	P_4	P_5	L_7	L_8	L_9	L_{10}	L_{11}	L_{12}	S	t	B	B_1
6	37	46	3 x 6,3	3 x 3,1	3 x 5,5	22,7	22	22	1,4	17	47	0,2	5	8	4
8	46	60	3 x 8	3 x 4,1	3 x 7	32,2	24	24	1,7	22	52	0,2	6	9	5,5
10	57	75	3 x 10,5	3 x 5,15	3 x 9	39,4	27,5	27,5	2,1	27	60	0,2	6	12	6,5
12	68,5	95	3 x 12	3 x 6,1	3 x 10	51,5	29,5	29,5	2,5	36,5	68	0,3	10	12	18
16	93	120	3 x 15	3 x 8,2	3 x 13	63	35	35	3	44,4	77,5	0,3	10	13	28
20	113	158	3 x 18	3 x 10,2	3 x 16	77,9	42,5	42,5	4	53,4	95,4	0,5	15	15	34
25	139	210	4 x 22	4 x 12,2	4 x 20	91,9	45,5	45,5	4,3	63,5	105	0,5	20	19	38

PRODUCT GROUPS

Couplings

Locking Assemblies

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Clutches & Brakes

Brakes

Collars

Skilled to get your ideas fulfilled

HITEX is a range of power transmission components dedicated to add value to all OEM industrial creations.

HITEX is produced using the latest technology & rich experience of its factories to provide innovative and cost-effective engineered solutions.

Honored to have the opportunity to serve OEM customers worldwide, HITEX provides prompt and reliable deliveries to meet all aftersales requirements.

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HITEX
POWER TRANSMISSION COMPONENTS

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