Electromagnetically actuated clutches and brakes

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE

General notes

Product data sheets

Multi-plate clutches and brakes

Single-face clutches and brakes combined units

Tooth clutches

Spring-applied multi-plate and twin-face brakes

SEMO-Brake

* for replacement only - for new machines please refer to series 08 . .

Accessories

General notes

The coil is designed for continuous duty. A temperature of between 40 °C and 80 °C will be establish due to electrical losses, the particular temperature will depend on the cooling conditions and the way in which the clutch or brake is installed. In the standard version the operating voltage is 24 V DC and the rated torque capacity will only be available if this voltage is maintained across the coil. Voltage losses in cables etc. must be compensated for by a correspondingly higher voltage at the power supply unit. The nominal voltage as measured at the clutch terminals may be exceeded by 10%.
The electrical circuit has a great influence on the switching characteristics of the clutch or brake and should be designed carefully to match the particular requirements.
Switching times and the build-up of torque can be influenced by the use of suitable devices as described in the "Electrical circuits" and "Accessories" chapters.
Clutches and brakes with flux-type plate stacks can be used only with the friction combination steel/steel; for this reason they are only suitable for wet-running.
When fitted vertically, the clutch or brake should be mounted in such a way that the armature plate is at the bottom in order to avoid increased idling drag and heat generation brought about by the effects of gravity.

Dry-running clutches and brakes

The friction plates must be kept free of lubricants and adjoining bearings should be adequately sealed. Proper ventilation is essential for heat dissipation. The covers should be provided with suitable openings to ensure proper ventilation. Dry running clutches and brakes should not be used for applications where there is a high risk of corrosion.

Wet-running clutches and brakes

Splash or mist lubrication is usually sufficient; however, internal lubrication through the shaft should be provided in the case of high speeds or high thermal loading. In the case of splash lubrication, the depth of immersion should not exceed $^1/_{10}$ of the diameter. Excessive immersion can lead to undesirable heat generation.
Recommendations on oils are given in section 1 "Technical information".

Electrical circuits

Ortlinghaus electromagnetic clutches and brakes are operated with direct current and the standard coils are designed for 24 V DC
+ 10 % at 100 % duty factor.
Special requirements in terms of response times can be fulfilled by the use of suitable devices. When carrying out control measurements, it should be noted that the rectifier voltage falls under load so that measurements must be carried out with the clutch or brake engaged/applied. In addition it should be noted that the coil resistance increases with increasing temperature so that the current decreases in accordance with Ohm's law $U = I \cdot R$.

Measurement of voltage and current

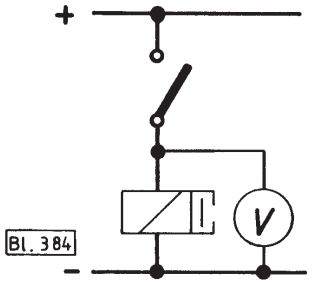


Fig. 1 Voltage measurement

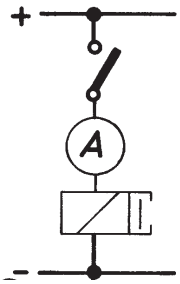


Fig. 2: Current measurement

Rectifier units

Electrical power from the mains AC power line is converted to direct current by a transformer-rectifier. This has a number of connection terminals to enable local variation in the mains voltage or voltage losses in long cables supplying the power to be compensated for. Enclosed or open transformer-rectifier units are available in 3 sizes. The size of the rectifier must be selected in accordance with the total amperage required.

Example:

1 clutch	0006-057-43-004000:	
U = 24 V	$P_{20\,°C}$ = 57 W	$I_{20\,°C}$ = 2,4 A
1 brake	0028-100-23-002000:	
U = 24 V	$P_{20\,°C}$ = 108 W	$I_{20\,°C}$ = 4,5 A
		$\Sigma I_{20\,°C}$ = 6,9 A

For a total load of 6.9 A, rectifier unit 0085-000-24-120000 should be selected.

Coil connections

On clutches and brakes with coil bodies which do not rotate, power is supplied by means of plug connections, connection boxes or by means of a built-in cable on the coil body. Where the coil body rotates, power supply is by means of hardened and ground sliprings. A difference exists between the following versions, namely plugtype brushholders and calipertype brushholders, these being used with coppergraphite brushes for dry-running and woven bronze brushes for wet-running.
One supply line per slipring suffices in the case of dry-running models. With wet-running models, however the sliprings can receive too much oil, the resulting oil film interrupting the power supply. In order to prevent this interruption, it is advisable (and necessary at speeds of 18 m/s and above) to install two power feeds one after the other. Caliper-type brushholders can also be used up to 15 m/s. Power connections must be secured in such a way that they will not be affected by vibration. In order to obtain correct brush pressure, the gap between the brushholder and the slipring must be maintained (approx. 2 mm). Wear should be monitored. Sets of brushes for dry and wet-running models can be supplied separately as spares.

Spark quenching

Due to inductive load, sparks tend to occur between the relay or contacts when the coil is de-energized. In order to prevent erosion, a spark quenching capacitor should be wired parallel to the contacts (circuit in accordance with Fig. 1). Do not use electrolyte capacitors!
More precise switching is obtained when this is carried out on the DC side. The reason for this is that if switching is carried out on the AC side the rectifier must absorb the inductive voltage.
In addition a separate rectifier must then be fitted for each clutch or brake. Spark quenching capacitors are available in two sizes.

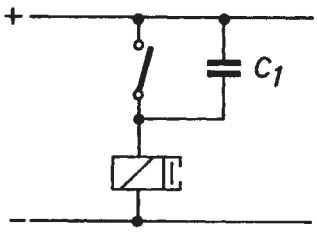


Fig. 1: Connection of the capacitor

Protection against induced current peaks

Induction voltage peaks occurring during disengagement of the clutch/brake can be suppressed by the installation of special varistors, these providing effective protection for insulation and switching elements.

Possible circuits

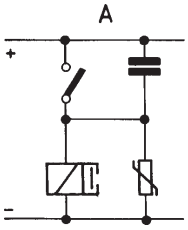


Fig. 2: with varistor

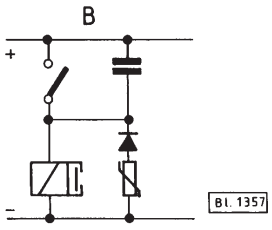


Fig. 3: with varistor and di- in series

The special varistor keeps the peak loading low while ensuring rapid disengagement. There is no heating effect and the rectifier is protected against additional loads. The version illustrated is suitable for all types and sizes of clutches and brakes.
If the operating voltage is to exceed 40 V, the varistor must be wired in series with a diode (1.5 to 2 A - 1000 V).

Effect of the protective elements on the induced current peaks and the disengagement times

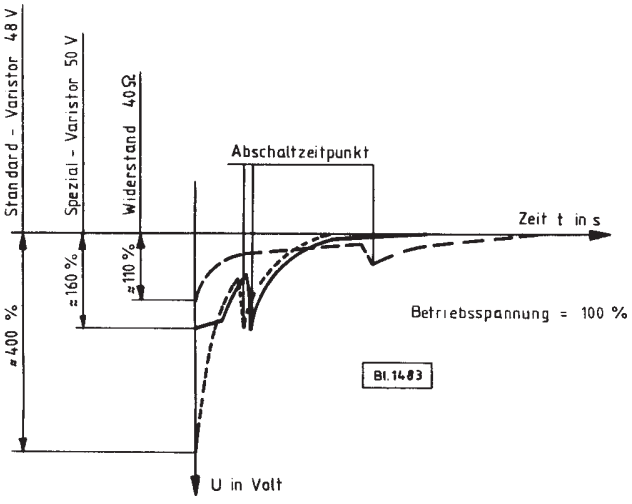


Fig. 4
Abschaltzeit = Disengagement point
Zeit t in s = Time t in s
Betriebsspannung = Circuit voltage
Widerstand = Resistor

Response times

The response times of clutches and brakes can be improved by the use of suitable control circuits and components.

Rapid engagement/application

In order to accelerate torque build-up in electromagnetic clutches and brakes, additional electrical circuits can be installed.
The alternatives are:

Rapid excitation (Fig. 1b)

Excitation of the coil using a series of resistors with an increased voltage. By increasing the circuit resistance, the electromagnetic time constants are reduced.

Over-excitation

Excitation of the coil by increased, time controlled voltage using a bridged series resistor (Fig. 1c), series resistor and capacitor (Fig. 1d) or capacitor with high charging voltage (Fig. 1e).
The coil experiences a momentary high current which gives rise to a steep torque curve.

The comparison shows that the optimum result is obtained with a capacitor with high charging voltage. With the circuits in accordance with Fig. 1b, c and d, the series resistor must be sized in such a way that the voltage drops to the normal operating voltage after engagement.

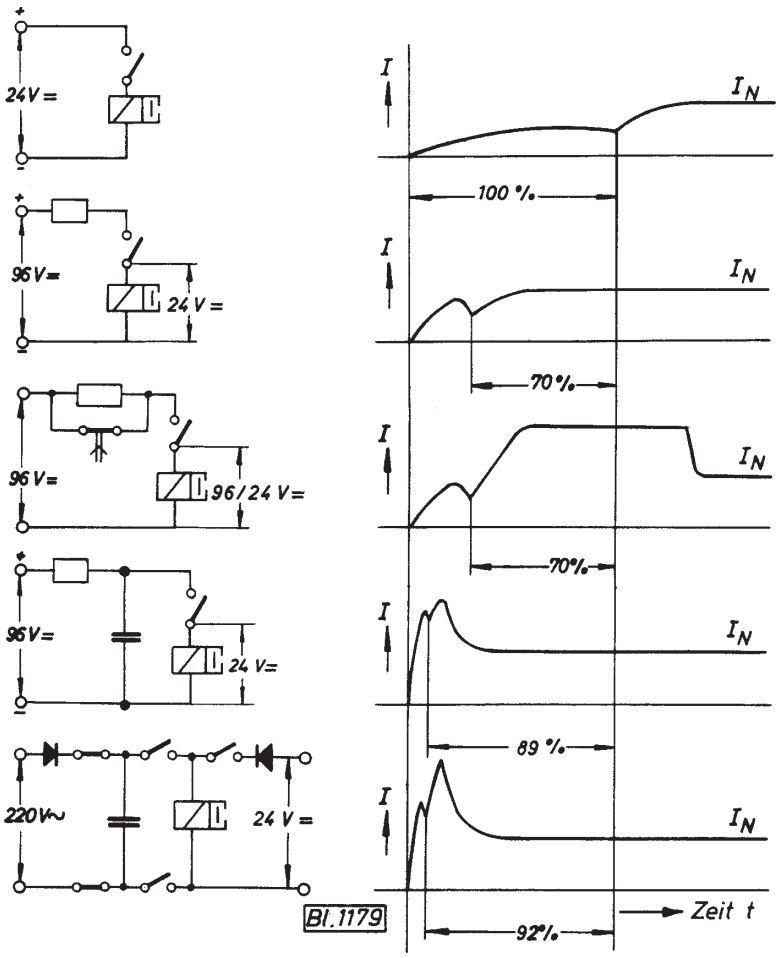


Fig. 1a: Standard excitation

Fig. 1b: Rapid excitation via series resistor

Fig. 1c: Over-excitation via bridged resistor

Fig. 1d: Over-excitation with series resistor and capacitor

Fig. 1e: Over-excitation via capacitor with high charging voltage

Zeit t = Time t

Slow engagement

In some applications smooth acceleration, even of small rotating masses, is required. Controlled torque build-up can be achieved with voltage control, via a variable resistor and single-wave rectification, during the acceleration period. Slow engagement units on request.

Rapid disengagement

When the actuating voltage is switched off, a certain amount of residual magnetism will remain. Particularly in the case of clutches and brakes with flux-type plate stacks, this will cause a delay in disengagement.
The residual magnetism can be eliminated very quickly by a short electric impulse with reversed polarity, i.e. counter-excitation.
The effect on the disengagement time of a clutch with flux-type plate stack is shown by way of example in Fig. 2.

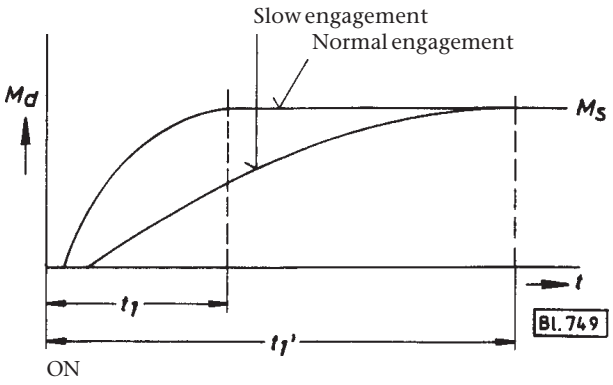


Fig. 1

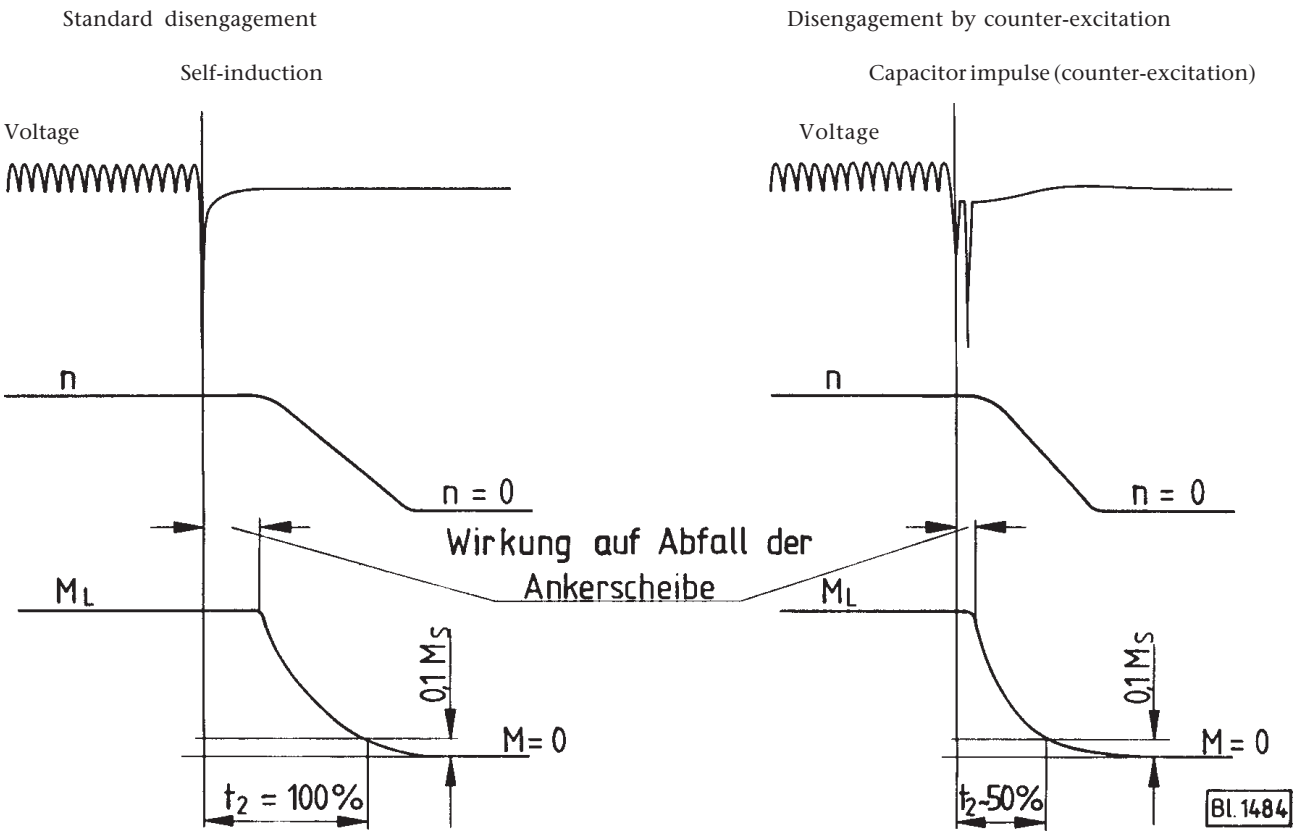
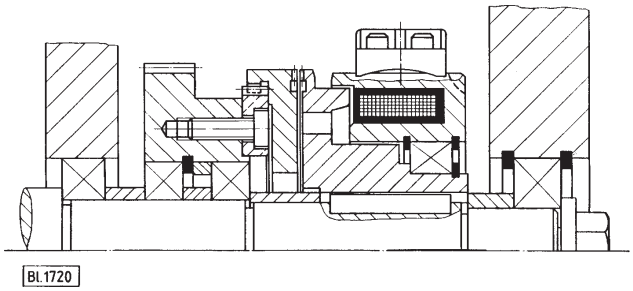


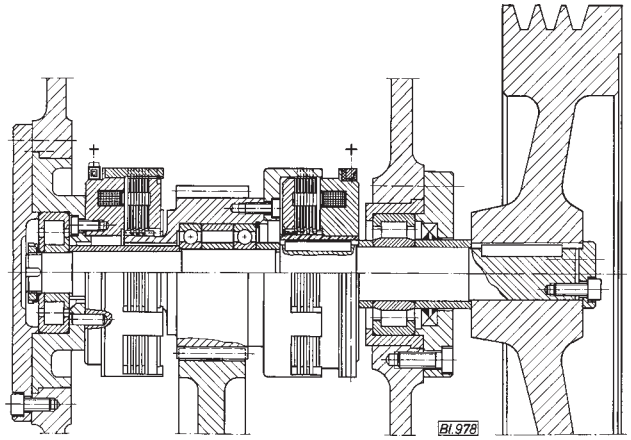
Fig. 2

Wirkung auf Abfall der Ankerscheibe = Effect on armature plate drop-off

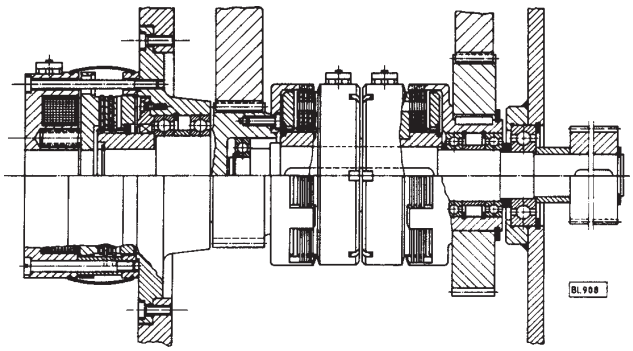
Application examples



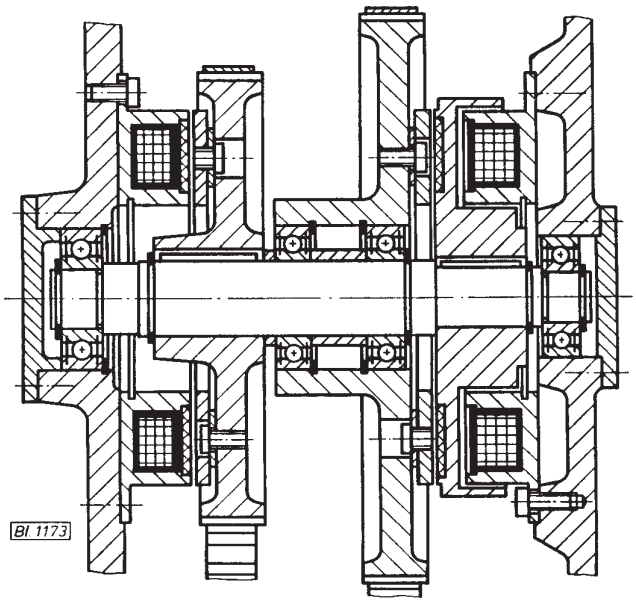
Electromagnetic stationary field tooth clutch with drive section flanged to gearwheel, series **0013**



Electromagnetic Sinus® multi-plate clutch with slipring, series **0011**, and electromagnetic Sinus® multi-plate brake, series **0011-300**



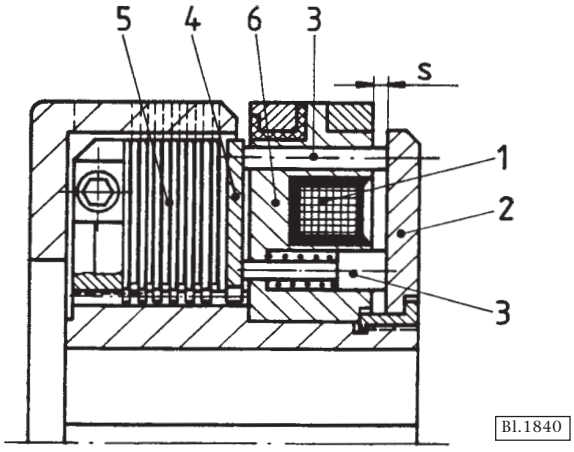
Electromagnetic stationary field Sinus® multi-plate clutches, series **0010**, friction combination steel/steel, in conjunction with an electromagnetic, spring-applied multi-plate brake,
series **0028**, friction combination steel/organic lining.



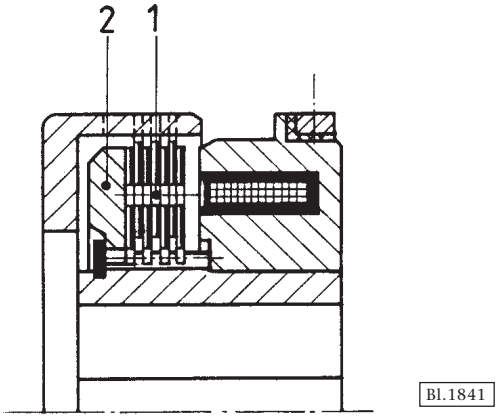
Electromagnetic single-face clutch, series **0008-100**, employed in conjunction with an electromagnetic single-face brake, series **0009-100**

Multi-plate clutches and brakes

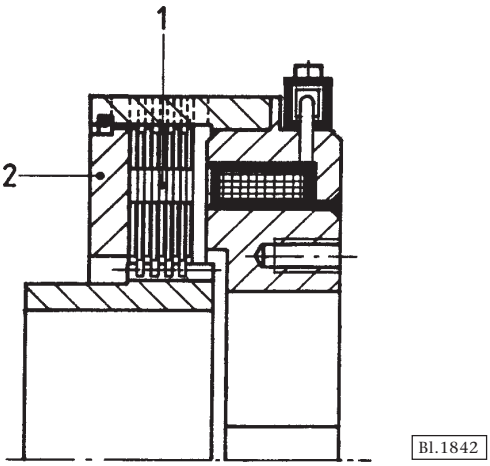
Operation and installation



Slipring clutches series 0006
With cup housing, thickness S1: series 0006-057-..004
With cup housing, thickness S2: series 0006-057-..003



Slipring clutches series 0011
With cup housing, thickness S1: series 0011-057-..004
With cup housing, thickness S2: series 0011-057-..003



Multi-plate brake series 0011-300

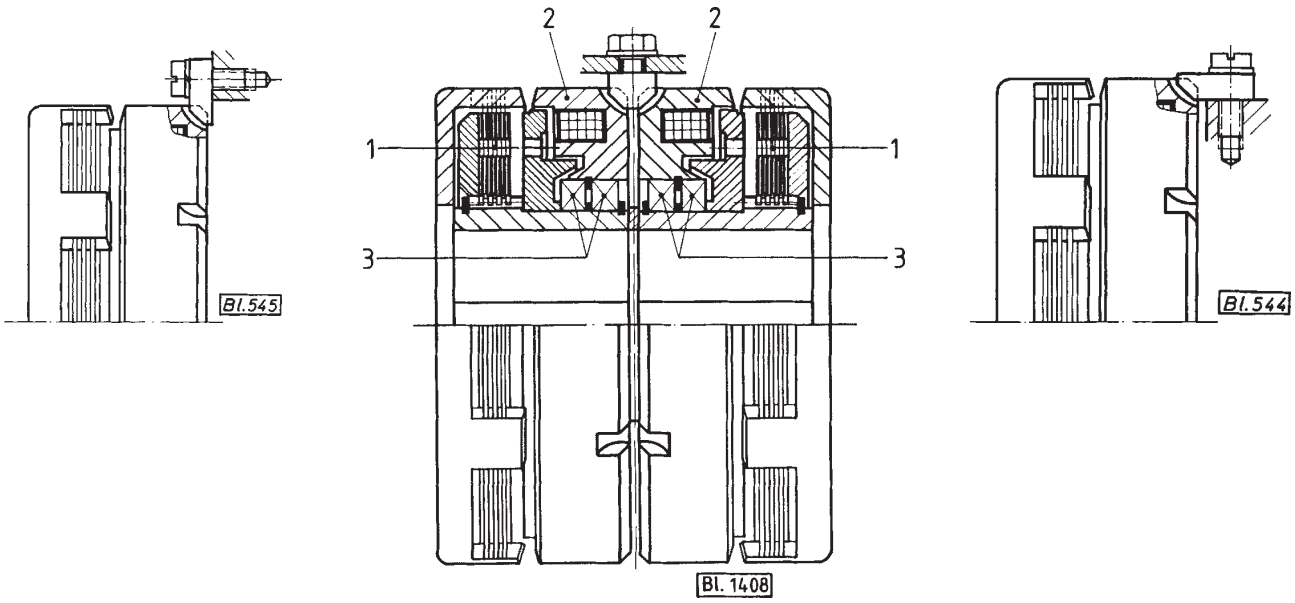
Slipring clutches series 0006
This series is available with various friction combinations for wet or dry-running.
The engagement pressure exerted by the coil (**1**) on the armature plate (**2**) is transferred to the plate stack (**5**) by means of pressure pins (**3**) and via a thrust plate (**4**). In order to achieve full torque capacity and accurate operation, it is essential that the air gap (**s**) is present when the clutch is engaged. It is recommended that this gap is checked regularly. Access must be given to enable this measurement to be made and to allow adjustment for wear to be carried out if necessary. It may be necessary for an inspection hole to be provided.

Slipring clutches series 0011 and brakes series 0011-300
This series with a flux-type plate stack (**1**) is suitable only for wet-running. There is no permanent air gap and wear is compensated for automatically by the movement of the armature plate (**2**). No adjustments are necessary.

Stationary field clutches series 0010

Thanks to the absence of sliprings and the fact that any wear of the flux-type plate stack (**1**) is compensated for automatically, this type of clutch requires no maintenance.

The coil body (**2**), which does not rotate, must be secured to prevent rotation in such a way that no axial or radial stresses arise. Care should be taken that the integrated bearings (**3**) are adequately lubricated. Direct spraying or internal lubrication through the shaft is recommended in the case of higher speeds. The lowest bearing temperatures are achieved with relatively low quantities of oil.



Securing of the coil body to prevent rotation

You will find further information on installation in the technical product information notes for the particular series.

Stationary field electromagnetic Sinus® multi-plate clutches

with flux-type plate stack, maintenance-free, for wet-running only

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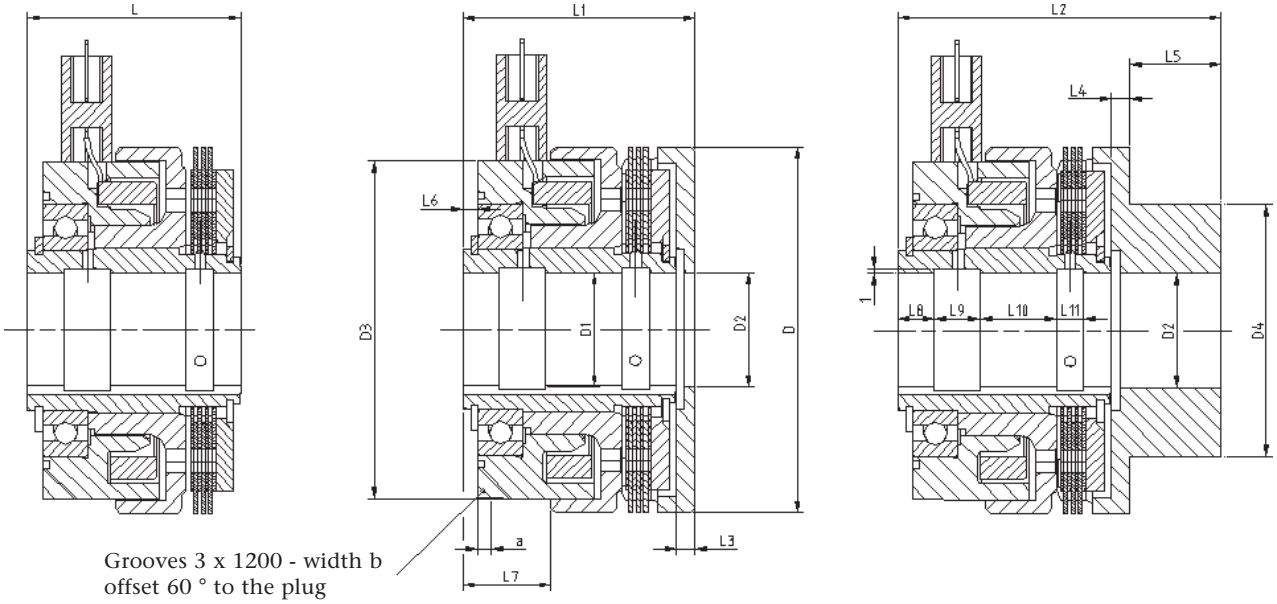


Series 0810-00 . **Open bearing**
Series 0810-10 . **Closed bearing**

Series 0810- . 00 **without housing**
Series 0810- . 01 **with cup housing**
Series 0810- . 02 **with hub housing** 1)

Series / Size			0810- . 0 . -Size-000000 07	11	15	23	31
M_S		Nm	15	30	60	140	300
DC voltage		V			24 2)		
Current consumption		20 °C A 80 °C A	0.60 0.50	1.25 1.05	1.85 1.50	2.05 1.65	2.45 2.00
Power consumption		20 °C W 80 °C W	14.5 11.8	30.5 24.5	44.1 35.7	49.0 40.0	58.5 47.0
n_{max} n_{max} with internal oiling		min^{-1} min^{-1}	4000 4000	4000 4000	3800 3800	3100 3700	2500 3300
Weight	cup housing hub housing	kg kg	1,30 1,46	1,92 2,27	2,78 3,25	4,36 5,16	8,60 10,00
Recommended bores	$D_{1\,max}$ H7 Keyway DIN 6885		25 8x3,3	30 8x2	35 10x3,3	42 12x2,2	60 18x4,4
	D_1 H7 Keyway DIN 6885		22 6x2,8	25 8x3,3	30 8x3.3	40 12x3,3	55 16x4,3
	D_1 H7 Keyway DIN 6885		20 6x2,8	22 6x2,8	28 8x3,3	35 10x3,3	50 14x3,8
	D_1 H7 Keyway DIN 6885		18 6x2,8	20 6x2,8	25 8x3,3	30 8x3,3	45 14x3,8
Diameters	D $D_{2\,min.}$ D_3 D_4		80 - 74 55	95 - 90 70	114 - 106 80	134 61 122 90	165 - 154 110
External keyway	ax45° b		3 8	5 10	5 10	5 10	5 10
Length dimensions	L $L_{1\,-0,1}$ L_2 L_3 L_4 L_5 L_6 L_7 L_8 L_9 L_{10} L_{11}		46,7 50,7 70,7 4 4 20 3,2 19,2 8 10 16,7 6	52 56 86 5 5 30 3,8 22 10 34,5 - -	58,5 63 93 6 5 30 3,5 26 7 18 13,5 13	68 73 113 6 6 40 9,3 27,6 6,5 17 23,5 14,5	76 82,5 122,5 8 6 40 4,5 31,5 9 20 24,5 16

1) Version with flange housing on request.
2) other voltages on request

Friction combination Steel/steel for **wet-running**.
Tolerances For bores and keyways see section 1 "Technical information"
Plug connection See chapter "Accessories" page 4.49.00

Sale through Ortlinghaus AG, Zug/Switzerland.

Version with hub housing
Series 0010-055-Size-code number 100

3 keyways spaced at 120°, offset relative to plug connection by 60° (up to size 47).

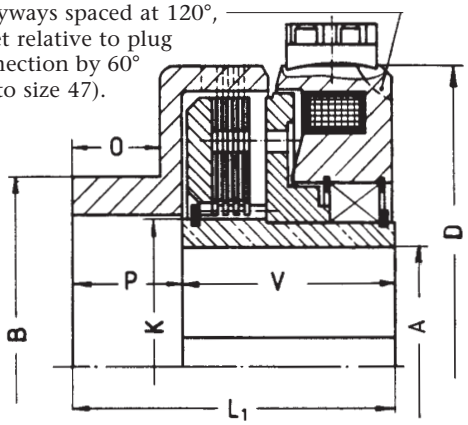


Fig. 1: 1 Bearing up to size 43

Version with cup housing
Thickness S1 series 0010-057-size-004000
Thickness S2 series 0010-057-size-003000

6 keyways spaced at 60°, offset relative to plug connection by 30° (from size 47).

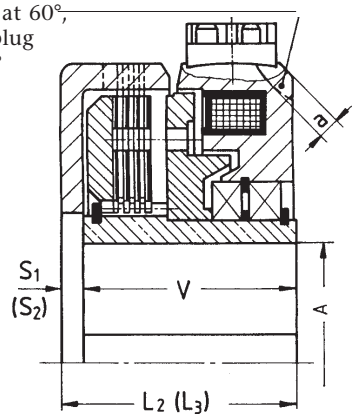


Fig. 2: 2 Bearings from size 47

Series			0010-05 . -Size - . . . 100000 (Fig. 1)								0010-05.-Size-...000000 (Fig. 2)			
Hub housing	Size		**07**	**11**	**15**	**23**	**27**	**31**	**32**	**43**	**47**	**51**	**55**	**59**
	Code number		**028**	**036**	**064**	**069**	**072**	**090**	**090**	**097**	**064**	**073**	**092**	**095**
Cup housing	Size		**07**	**11**	**15**	**23**	**27**	**31**	**32**	**43**	**47**	**51**	**55**	**59**
M_{dyn}		Nm	12	25	60	120	200	240	360	480	720	1200	2000	3000
DC voltage		V				24						24		
Power consumption		20 °C W	26	37	42	63	53	85	98	86	112	116	178	210
		80 °C W	21	30	34	51	43	69	79	70	91	94	144	170
n_{max}		min^{-1}	4000	4000	3800	3100	2800	2500	2500	2100	2000	1700	1450	1350
n_{max} with internal oiling		min^{-1}	4000	4000	3800	3700	3700	3300	3300	3000	2700	2200	2000	1750
J	internal	$kgcm^2$	3	7	18	34	61	94	98	257	395	778	1640	2383
	hub housing external	$kgcm^2$	3	11	21	46	81	88	113	283	439	845	2108	2675
	cup housing S_1 external	$kgcm^2$	2	9	13	31	53	61	78	186	289	533	1458	1880
	cup housing S_2 external	$kgcm^2$	4	12	20	44	74	91	116	248	344	633	1728	2223
Weight	hub housing	kg	1,74	3,11	4,76	6,06	7,86	10,1	12,6	18,9	25,5	35,1	63,6	77
	cup housing S_1	kg	1,585	2,764	4,289	5,26	6,83	8,69	11,18	16,32	21,92	29,35	51,7	67,6
	cup housing S_2	kg	1,738	2,912	4,513	5,743	7,46	9,461	11,93	17,36	22,71	30,61	54	69,7
Recommended bores[2]	A_{max} H7		**22**	**30**	**35**	**42**	42	55	**55**	65	70	78[1]	98[1]	98[1]
	KeywayDIN 6885		**6x1,6**	**8x2**	**10x2,4**	**12x2,2**	12x2,2	16x4,3	**16x4,3**	18x2,3	20x2,7	22x3,1	28x3,2	28x3,2
	A H7		**20**	**25**	**30**	**40**	**40**	**50**	**50**	**60**	**60**			
	KeywayDIN 6885		**6x2,8**	**8x3,3**	**8x3,3**	**12x3,3**	**12x3,3**	**14x3,8**	**14x3,8**	**18x4,3**	**18x4,3**			
	A H7		**18**	**22**	**28**	**35**	**35**	**45**	**40**	**55**	**50**			
	KeywayDIN 6885		**6x2,8**	**6x2,8**	**8x3,3**	**10x3,3**	**10x3,3**	**14x3,8**	**12x3,3**	**16x4,3**	**14x3,8**			
	A H7			**20**	**25**	**25**	**30**	**40**		**50**				
	KeywayDIN 6885			**6x2,8**	**8x3,3**	**8x3,3**	**8x3,3**	**12x3,3**		**14x3,8**				
	A H7							**35**		**45**				
	KeywayDIN 6885							**10x3,3**		**14x3,8**				
Diameters	D		80	95	114	134	147	165	165	195	210	240	295[3]	310
	B		55	70	80	90	100	110	110	130	145	170	195	205
	K		32	45	55	60	60	80	80	90	100	120	140	145
External keyway	keyway width x a		6x3	6x3	6x4	8x5	8x5	8x6	8x6	10x8	12x9	12x10	14x11	14x12
Length dimensions	L_1		70,5	87	92	106	111	113	128	153	180	174	197	232
	L_2		50,5	57	62	66	71	73	88	93	115	109	129	145
	L_3		55,5	61	66	72	77	79	94	99	119	113	134	149
	O		20	30	30	40	40	40	40	60	65	65	68	87
	P		24	35	35	46	46	46	46	68	75	75	80	100
	S_1		4	5	5	6	6	6	6	8	10	10	12	13
	S_2		9	9	9	12	12	12	12	14	14	14	17	17
	V		46,5	52	57	60	65	67	82	85	105	99	117	132

[1] 2 keyways offset at 180° to each other.
[2] Bore diameters in bold print are available ex stock.
[3] Housing external diameter = 290.
Version with flange housing on request.
Friction combination Steel/steel for wet-running

Tolerances For bores and keyways see section 1 "Technical information"

Plug connection and flat plug See chapter "Accessories", page 4.49.00

Hub version: Coil body is connected to the hub

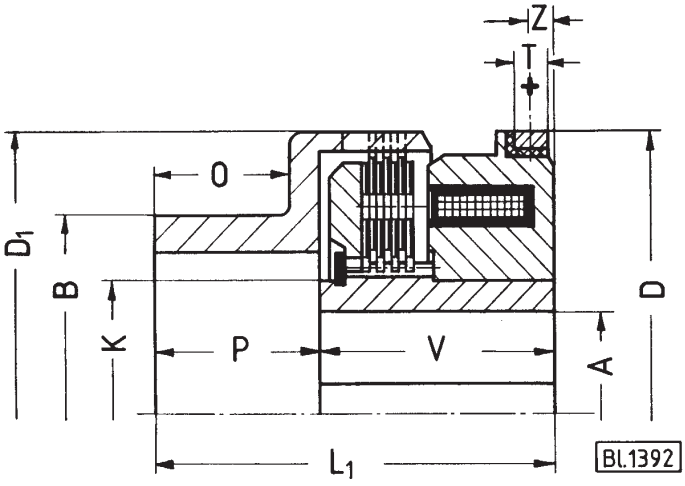


Fig. 1 with hub housing
Series 0011-055-Size-Code number

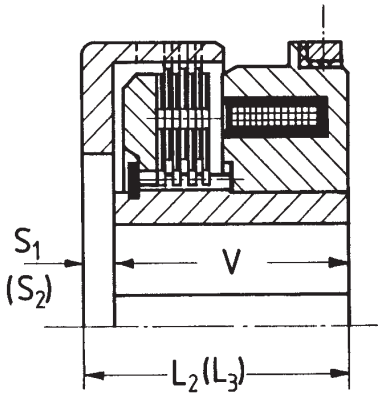


Fig. 2 with cup housing
Thickness S1 series 0011-057-Size-004
Thickness S2 series 0011-057-Size-003

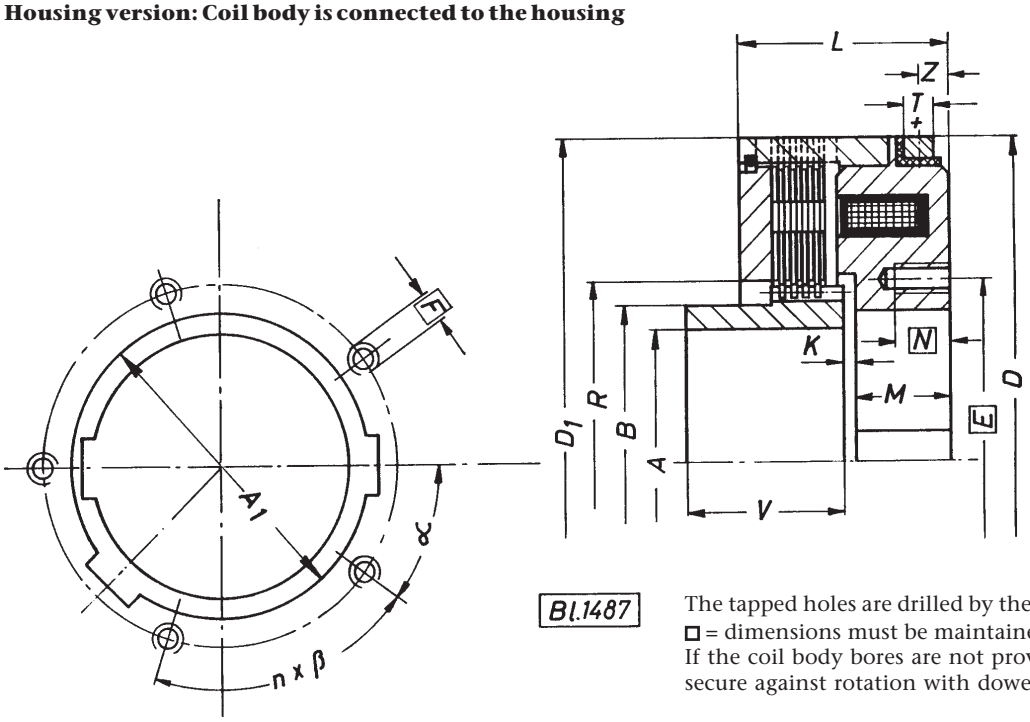
Series with hub housing Size Code number				**0011-055-Size-000000 Code number (Fig. 1)**									
				07 **028**	**11** **036**	**15** **064**	**23** **069**	**31** **090**	**43** **097**	**47** **064**	**51** **055**	**55** **093**	**59** **055**
Series with cup housing Size				**07**	**11**	**15**	**23**	**31**	**43**	**47**	**51**	**55**	**59**
Mdyn			Nm	12	25	60	120	240	480	720	1200	2000	3000
DC voltage			V					24					
Power consumption			20 °C W 80 °C W	7,5 6	15 12	25 20	40 32	42 34	77 62	88 71	90 73	115 93	147 119
n max	1 power feed		min-1	2300	2000	1700	1400	1150	1000	900	800	700	650
n max	2 power feeds		min-1	4600	4000	3400	2800	2300	2000	1800	1600	1400	1300
J	hub housing	internal	kgcm2	8	13	33	70	185	445	610	1408	3235	5370
	hub housing	external	kgcm2	3	10	20	45	88	283	440	828	1755	2798
	cup housing S1	external	kgcm2	2	9	13	30	60	185	288	568	1268	2080
	cup housing S2	external	kgcm2	3	11	19	43	90	248	343	675	1515	2378
Weight	hub housing		kg	1,189	2,175	3,384	5,31	8,35	15,33	19,31	28	46,95	63,7
	cup housing S1		kg	1,034	1,829	2,913	4,51	6,94	12,45	15,73	23,21	40,43	54,9
	cup housing S2		kg	1,187	1,977	3,137	4,993	7,711	13,49	16,52	24,33	42,33	56,8
ØA	prebored			15	18	20	20	30	40	40	40	60	70
ØAmax		H7		22	32	40	45	60	70	75	90	105	115
Keyway		DIN 6885		6x1,6	10x2,4	12x2,2	14x3,8	18x4,4	20x4,9	20x4,9	25x5,4	28x6,4	32x7,4
Diameters		D/D1		82/80	95	114	134	165	195	210	240	290	310
		B		55	70	80	90	110	130	145	170	195	205
		K		32	45	55	60	80	90	100	120	138	145
Length dimensions		L1		55,5	74	83,5	100	106,5	140	152	158	187	218
		L2		35,5	44	53,5	60	66,5	80	87	93	119	131
		L3		40,5	48	57,5	66	72,5	86	91	97	124	135
		O		20	30	30	40	40	60	65	65	68	87
		P		24	35	35	46	46	68	75	75	80	100
		S1		4	5	5	6	6	8	10	10	12	13
		S2		9	9	9	12	12	14	14	14	17	17
		T		8	8	8	8	8	8	8	10	10	10
		V		31,5	39	48,5	54	60,5	72	77	83	107	118
		Z		6	6	6	7	7	7	8,5	8,5	8,5	8,5

Version with flange housing on request.

Friction combination Steel/steel for wet-running
Tolerances For bores and keyways see section 1"Technical information"

Accessories From page 4.49.00

Housing version: Coil body is connected to the housing



Bl.1487

The tapped holes are drilled by the customer at installation.
□ = dimensions must be maintained.
If the coil body bores are not provided with keyways, secure against rotation with dowel pins.

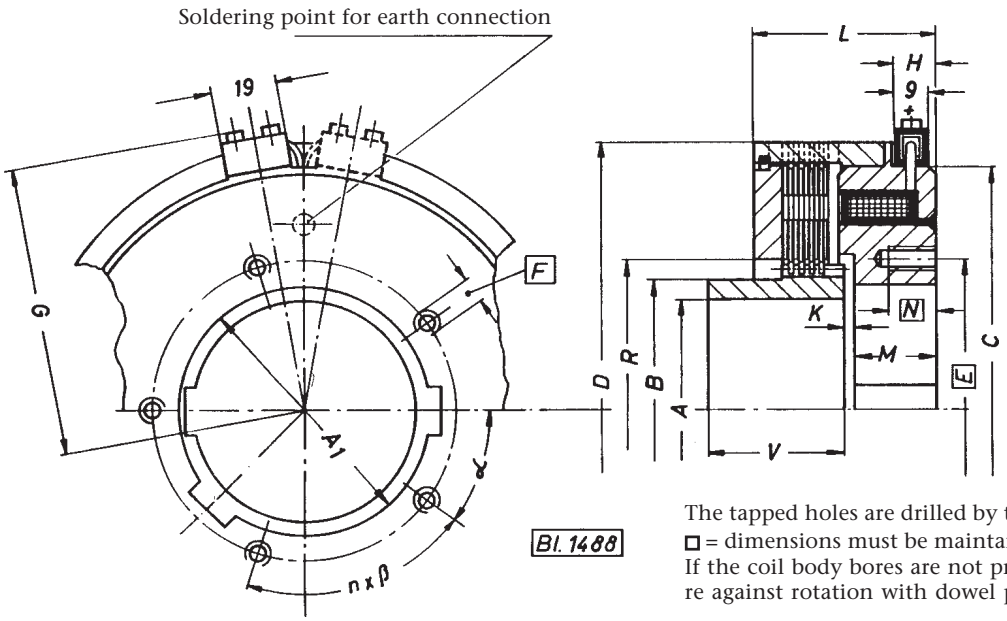
Series / Size			0011-100-Size-001000 07	11	15	23	31	43	47	51	55	59
M_{dyn}		Nm	12	25	60	120	240	480	720	1200	2000	3000
DC voltage		V						24				
Power consumption		20 °C W	7,5	15	24	40	42	77	88	90	115	147
		80 °C W	6	12	19	32	34	62	71	73	93	119
n_{max}	1 power feed	min^{-1}	2300	2000	1700	1400	1150	1000	900	800	700	650
n_{max}	2 power feeds	min^{-1}	4600	4000	3400	2800	2300	2000	1800	1600	1400	1300
J	internal	$kgcm^2$	0,5	1	5	10	28	79	96	225	433	704
	external	$kgcm^2$	9	16	39	86	221	515	711	1570	3947	6396
Weight		kg	0,821	1,297	2,413	3,776	6,146	10,94	13,54	21,74	37,26	51,13
Coil body	$ØA_1$	prebored	18	20	25	30	40	40	40	60	70	70
	$ØA_{1\ max}$ [1]	H7	35	44	55	65	80	90	98	115	130	145
	Keyway [2]	DIN 6885	8x2	12x3,3	16x4,3	18x4,4	22x5,4	25x5,4	25x5,4	32x7,4	32x7,4	36x8,4
Hub	ØA	prebored	12	20	20	20	30	40	40	50	60	70
	ØA max	H7	25	38	44	48	65	75	78	95	110	115
	Keyway	DIN 6885	8x2	10x2,4	12x3,3	14x3,8	16x4,3	20x4,9	22x5,4	25x5,4	28x6,4	32x7,4
Diameters		D/D1	82/80	95	114	134	165	195	210	240	290	310
		B	32	47	55	62	80	95	100	120	138	145
		E	41	50	60	72	92	110	120	150	160	190
		F	M4	M6	M6	M8	M10	M10	M10	M12	M16	M16
		R	40	54	64	74	92	108	113	134	155	166
Bores		α°	60	45	45	45	36	36	36	36	36	36
		n x β°	3x120	4x90	4x90	4x90	5x72	5x72	5x72	5x72	5x72	5x72
Length dimensions		K	2	3	3	3	3	2,5	3	3	3	4
		L	29,5	36	45,5	52	58,5	68,5	73,5	80	104	114
		M	16,5	20	23	26	30	33,5	35	37	48	49
		N	10	10	12	15	15	18	20	20	25	25
		T	8	8	8	8	8	8	8	10	10	10
		V	25	35	40	45	55	65	75	85	90	100
		Z	5,5	5,5	6	7	7	7	8,5	8,5	8,5	8,5

[1] Maximum bore up to size 31 for version without tapped holes F.
[2] Provide a key which must support along the whole length M!
From size 31 upwards two keyways offset by 135°.

Friction combination Steel/steel for wet-running
Tolerances For bores and keyways see section 1 "Technical information"
Accessories From page 4.49.00

Version without hub: series **0011-100-..-101**
Version with face keyway on coil body side on request.

Housing version: Coil body is connected to the housing



The tapped holes are drilled by the customer at installation.
□ = dimensions must be maintained.
If the coil body bores are not provided with keyways, secure against rotation with dowel pins.

Series / Size			0011-300-Size-000000 07	11	15	23	31	43	47	51	55	59
M_{dyn}		Nm	12	25	60	120	240	480	720	1200	2000	3000
DC voltage		V						24				
Power consumption	20 °C	W	7,5	15	24	40	42	77	88	90	115	147
	80 °C	W	6	12	19	32	34	62	71	73	93	119
n_{max}		min^{-1}	4000	4000	3800	3100	2500	2100	2000	1700	1450	1350
n_{max} with internal oiling		min^{-1}	4000	4000	3800	3700	3300	3000	2700	2200	2000	1750
J	internal	$kgcm^2$	0,5	1	5	10	28	79	96	225	433	704
Weight		kg	0,821	1,297	2,413	3,776	6,146	10,94	13,54	21,74	37,26	51,13
Coil body	ØA1	prebored	18	20	25	30	40	40	40	60	70	70
	ØA1 max[1]	H7	35	44	55	65	80	90	98	115	130	145
	Keyway[2]	DIN 6885	8x2	12x3,3	16x4,3	18x4,4	22x5,4	25x5,4	25x5,4	32x7,4	32x7,4	36x8,4
Hub	ØA	prebored	12	20	20	20	30	40	40	50	60	70
	ØA max	H7	25	38	44	48	65	75	78	95	110	115
	Keyway	DIN 6885	8x2	10x2,4	12x3,3	14x3,8	16x4,3	20x4,9	22x5,4	25x5,4	28x6,4	32x7,4
Diameter	D		80	95	114	134	165	195	210	240	290	310
	B		32	47	55	62	80	95	100	120	138	145
	C		72	84	103	122	150	180	192	220	264	284
	E		41	50	60	72	92	110	120	150	160	190
	F		M4	M6	M6	M8	M10	M10	M10	M12	M16	M16
	R		40	54	64	74	92	108	113	134	155	166
Bores	α°		60	45	45	45	36	36	36	36	36	36
	n x β°		3x120	4x90	4x90	4x90	5x72	5x72	5x72	5x72	5x72	5x72
Length dimensions	G ~		49	55	64,5	74	88	103	109	127	145	160
	H		10,5	11	12	13	13	13	14,5	16,5	16,5	16,5
	K		2	3	3	3	3	2,5	3	3	3	4
	L		29,5	36	45,5	52	58,5	68,5	73,5	80	104	114
	M		16,5	20	23	26	30	33,5	35	37	48	49
	N		10	10	12	15	15	18	20	20	25	25
	V		25	35	40	45	55	65	75	85	90	100

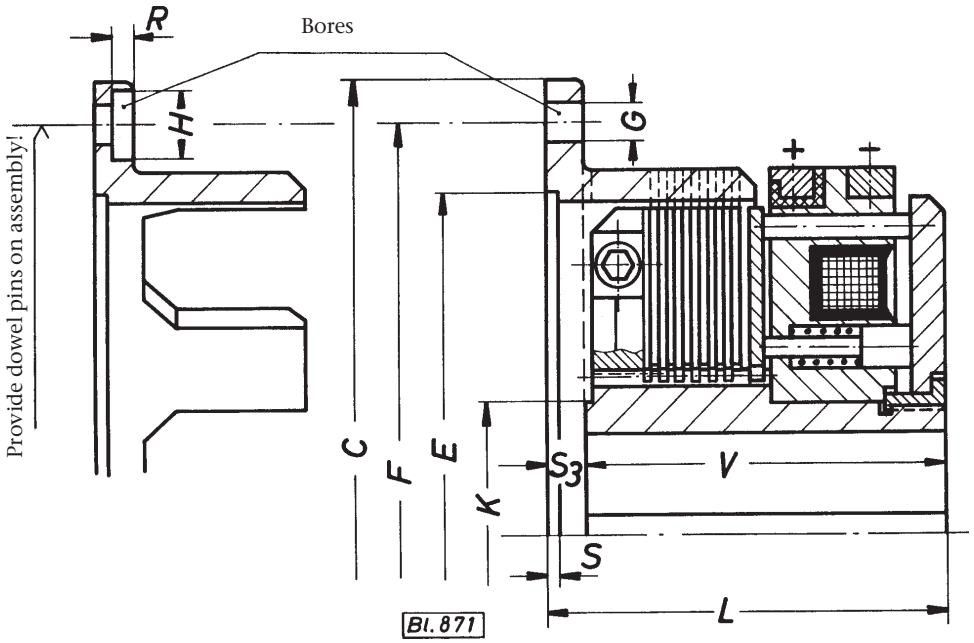
[1] Maximum bore up to size 31 for version without tapped holes F.
[2] Provide a key which must support along the whole length M!
From size 31 upwards two keyways offset by 135°.

Friction combination Steel/steel for wet-running
Tolerances For bores and keyways see section 1"Technical information"
Accessories From page 4.49.00

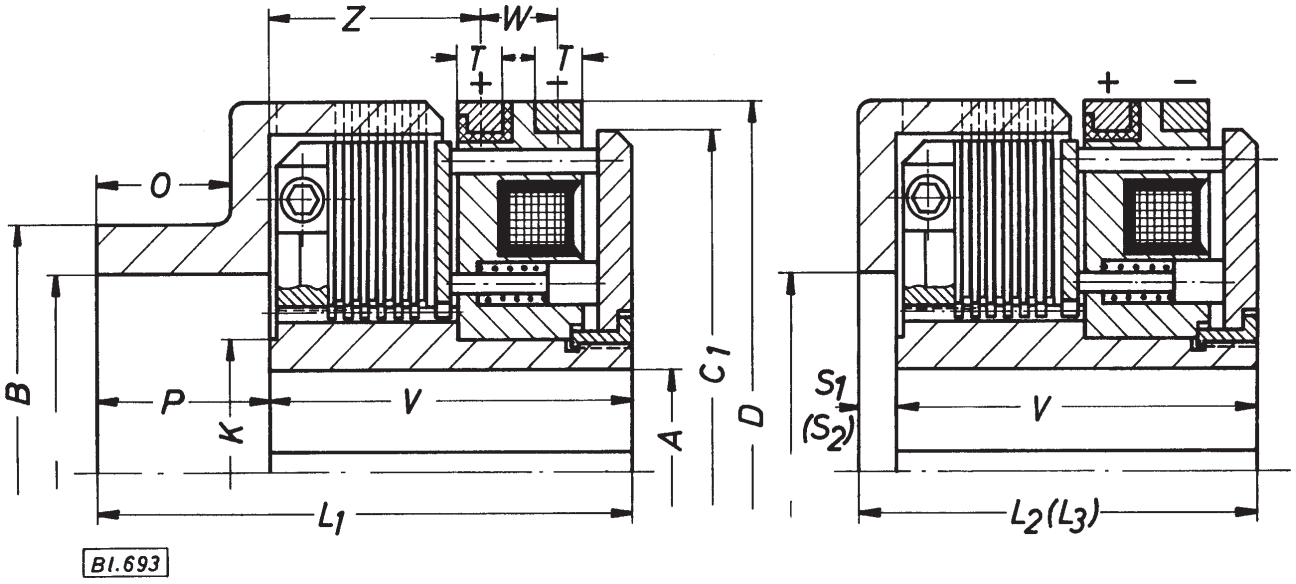
Standard version (with hub):
Series **0011-300-..-001** with 1 insulated terminal
Series **0011-300-..-002** with 2 insulated terminals

Version without hub:
Series **0011-300-..-101** with 1 insulated terminal
Series **0011-300-..-102** with 2 insulated terminals

Version with face keyway on coil body side on request.



with flange housing
Series 0006-051- . . -000000



with hub housing
Series 0006-055- . . - . . .

with cup housing
Thickness S1, series 0006-057- . . -004
Thickness S2, series 0006-057- . . -003

Series with flange housing Size			0006-051-Size-000000 **07**	**11**	**15**	**23**	**31**	**43**	**51**	**59**
Series with hub housing Size-code number			0006-055-Size-Code number **07-028**	**11-034**	**15-056**	**23-067**	**31-070**	**43-096**	**51-073**	**59-094**
Series with cup housing Size			0006-057-Size-000000 **07**	**11**	**15**	**23**	**31**	**43**	**51**	**59**
M_{dyn} dry-running		Nm	15	30	60	120	240	600	1200	2400
M_{dyn} wet-running		Nm	12	25	50	100	200	500	1000	2000
DC voltage		V				24				
Power consumption		20 °C W	15	15,5	25	27	49	57	86	105
		80 °C W	12	12,5	20	22	40	46	70	85
n_{max} dry-running		min^{-1}	4400	3800	3400	3000	2400	1900	1500	1300
n_{max} wet-running	1 power feed	min^{-1}	2200	1900	1700	1500	1200	950	750	650
n_{max} wet-running	2 power feeds	min^{-1}	4400	3800	3400	3000	2400	1900	1500	1300
J	internal	$kgcm^2$	11	20	45	85	233	660	1738	4183
	flange housing external	$kgcm^2$	7	13	20	65	115	310	825	2250
	hub housing external	$kgcm^2$	7	10	15	35	70	238	625	1475
	cup housing S_1 external	$kgcm^2$	3	5	8	19	48	125	348	870
	cup housing S_2 external	$kgcm^2$	4	8	13	30	73	195	455	1145
Weight	flange housing	kg	1,7	2,9	4,6	6	10	19	32	57
	hub housing	kg	2	3	4,7	6,2	10,8	21	33	60
	cup housing S_1	kg	1,8	2,7	4,4	5,65	10	19	30,5	57,5
	cup housing S_2	kg	2	2,9	4,7	6	10,8	20,5	33,5	62,5
ØA	prebored		12	15	18	20	20	30	40	50
Recommended bores[1)]	A_{max} H7 KeywayDIN 6885		**20** **6x2,8**	**22** **6x2,8**	**30** **8x2**	40 10x2,4	48 12x3,3	**65** **18x4,4**	80 22x5,4	105 28x6,4
	A H7 KeywayDIN 6885			**20** **6x2,8**	**28** **8x3,3**	**35** **10x2,4**	**45** **14x3,8**	**60** **18x4,4**	**60** **18x4,4**	
	A H7 KeywayDIN 6885				**25** **8x3,3**	**30** **8x3,3**	**35** **10x3,3**	**50/45** **14x3,8**		
	A H7 KeywayDIN 6885				**20** **6x2,8**	**25** **8x3,3**	**30** **8x3,3**	**40** **12x3,3**		
	A H7 KeywayDIN 6885						**28/25** **8x3,3**			
Diameter	D		85	100	110	128	154	200	245	295
	B		55	55	60	70	80	120	140	160
	C		115	135	150	170	195	240	295	360
	C_1		78	90	100	115	140	184	225	270
	E H7		80	95	105	125	145	190	230	280
	F		100	120	130	150	175	220	270	325
	G		6,5	8,5	8,5	8,5	10,5	10,5	13	15
	H		–	–	–	–	–	–	19,5	23,5
	K		30	30	36	45	60	80	100	120
Number of bores Dowel pins	Number x Ø		3 2x6	3 2x6	3 2x6	3 2x6	3 2x8	6 2x10	6 2x13	6 3x13
Length dimensions	L		49	61	71	80	85	102	120	145
	L_1		70	90	100	116	121	158	180	210
	L_2		50	60	70	76	81	98	115	142
	L_3		54	64	74	82	87	104	119	147
	O		20	30	30	40	40	60	65	68
	P		25	35	35	46	46	68	75	80
	R		–	–	–	–	–	–	7,5	7,5
	S		1,5	3	3	4	4	4	6	6
	S_1		5	5	5	6	6	8	10	12
	S_2		9	9	9	12	12	14	14	17
	S_3		4	6	6	10	10	12	15	15
	T		7	7	8	8	8	8	10	10
	V		45	55	65	70	75	90	105	130
	W		9,5	11	13	13	13	13	16	17
	Z		24,5	31,5	34,5	37	41,5	48	55,5	64,5

[1)] Bore diameters in bold print are available ex stock.

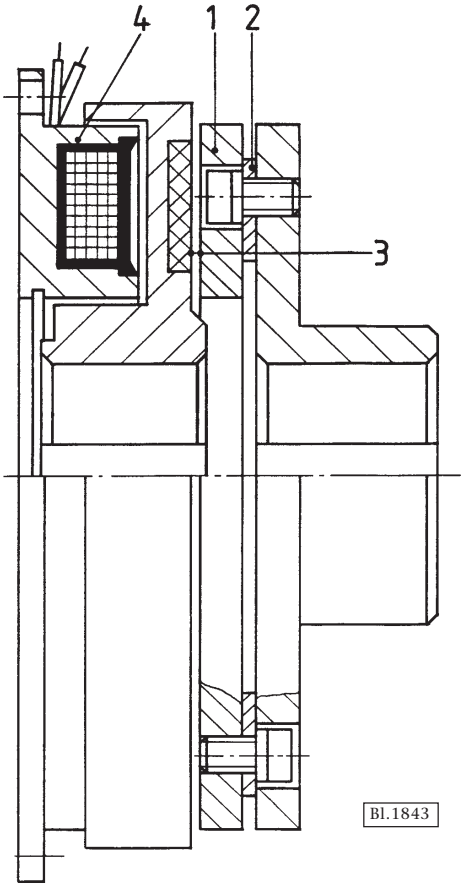
Friction combination Standard version steel/sintered lining for wet- and dry-running. On request steel/organic lining for dry-running **(the plate chamber must be sealed to prevent entry of lubricants).**

Tolerances For bores and keyways see section 1 "Technical information"

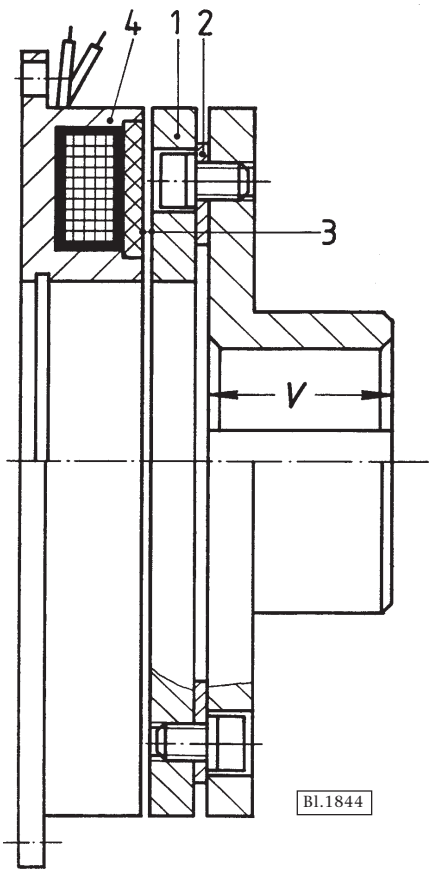
Accessories From page 4.49.00

Single-face clutches and brakes, combined units

Operation



Clutch series 0008-101
Armature section with driving flange



Brake series 0009-101

Clutch and brake

Torque is transferred from the armature plate (**1**) to the component being connected (gear wheel, pulley etc.) via a spring disc (**2**), which guarantees axial freedom of movement. After disengagement, the friction surfaces (**3**) are precisely separated by means of the spring disc (**2**) with the result that no idling torque occurs and high idling speeds are possible. These clutches and brakes are suitable for both vertical and horizontal installation. Electrical connection is by means of two insulated cables, which all approx. 200 mm in length from the coil body (**4**).

Installation

Mounting the coil body

The coil body, which does not rotate, must be carefully centered. It is best mounted to the machine frame, the bore diameters or the outside diameter can be used for centering. The coil body is provided with a groove for the acceptance of a circlip in accordance with DIN 472. This allows axial location of the centering ball bearing.
In the case of series 0008-30., the coil body is located on the support plate and must be secured against rotation in such a way that no radial or axial loads are produced.
If it is not possible to mount the coil body to the machine frame, it can be secured to a bearing located flange as shown in Fig. 2.

Mounting of the armature

If ordered without drive flange, the armature plate is mounted to the input or output pulley etc. with socket screws to DIN 6912 or DIN 7984 (DIN 84), it is necessary to counterbore the mating part (1x45°). The screws must be secured (Fig. 3).

Series **0008-10.-..-002000**
Series **0009-10.-..-002000**

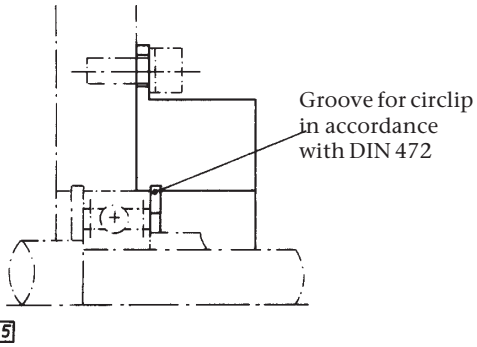


Fig. 1

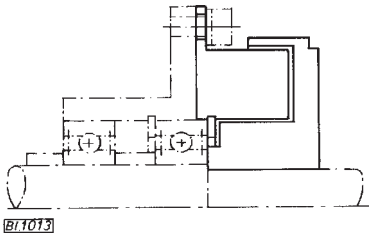


Fig. 2

Size	00[1)]	01[1)]	05	09	13	17	25	33
n x G	2xM2,5	3xM3	3xM4	3xM5	3xM6	3xM8	3xM10	4xM12

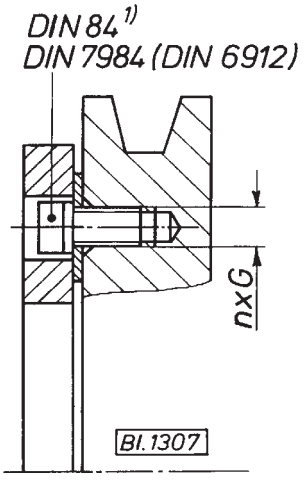
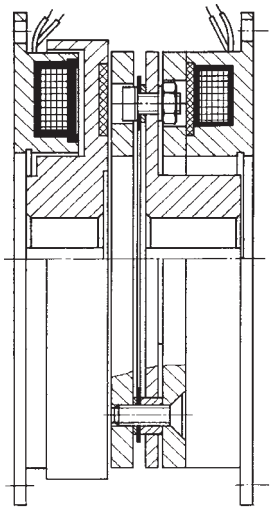


Fig. 3

Clutch-brake combined units

The electromagnetic single-face clutches, series 0008-10., and single-face brakes, series 0009-10., are also available as combined units, series **0008-102.**

Clutch **Brake**



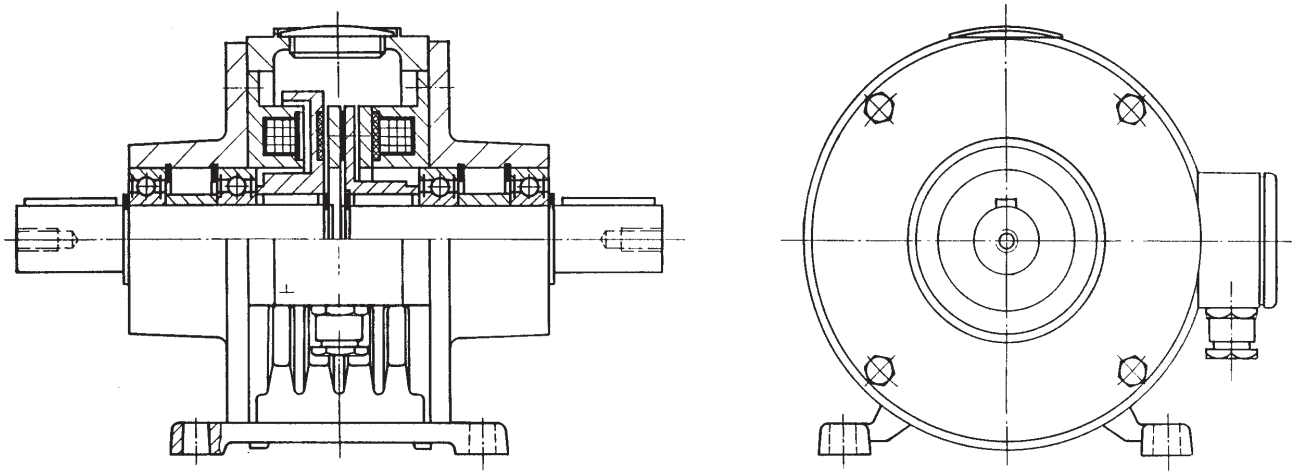
Clutch-brake combined units in housing
These pre-assembled units are intended for stop-start applications, i.e. for applications in which rotating masses must be alternately accelerated and decelerated.
The fully enclosed housing protects the clutch, brake or combined unit from dust and dirt while the ribbing permits improved dissipation of the heat generated in each switching process.

The input and output shaft centre heights of the units have been selected in accordance with DIN 747, the dimensions for the shaft ends in accordance with DIN 748.

The design and operation of the units is the same as that for series 0008 and 0009.

For installation details see page 4.20.00.

Clutch **Brake**

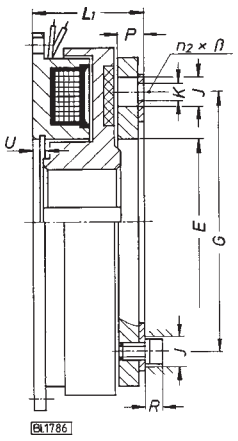


BI 1846

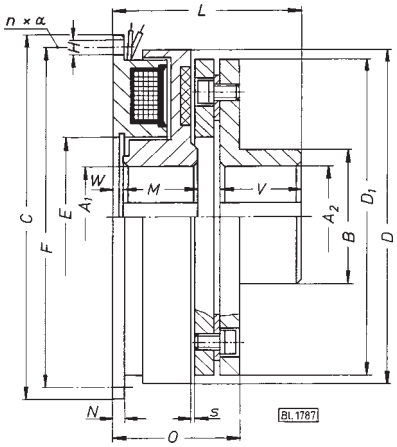
Series **0081**

Electromagnetic single-face clutches
for dry-running only

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE



Series 0008-100 armature section without driving flange



Series 0008-101 armature section with driving flange

Series / Size			0008-10.-Size-002000 00	01	05	09	13	17	25	33[1]
Mdyn at n		Nm / min^{-1}	1,7 / 450	7,5 / 300	15 / 240	30 / 200	60 / 150	120 / 120	240 / 100	480 / 80
n max		min^{-1}	8000	7000	6000	5000	4000	3000	2500	2000
DC voltage		V				24				
Power consumption		20 °C W / 80 °C W	6 / 5	16 / 13	21,5 / 17,5	29,5 / 24	44,5 / 36	60 / 48,5	66 / 53,5	83 / 67
J support plate		kgcm^2	0,19	0,9	3	9	23	82	195	550
J armature section	**0008-100**	kgcm^2	0,12	0,3	1	3	9	30	128	368
	0008-101	kgcm^2	0,14	0,8	2	8	21	67	267	793
Weight	**0008-100**	kg	0,285	0,46	0,85	1,64	2,9	5,6	10,1	18,8
	0008-101	kg	0,33	0,57	1,06	2,05	3,6	6,9	13,1	24,3
Recommended bores[2]	A1 max H7		10	**15**	**25**	**30**	**40**	**50**	**70**	**80**
	KeywayDIN 6885		3x1,4	**5x2,3**	**8x3,3**	**8x3,3**	**12x3,3**	**14x3,8**	**20x4,9**	**22x5,4**
	A2 max H7		8	**15**	**20**	**30**	**35**	**50**	**65**	**80**
	KeywayDIN 6885		2x1	**5x2,3**	**6x2,8**	**8x3,3**	**10x3,3**	**14x3,8**	**18x4,4**	**22x5,4**
	A1/A2 H7			**10**	**20**	**25**	**30**	**40**	**50**	**70**
	KeywayDIN 6885			**3x1,4**	**6x2,8**	**8x3,3**	**8x3,3**	**12x3,3**	**14x3,8**	**20x4,9**
	A1/A2 H7				**15**	**20**	**25**	**30**	**40**	**60**
	KeywayDIN 6885				**5x2,3**	**6x2,8**	**8x3,3**	**8x3,3**	**12x3,3**	**18x4,4**
Diameter	D		45	68	85,5	107	134,5	170,5	214	266,5
	D1		42	63	80	100	125	160	200	250
	B		14,5	28	33	43	50	66	84	106
	C h9		60	80	100	125	150	190	230	290
	E H8[3]		18	35	42	52	62	80	100	125
	F		52	72	90	112	137	175	215	270
	G		29	46	60	76	95	120	158	210
Bores	H		4,3	4,5	5,5	6,5	6,5	9	9	11
	n1 x α		3x120°	4x90°	4x90°	4x90°	4x90°	4x90°	4x90°	4x90°
	J		6	6,5	8	10,5	12	15	18	22
	K		2,8	3,1	4,1	5,2	6,2	8,2	10,2	12,2
	n2 x β		2x180°	3x120°	3x120°	3x120°	3x120°	3x120°	3x120°	4x90°
Length dimensions	L		38,5	43	51	61	70,5	84,5	103,5	119
	L1		26,5	28	31	36	40,5	46,5	55,5	64
	M		20	22	24	27	30	34	40	47
	N		2	2	2,5	3	3,5	4	5	6
	O		29,5	31,5	35	41	46,5	53,5	64,5	75
	P		3,8	3,8	5,2	6,7	7,7	10,1	13	15,4
	R		2,5	2,5	3,3	4,1	4,7	5,8	7	8
	s[4] air gap		0,2	0,2	0,3	0,3	0,3	0,4	0,5	0,6
	U		–	3,5	4,3	5	5,5	6	7	8
	V		12	15	20	25	30	38	48	55
	W		2,5	2	2,5	3	3,5	3,5	4	4

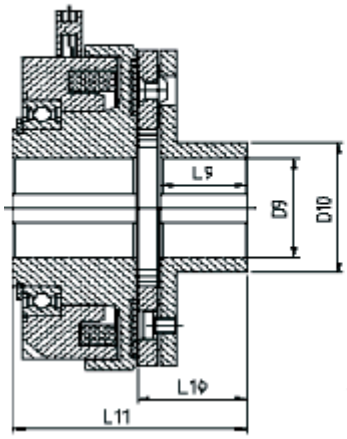
[1] Further sizes on request.
[2] Bore diameters in bold print are available ex stock.
[3] H8 only for coil bodies.
[4] Up to size 09 s + 0,1; size 13 and upwards s + 0,2.

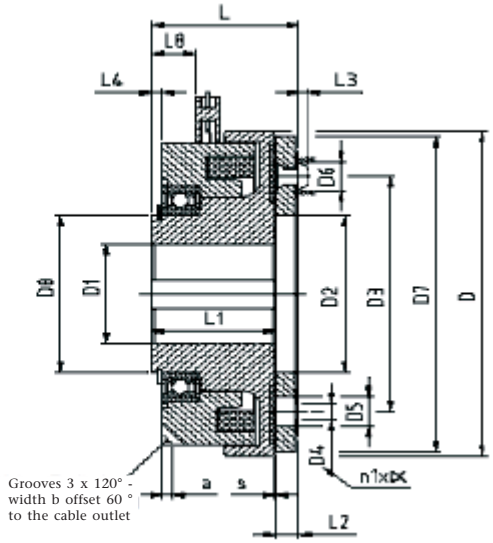
For dry-running only; it is essential to keep the friction surface free of lubricants.

Tolerances For bores and keyways see section 1 "Technical information"

Accessories From page 4.49.00

Sale through Ortlinghaus AG, Zug/Switzerland.





Series 0808-30. Solenoid body with leads
Series 0808-35. Solenoid body with plug

Series 0808-3.1 armature section with driving flange
Series 0808-3.0 armature section without driving flange

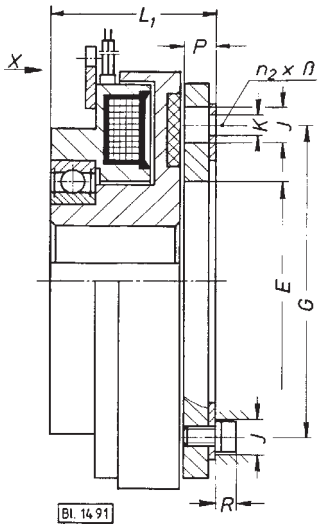
Series / Size			0808-3..-Size-000000 05	13	17
Ms at n		Nm min^{-1}	20 240	90 150	180 120
n max		min^{-1}	6000	4000	3000
DC voltage		V		24 [1]	
Current consumption		20 °C A 80 °C A	0,60 0,50	2,05 1,65	2,45 2,00
Power consumption		20 °C W 80 °C W	14,5 11,8	49 40	58,5 47
Weight	**0808-3.0** **0808-3.1**	kg kg	1,10 1,31	3,8 4,5	4,2 5,6
ØD1 max Keyway		H7 DIN 6885	25 8x3,3	40 12x3,3	50 14x3,8
ØD9 max Keyway		H7 DIN 6885	20 6x2,8	35 10x3,3	50 14x3,8
Diameter	D D2 D3 D7 D8 D10		82 42 60 80 74 33	134 62 95 125 122 50	165 80 120 160 154 66
Bores	D4 D5 and D6 n1 x α		4,1 8 3x120°	6,2 12 3x120°	8,2 15 3x120°
Length dimensions	L L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 a b s air gap [2]		44 38,5 5,2 1,8 6,5 - - - 10,7 20 25,2 64 3x45° 8 0,3	62 54 7,7 2,7 15 - - - 21 30 37,7 92 5x45° 10 0,3	64,5 54 10,1 3,7 4,5 - - - 19 38 48,1 102,5 5x45° 10 0,4

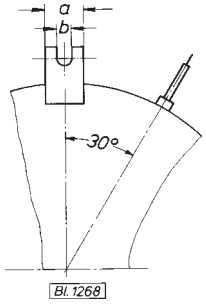
[1] other voltages on request
[2] Up to Size 05 s +0,1, Size 13 upwards s +0,2.

For dry-running only; it is essential to keep the friction surface free of lubricants.

Tolerances For bores and keyways see section 1 "Technical information"
Accessories From page 4.49.00

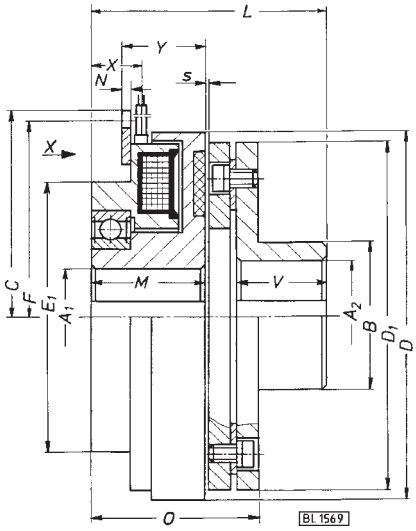
Sale through Ortlinghaus AG, Zug/Switzerland.





View X

Series 0008-300 armature section without driving flange



Series 0008-301 armature section with driving flange

Series / Size			0008-30.-Size-002000 01	05	09	13	17	25	33
M_{dyn} at n		Nm / min^{-1}	7,5 / 300	15 / 240	30 / 200	60 / 150	120 / 120	240 / 100	480 / 80
n max		min^{-1}	7000	6000	5000	4000	3000	2500	2000
DC voltage		V				24			
Power consumption		20 °C W / 80 °C W	16 / 13	21,5 / 17,5	29,5 / 24	44,5 / 36	60 / 48,5	66 / 53,5	83 / 67
J support plate		$kgcm^2$	0,9	3	9	23	82	195	550
J armature section	**0008-300**	$kgcm^2$	0,3	1	3	9	30	128	368
	0008-301	$kgcm^2$	0,8	2	8	21	67	267	793
Weight	**0008-300**	kg	0,61	1,09	2,16	3,6	6,8	12,5	21,4
	0008-301	kg	0,72	1,3	2,57	4,3	8,2	15,5	26,9
ØA1 max		H7	15	20	30	40	50	60	60
Keyway		DIN 6885	5x2,3	6x2,8	8x3,3	12x3,3	14x3,8	18x4,4	18x4,4
ØA2 max		H7	15	20	30	35	50	65	80
Keyway		DIN 6885	5x2,3	6x2,8	8x3,3	10x3,3	14x3,8	18x4,4	22x5,4
Diameter	D		68	85,5	107	134,5	170,5	214	266,5
	D1		63	80	100	125	160	200	250
	B		28	33	43	50	66	84	106
	E		35	42	52	62	80	100	125
	E1		52	64	85	100	125	155	155
	G		46	60	76	95	120	158	210
Bores	J		6,5	8	10,5	12	15	18	22
	K		3,1	4,1	5,2	6,2	8,2	10,2	12,2
	n2 x β		3x120°	3x120°	3x120°	3x120°	3x120°	3x120°	4x90°
Length dimensions	a		10	10	10	10	20	20	20
	b		4,1	4,1	4,1	4,1	8,1	8,1	8,1
	C		41	50	61	76	99	119	145
	F		37	46	57	71	93	113	139
	L		55	64	77	86,5	102,5	125,5	145
	L1		40	44	52	56,5	64,5	77,5	90
	M		36	38,5	45	48,5	54	64	74
	N		1,5	2,5	2,5	2,5	3,5	3,5	3,5
	O		43,5	48	57	62,5	71,5	86,5	101
	P		3,8	5,2	6,7	7,7	10,1	13	15,4
	R		2,5	3,3	4,1	4,7	5,8	7	8
	s[1] air gap		0,2	0,3	0,3	0,3	0,4	0,5	0,6
	V		15	20	25	30	38	48	55
	X		17	18	22	23	24,5	29	34
	Y		25,5	28	31,5	35	39,5	45,5	51,5

[1] Up to Size 09 s +0,1, Size 13 upwards s +0,2.

For dry-running only; it is essential to keep the friction surface free of lubricants.

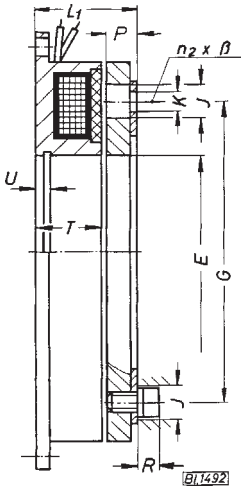
Tolerances For bores and keyways see section 1 "Technical information"

Accessories From page 4.49.00

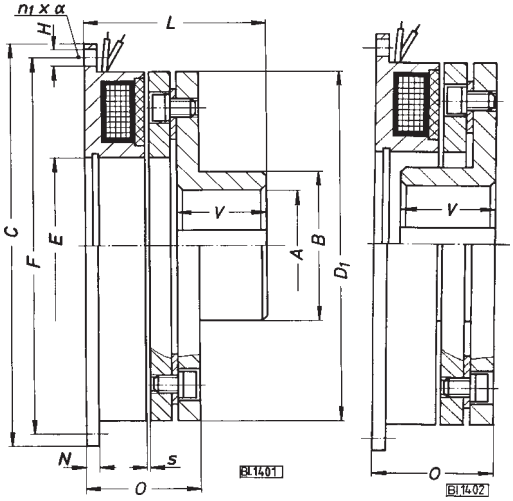
Sale through Ortlinghaus AG, Zug/Switzerland.

Electromagnetic single-face brakes
for dry-running only

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE



Series 0009-100
Armature section without driving flange



Series 0009-101
Armature section with driving flange
External hub

Series 0009-102
Internal hub

Series / Size			0009-10.-Size-002000 00	01	05	09	13	17	25	33[1]
Mdyn at n		Nm / min^{-1}	1,7 / 450	7,5 / 300	15 / 240	30 / 200	60 / 150	120 / 120	240 / 100	480 / 80
n max		min^{-1}	8000	7000	6000	5000	4000	3000	2500	2000
DC voltage		V				24				
Power consumption		20 °C W / 80 °C W	5 / 4	11 / 9	15,5 / 12,5	20 / 16,5	28 / 23	35 / 28,5	48 / 39	62 / 50
J armature section	**0009-100**	kgcm^2	0,12	0,3	1	3	9	30	128	368
	0009-101/102	kgcm^2	0,14	0,8	2	8	21	67	267	793
Weight	**0009-100**	kg	0,165	0,26	0,49	0,91	1,69	3,2	6,3	11,7
	0009-101/102	kg	0,21	0,37	0,69	1,31	2,38	4,5	9,3	17,2
Recommended bores[2]	Amax H7		8	**15**	**20**	**30**	**35**	**50**	**65**	**80**
	KeywayDIN 6885		2x1	**5x2,3**	**6x2,8**	**8x3,3**	**10x3,3**	**14x3,8**	**18x4,4**	**22x5,4**
	A H7			**10**	**15**	**25**	**30**	**40**	**50**	**70**
	KeywayDIN 6885			**3x1,4**	**5x2,3**	**8x3,3**	**8x3,3**	**12x3,3**	**14x3,8**	**20x4,9**
	A H7					**20**	**25**	**30**	**40**	**60**
	KeywayDIN 6885					**6x2,8**	**8x3,3**	**8x3,3**	**12x3,3**	**18x4,4**
Diameter	D1		42	63	80	100	125	160	200	250
	B		14,5	28	33	43	50	66	84	106
	C h9		60	80	100	125	150	190	230	290
	E H8[3]		18	35	42	52	62	80	100	125
	F		52	72	90	112	137	175	215	270
	G		29	46	60	76	95	120	158	210
Bores	H		4,3	4,5	5,5	6,5	6,5	9	9	11
	n1 x α		3x120°	4x90°	4x90°	4x90°	4x90°	4x90°	4x90°	4x90°
	J		6	6,5	8	10,5	12	15	18	22
	K		2,8	3,1	4,1	5,2	6,2	8,2	10,2	12,2
	n2 x β		2x180°	3x120°	3x120°	3x120°	3x120°	3x120°	3x120°	4x90°
Length dimensions	L		33	37	44,5	53	61	73	89,5	103
	L1		21	22	24,5	28	31	35	41,5	48
	N		2	2	2,5	3	3,5	4	5	6
	O		24	25,5	28,5	33	37	42	50,5	59
	P		3,8	3,8	5,2	6,7	7,7	10,1	13	15,4
	R		2,5	2,5	3,3	4,1	4,7	5,8	7	8
	s[4] air gap		0,2	0,2	0,3	0,3	0,3	0,4	0,5	0,6
	T		17	18	19	21	23	24,5	28	32
	U		–	3,5	4,3	5	5,5	6	7	8
	V		12	15	20	25	30	38	48	55

[1] Further sizes on request.
[2] Bore diameters in bold print are available ex stock.
[3] H8 only for coil bodies.
[4] Up to size 09 s + 0,1; size 13 and upwards s + 0,2.

For dry-running only; it is essential to keep the friction surface free of lubricants.

Tolerances For bores and keyways see section 1 "Technical information"

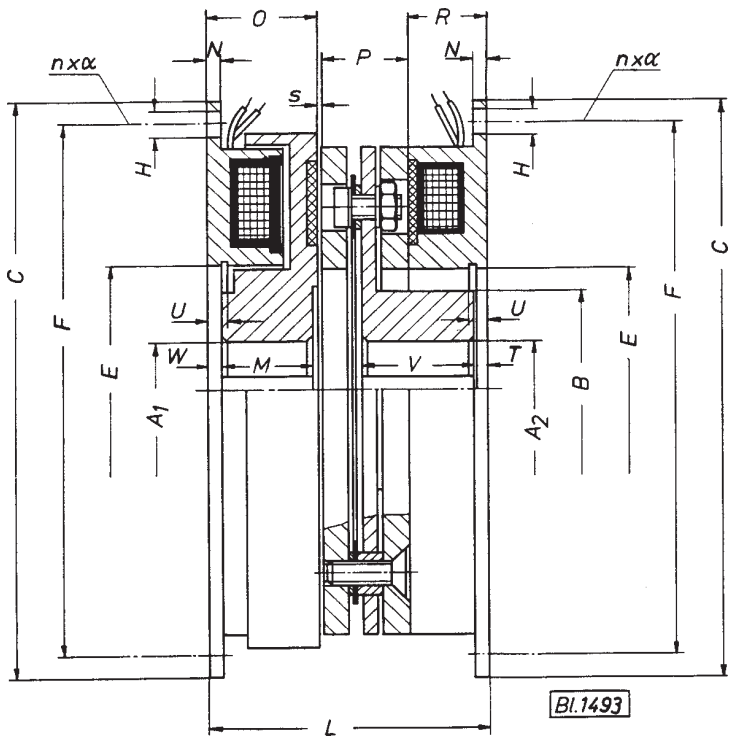
Accessories From page 4.49.00

Sale through Ortlinghaus AG, Zug/Switzerland.

Electromagnetic single-face clutch/brake combined units
for dry-running only

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE

Clutch **Brake**



Series / Size			0008-102-Size-002000 01	05	09	13	17	25	33[1]
Mdyn at n		Nm / min-1	7,5 / 300	15 / 240	30 / 200	60 / 150	120 / 120	240 / 100	480 / 80
n max		min-1	7000	6000	5000	4000	3000	2500	2000
DC voltage		V				24			
Power consumption	Clutch	20 °C W / 80 °C W	16 / 13	21,5 / 17,5	29,5 / 24	36,5 / 29,5	50 / 40,5	66 / 53,5	83 / 67
	Brake	20 °C W / 80 °C W	11 / 9	15,5 / 12,5	20 / 16,5	28 / 23	35 / 28,5	48 / 39	62 / 50
J	Support plate	kgcm2	0,9	3	9	23	82	195	550
	Armature section	kgcm2	1,1	3,2	10,5	30	96	395	1160
Weight		kg	0,83	1,55	2,96	5,3	10,1	19,4	36
ØA1 max		H7	15	25	30	40	50	70	80
Keyway		DIN 6885	5x2,3	8x3,3	8x3,3	12x3,3	14x3,8	20x4,9	22x5,4
ØA2 max		H7	15	20	30	35	50	65	80
Keyway		DIN 6885	5x2,3	6x2,8	8x3,3	10x3,3	14x3,8	18x4,4	22x5,4
Diameter	B		28	33	43	50	66	84	106
	C h9		80	100	125	150	190	230	290
	E H8[2]		35	42	52	62	80	100	125
	F		72	90	112	137	175	215	270
	H		4,5	5,5	6,5	6,5	9	9	11
	n x α		4x90°	4x90°	4x90°	4x90°	4x90°	4x90°	4x90°
Length dimensions	L		53,4	59,5	69	77,5	88,5	106	123
	M		19,5	22	24,5	27	31	37	43,5
	N		2	2,5	3	3,5	4	5	6
	O		24	25,5	29	32,5	36	42	48
	P		11,2	14,7	18,7	21,7	27,6	35,5	42,4
	R		18	19	21	23	24,5	28	32
	s air gap[3]		0,2	0,3	0,3	0,3	0,4	0,5	0,6
	T		10,5	8,5	8	7	4	2,4	4
	U		3,5	4,3	5	5,5	6	7	8
	V		13,6	18	22,8	27,6	35	44,1	51,2
	W		2	2,5	3	3,5	3,5	4	4

[1] Further sizes on request.
[2] H8 only for coil bodies.
[3] Up to size 09 s + 0,1; size 13 and upwards s + 0,2.

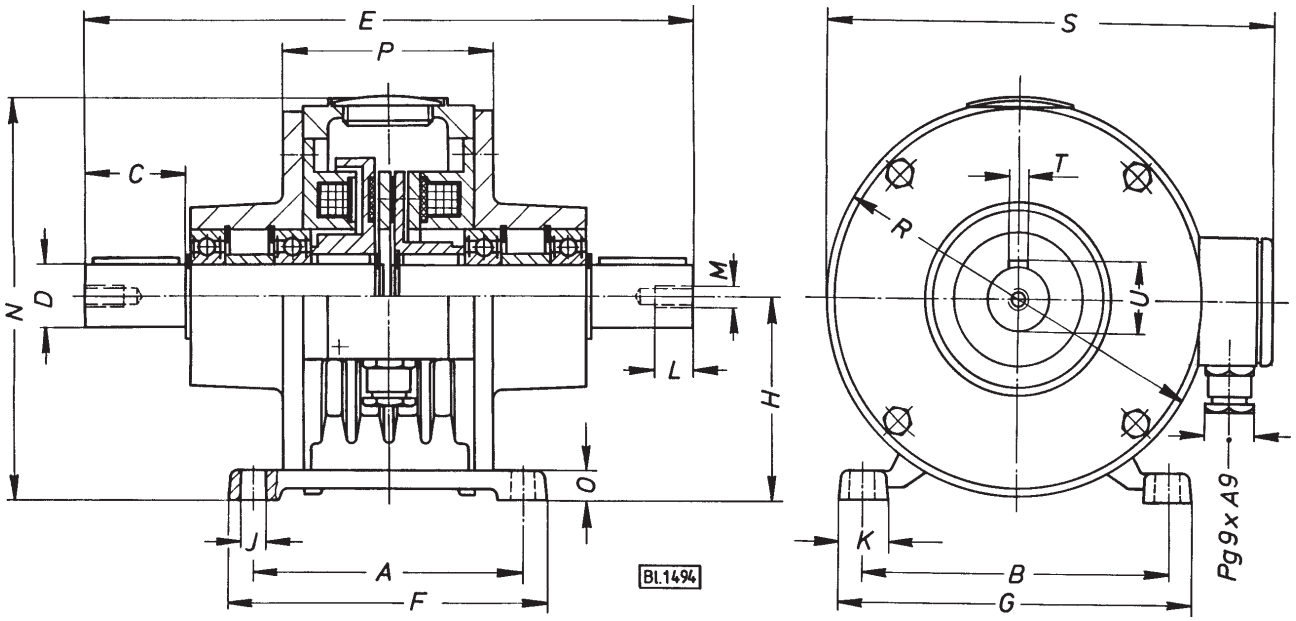
For dry-running only; it is essential to keep the friction surface free of lubricants.

Tolerances For bores and keyways see section 1 "Technical information"

Accessories From page 4.49.00

Sale through Ortlinghaus AG, Zug/Switzerland.

Clutch **Brake**

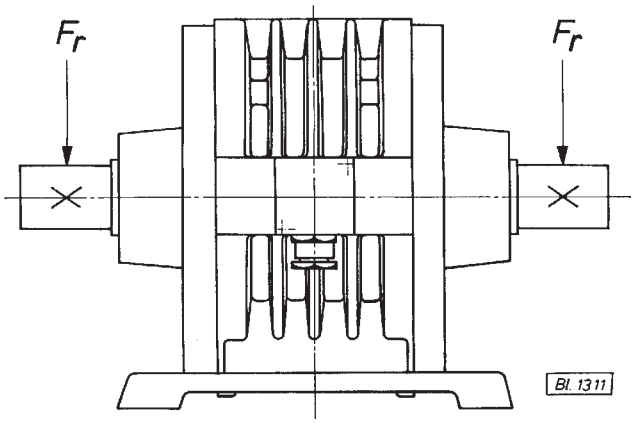


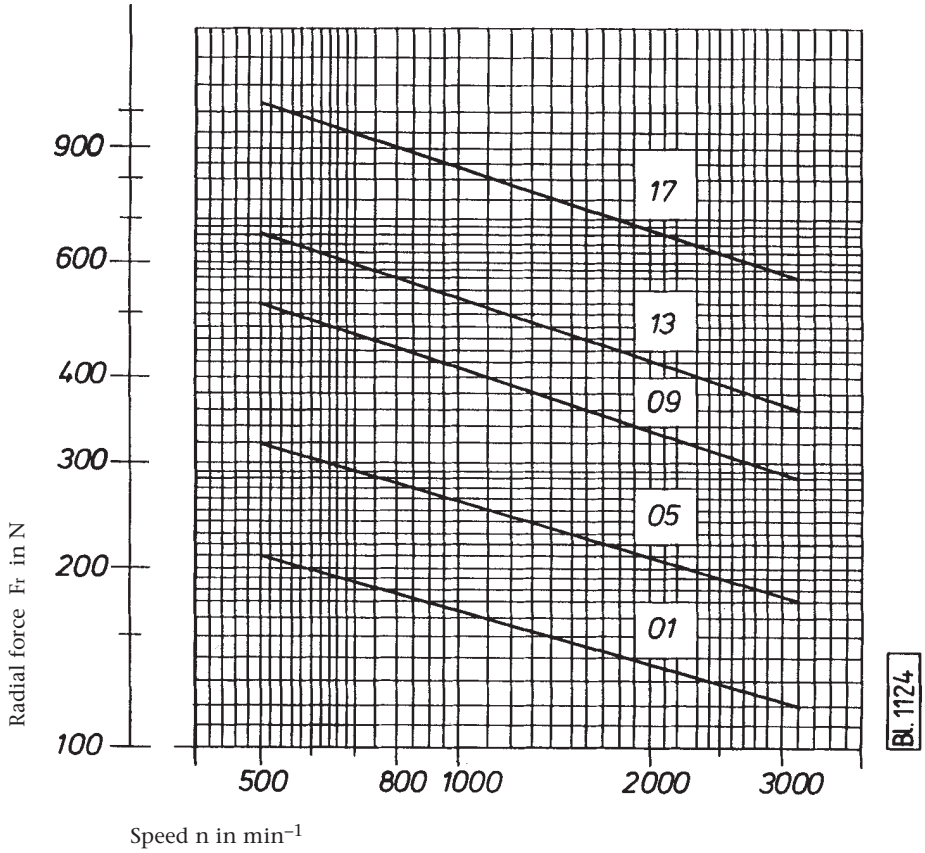
Series / Size			0081-000-Size-002000 01	05	09	13	17
M_{dyn} at n		Nm / min^{-1}	7,5 / 300	15 / 240	30 / 200	60 / 150	120 / 120
DC voltage		V			24		
Power consumption	Clutch	20 °C W	16	21,5	29,5	36,5	50
		80 °C W	13	17,5	24	29,5	40,5
	Brake	20 °C W	11	15,5	20	28	35
		80 °C W	9	12,5	16,5	23	28,5
J input		$kgcm^2$	0,9	2,7	9,1	24	89
J output		$kgcm^2$	1,1	3,4	11	31	100
Weight		kg	3,3	5,2	9	15	30
Dimensions	A		90	100	110	120	140
	B		85	105	125	140	216
	C		18	36	42	58	82
	D_{j5}		14	20	25	30	40
	E		152	204	250	302	385
	F		105	120	130	150	170
	G		105	125	145	165	246
	H		63	71	80	100	132
	J		7,5	9,5	9,5	12	12
	K		20	20	20	25	30
	L		10	12	16	20	20
	M		M5	M6	M8	M10	M10
	N		123	140	158	197,5	257
	O		10	11	12	12	20
	P		66	74	85	96	111
	R		120	138	156	195	250
	S ~		145	164	182	222	277
	T h9		5	6	8	8	12
	U		16	22,5	28	33	43

For dry-running only; it is essential to keep the friction surface free of lubricants.

Accessories From page 4.49.00

Sale through Ortlinghaus AG, Zug/Switzerland.



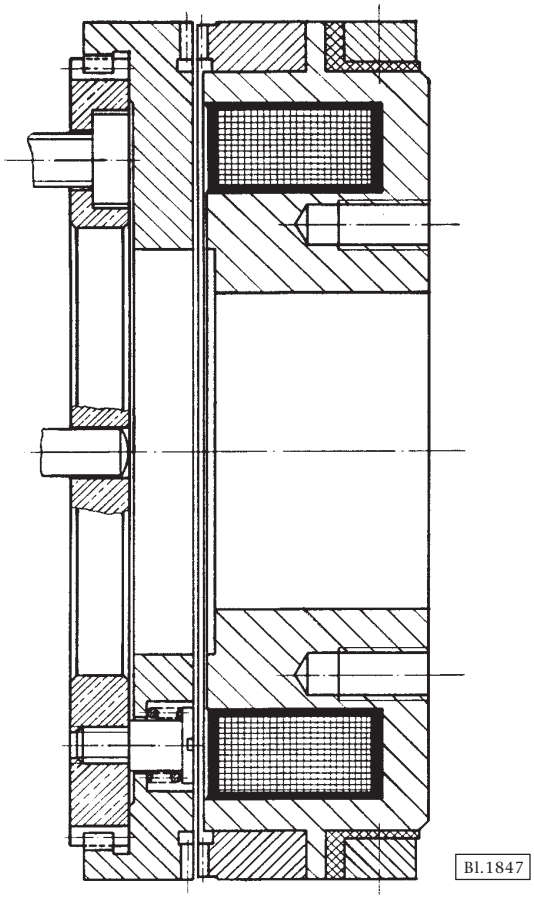


Size		01	05	09	13	17
n max*	min⁻¹	3500	3000	2600	2200	2000

* Assuming a service life of the sealed-for-life bearings of 10,000 h

Tooth clutches

Design characteristics and properties

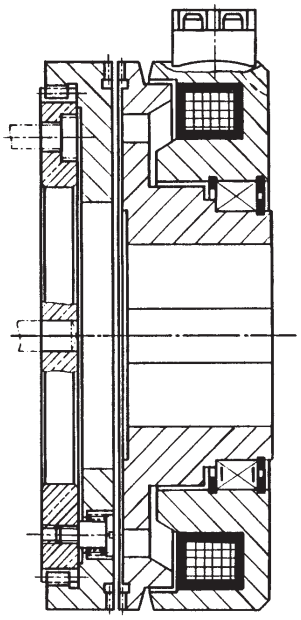


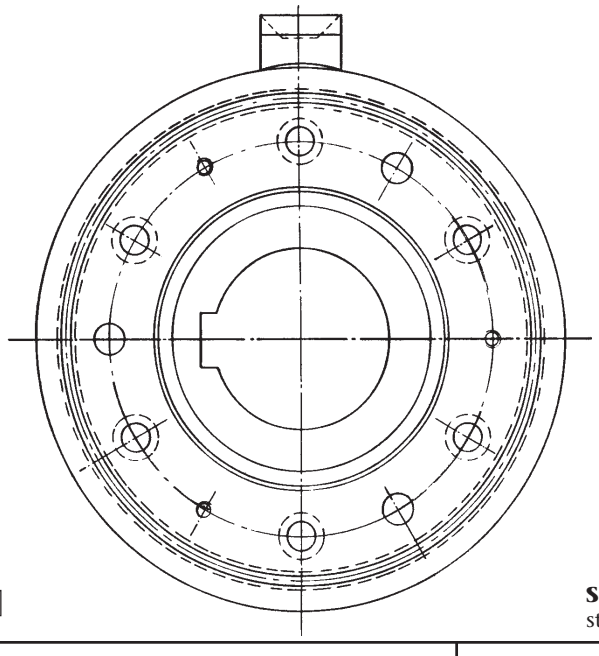
Series 0012 with slipring

Tooth clutches transmit torque via two meshing sets of teeth. Size for size they can transmit larger torques than multi-plate clutches and their moments of inertia are low. In addition there is no idling friction so that high idling speeds are possible.

The clutches can only be engaged when they are stationary or when there are only small differences in the relative speeds.
Disengagement can be carried out at full speed and under load. When two tooth clutches are being switched alternately (in the stationary state) the response time for the clutch to be disengaged can be reduced considerably by counter-excitation.

Since tooth clutches cannot transmit peak torques over their rated value, particular caution must be used when selecting the unit. In addition to the static requirements of the input or output side, the dynamic characteristics of the complete system must be considered including such factors as motor starting torques and the engagement of friction clutches.





Series 0013
stationary field

Installation

Coil body and armature plate with drive plate must be securely located axially and must run true relative to one another axially and radially. Eccentricity can reduce the torque that can be transmitted. Correct meshing of the teeth is essential.
Tooth clutches may be fitted horizontally or vertically. When installed vertically, the armature plate should lie at the bottom if possible.

The following points should be observed when securing the drive plate to the input or output part:

1. After drilling the dowel holes, fit spring bolts and springs, secure against rotation (Fig. 1a).

2. Where a tooth clutch is supplied without the drive plate, the hexagonal nuts must be removed before installation (Fig. 1b). Fit spring bolts and springs, secure against rotation (Fig. 1c).

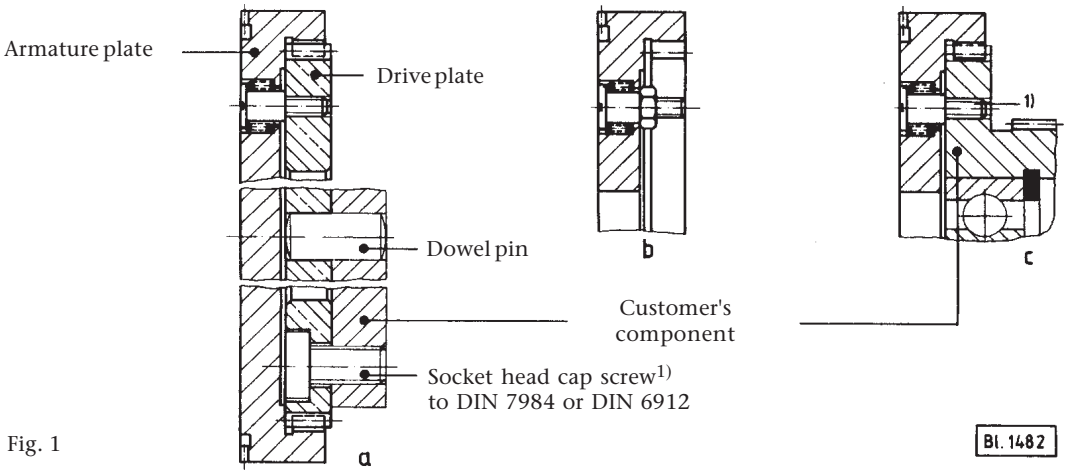
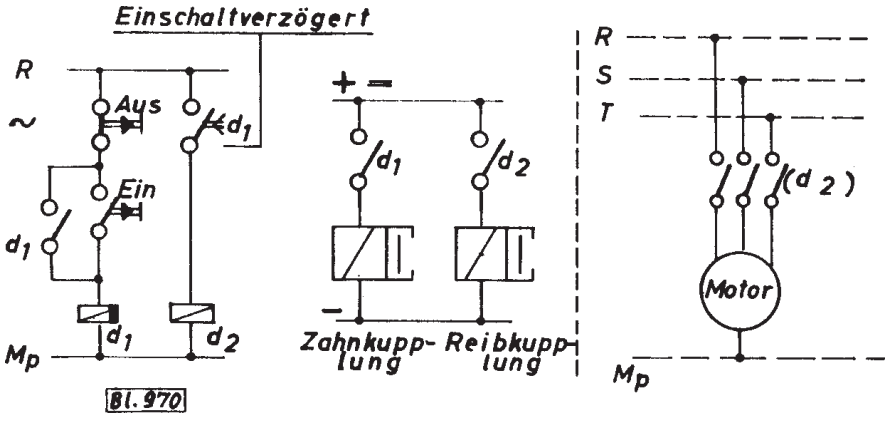


Fig. 1

1) Secure all screws with Loctite 262!

Actuation

Fig. 2 shows the basic control circuit diagram for a tooth clutch used in conjunction with a friction clutch or a motor, the tooth clutch is always engaged before the other components.

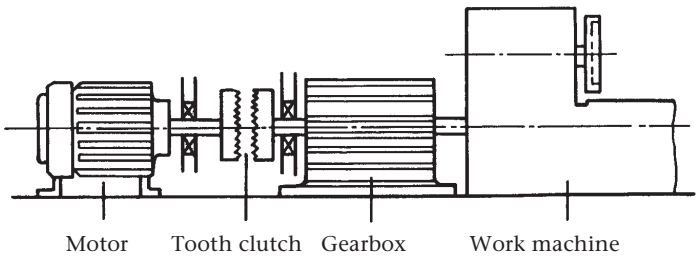


Aus = Off
Ein = On
Einschaltverzögert = Delayed switching
Zahnkupplung = Tooth clutch
Reibkupplung = Friction clutch

Fig. 2

Application examples

Example a):
A tooth clutch is fitted between a motor and a gearbox which drives a machine (Fig. 3). Here the torque of the tooth clutch must be greater than the starting or pull-out torque of the motor, otherwise the clutch will slip.



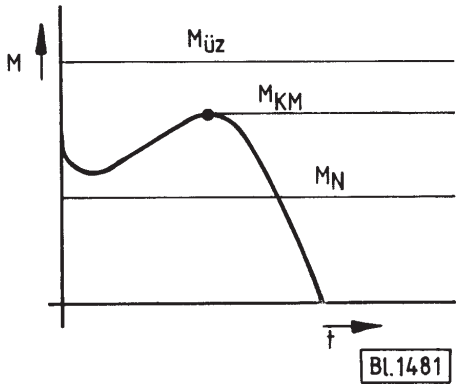


Fig. 3: Drive layout incorporating tooth clutch (Load by M_{KM})

M_{statZ} = Static torque of the tooth clutch
M_N = Nominal motor torque
M_{KM} = Motor pull-out torque

Example b):
If a tooth clutch is used together with a friction clutch as shown in Fig. 4, the torque behaviour of the friction clutch as well as the masses upstream and downstream of the tooth clutch and the stiffness/elasticity of the system must be known.

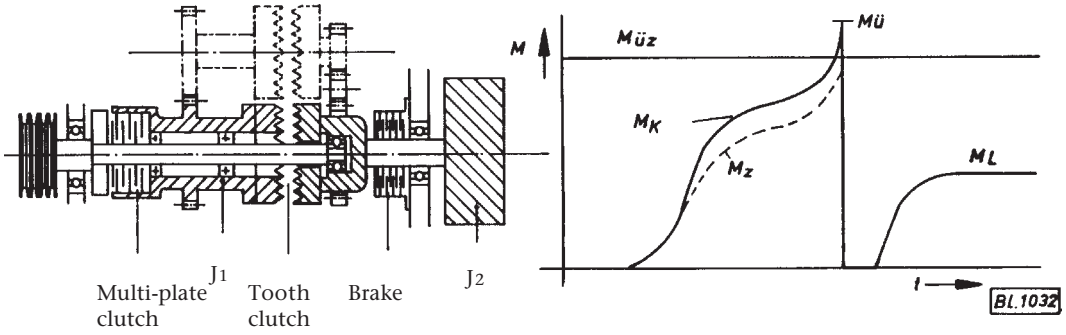


Fig. 4: Drive layout with tooth and multi-plate clutch (Torques during engagement)

M_{statZ} = Static torque of the tooth clutch
M_Z = Torque on tooth clutch
M_{stat} = Satic torque of the multi-plate clutch
M_K = Torque on multi-plate clutch
M_L = Load torque

The torque of the tooth clutch can be calculated from the following formula taking into account the processes between the friction clutch and the tooth clutch as well as the downstream masses:

$$M_Z = M_{stat} \cdot \left[1 - \frac{J_1}{J_1 + J_2} \right] \quad \text{in Nm}$$

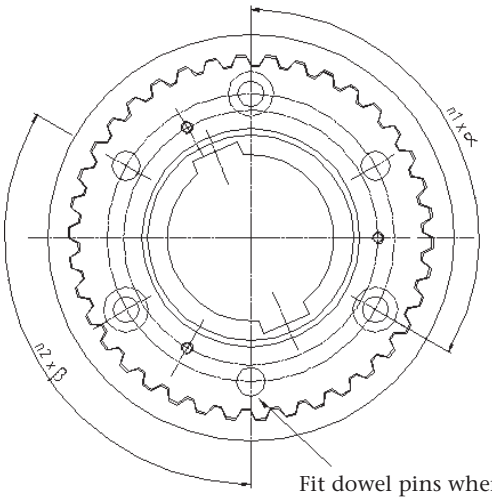
For reasons of safety M_{statZ} must be greater than M_Z.

In certain cases the damping effect from elasticity in the system can be taken into consideration.

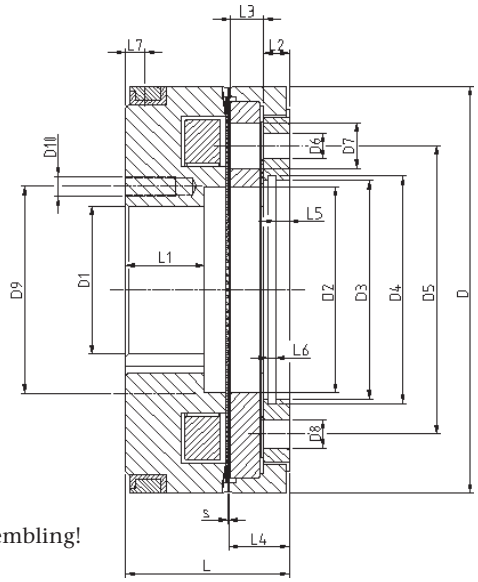
Electromagnetic slipring tooth clutches
for dry- or wet-running

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE

If the coil body bores are not provided with keyways, secure against rotation with dowel pins. Tapped holes are drilled by the customer at installation. Dimensions D9 and D10 must be maintained.



Fit dowel pins when assembling!



Material pair steel / brass [3]**:**

Series 0812-000 Normal splining
Series 0812-001 Fixed point splining 1x360°
Series 0812-002 Fixed point splining 2x180°
Series 0812-003 Fixed point splining 4x90°

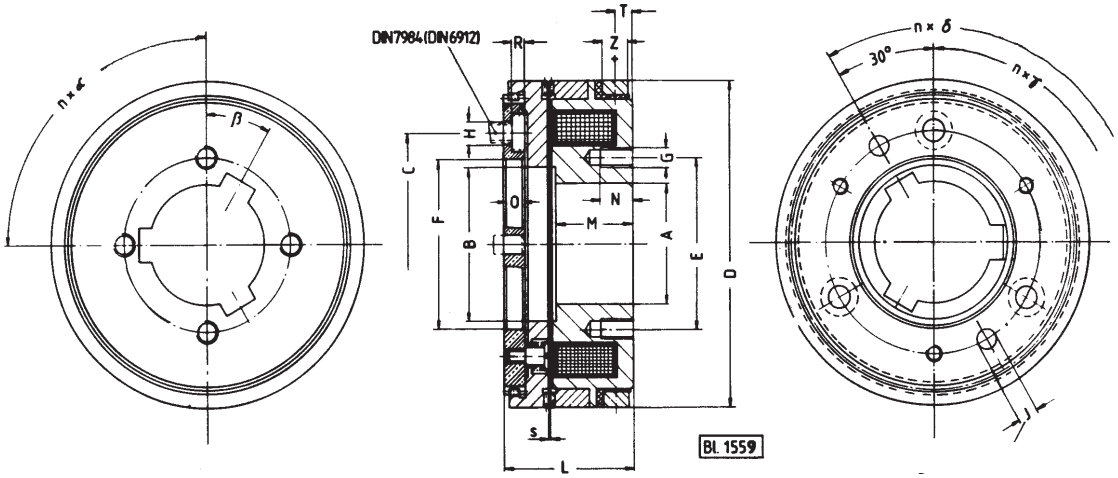
Series / Size			0812-00 . -Size-000000 07	11	15	23	31
Mü		Nm	100	200	400	600	1200
n max dry-running		min^{-1}	4600	4000	3400	2800	2300
n max wet-running	1 Power feed	min^{-1}	2300	2000	1700	1400	1150
n max wet-running	2 Power feeds	min^{-1}	4600	4000	3400	2800	2300
DC voltage		V			24 [1]		
Current consumption		20 °C A	0,30	0,45	0,65	0,55	0,50
		80 °C A	0,25	0,40	0,50	0,45	0,40
Power consumption		20 °C W	7,5	11,0	15,5	13,6	12,5
		80 °C W	6,0	9,0	12,5	11,0	10,0
Weight		kg	0,98	1,52	2,60	4,14	7,50
ØD1 prebored			18	20	20	20	38
Recommended bores [1]	D1 max	H7	30	35	45	55	70
	Keyway [2]	DIN 6885	8x2	10x3,3	12x3,3	16x4,3	16x4,3
	D1	H7	25	30	40	52	
	Keyway	DIN 6885	8x3,3	8x3,3	12x3,3	14x3,8	
Number of keyways			2x180°	2x180°	2x180°	3x120°	3x120°
Diameter	D		82	95	114	134	166
	D2		36,5	46	55	68	80
	D3 H7		42	52	62	72	90
	D4		44,5	55	65	75	93,5
	D5		60	70	80	95	120
	D9		41	47,5	57,5	68	87,5
	D10		M4	M6	M6	M8	M10
Bores	D6		5,8	6,8	6,8	8,5	8,5
	D7		10	12	13	15	15
	n1 x α		3x120°	3x120°	3x120°	3x120°	6x60°
	D8 prebored for dowel pins		4,5	5,5	7,8	9,5	9,5
	n2 x β		3x120°	3x120°	3x120°	3x120°	3x120°
Length dimensions	L		33	41	46	54	63,5
	L1 -0,1		16,5	20	23	26	30
	L2		4,6	6	6,5	8,4	11,4
	L3		6,3	8,7	9	11	13,1
	L4		11	15	16	20	25
	L5		2,3	3	3,5	4,5	5,5
	L6		1,85	2,15	2,15	2,65	3,15
	L7		5,5	5,5	6	7,5	8
	s air gap		0,3	0,4	0,4	0,4	0,5

[1] other bores and voltages on request
[2] Provide a key which must support along the whole length L1!
[3] other material pairs on request

Passungen For bores and keyways see section 1 "Technical information"
Accessories From page 4.49.00
Sale through Ortlinghaus AG, Zug/Switzerland.

Electromagnetic slipring tooth clutches
for dry- or wet-running

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE



Important: Secure screwed unions with Loctite type 262!
Tapped holes are drilled by the customer at installation.
Dimensions E, G and N must be maintained.

J: Fit dowel pins at installation!

If the coil body bores are not provided with keyways, secure against rotation with dowel pins.

Series / Size			0012-005-Size-000000 03	07	11	15	23	31	43	51[4]
Mstat		Nm	40	100	200	350	600	1200	2200	4000
n max dry-running		min^{-1}	5400	4600	4000	3400	2800	2300	2000	1600
n max wet-running	1 Power feed	min^{-1}	2700	2300	2000	1700	1400	1150	1000	800
n max wet-running	2 Power feeds	min^{-1}	5400	4600	4000	3400	2800	2300	2000	1600
DC voltage		V				24				
Power consumption		20 °C W	11,5	23,5	28	47,5	58,5	78,5	80,5	100
		80 °C W	9,5	19	22,5	38,5	47,5	63,5	65	81
J Coil body		kgcm^2	3	7	14	31	65	185	415	1215
J Drive armature		kgcm^2	2	4	7	19	40	114	215	705
Weight		kg	0,602	1,038	1,581	2,603	4,045	7,276	11,32	21,5
ØA prebored			16	18	20	20	20	38	40	50
Recommended bores[3]	A max[1]	H7	25	30	35	45	52	70	78	98
	Keyway[2]	DIN 6885	8x2	8x2	10x3,3	12x2,2	14x3,8	16x4,3	20x4,9	22x5,4
	A	H7	**20**	**25**	**30**	**40**				
	Keyway	DIN 6885	**6x2,8**	**8x3,3**	**8x3,3**	**12x3,2**				
	A	H7			**28**	**30**				
	Keyway	DIN 6885			**8x3,3**	**8x3,3**				
	A	H7			**25**					
	Keyway	DIN 6885			**8x3,3**					
Number of keyways offset by β relative to tapped hole			1x 30°	2x180° 30°	2x180° 22,5°	2x180° 22,5°	3x120° 22,5°	3x120° 18°	3x120° 18°	3x120° 18°
Diameter	D		70	82	95	114	134	165	195	240
	B		28	35	45	53	63	80	90	112
	C		44	55	65	80	95	120	150	170
	E		32	41	50	60	72	92	110	140
	F H7		32	40	50	60	70	90	100	130
Bores	G		M4	M4	M6	M6	M8	M10	M10	M12
	n x α		3x120°	3x120°	4x90°	4x90°	4x90°	5x72°	5x72°	5x72°
	H		4,5	5,5	6,5	6,5	8,5	8,5	10,5	13
	n x γ		3x120°	3x120°	3x120°	3x120°	3x120°	6x60°	6x60°	6x60°
	J prebored for dowel pins		4,5	4,5	5,5	7,5	9,5	9,5	11,5	13,5
	n x δ		2x180°	2x180°	2x180°	2x180°	2x180°	3x120°	3x120°	3x120°
Length dimensions	L		27,5	37	38	43	50	60	68	81
	M		17	22	23	24	30	36	40	46
	N		8	10	10	12	15	15	18	20
	O		4,5	6	6	7,5	9	11	11	14
	R		2,8	3,5	4	4	5	5	6,5	7,5
	s air gap		0,4	0,5	0,5	0,5	0,6	0,6	0,8	1
	T		3,5	5,5	5,5	6	7	7	7	8,5
	Z		6	8	8	8	8	8	8	10

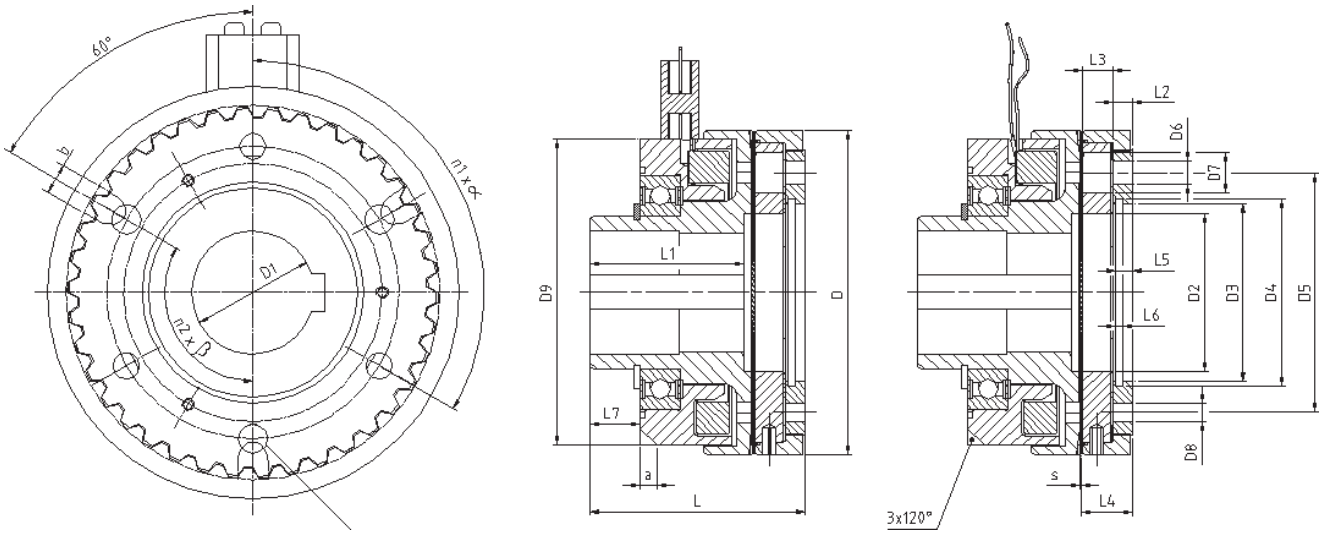
[1] Smaller bores on request.
[2] Provide a key which must support along the whole length M!
[3] Bore diameters in bold print are available ex stock.
[4] Larger sizes on request

Tolerances For bores and keyways see section 1 "Technical information"

Accessories From page 4.49.00

Electromagnetic stationary field tooth clutches
For dry- or wet-running

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE



Fit dowel pins at installation

Series 0813-0 . . Closed bearing
Series 0813-5 . . Open bearing

Series 0813- . 0 . Solenoid body with leads
Series 0813- . 5 . Solenoid body with plug

Material pair steel / brass [3]**:**

Series 0813- . . 0 Normal splining
Series 0812- . . 1 Fixed point splining 1x360°

Series 0812- . . 2 Fixed point splining 2x180°
Series 0812- . . 3 Fixed point splining 4x90°

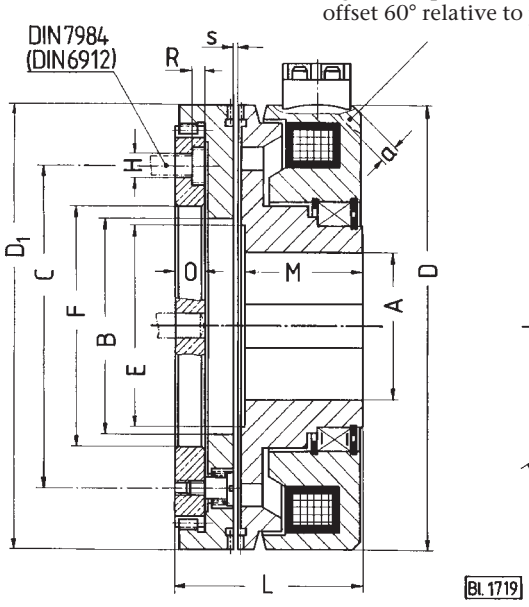
Series / Size			0813- . . . -Size-000000 07	11	15	23	31
Mü		Nm	80	120	350	600	1000
n max		min^{-1}	4000	4000	3800	3700	3300
DC voltage		V			24 [1]		
Current consumption		20 °C A 80 °C A	0.60 0.50	1.25 1.05	1.85 1.50	2.05 1.65	2.45 2.00
Power consumption		20 °C W 80 °C W	14.5 11.8	30.5 24.5	44.1 35.7	49.0 40.0	58.5 47.0
Weight		kg	1.1	1.9	2.9	4.9	9.6
Recommended bores [1]	D1 max Keyway	H7 DIN 6885	25 8x3,3	30 8x2	35 10x2,4	40 [2] 12x3,3	60 [2] 18x4,4
	D1 Keyway	H7 DIN 6885	22 6x2,8	25 8x3,3	30 8x3.3	35 10x3,3	55 [2] 16x4,3
	D1 Keyway	H7 DIN 6885	20 6x2,8	22 6x2,8	25 8x3,3	30 8x3,3	50 [2] 14x3,8
Diameter	D D2 D3 H7 D4 D5 D9		82 36,5 42 44,5 60 74	95 46 52 55 70 90	114 55 62 65 80 106	134 68 72 75 95 122	166 80 90 93,5 120 154
Bores	D6 D7 n1 x α D8 prebored for dowel pins n2 x β		5,8 10 3x120° 4,5 3x120°	6,8 12 3x120° 5,5 3x120°	6,8 13 3x120° 7,8 3x120°	8,5 15 3x120° 9,5 3x120°	8,5 15 6x60° 9,5 3x120°
External groove	ax45° / b		3 / 8	5 / 10	5 / 10	5 / 10	5 / 10
Length dimensions	L L1 -0,1 L2 L3 L4 L5 L6 L7 s air gap		55 42 4,6 6,3 11 2,3 1,85 11,3 0,3	63 45 6 8,7 15 3 2,15 14,5 0,4	69 50 6,5 9 16 3,5 2,15 16,5 0,4	83 61 8,4 11 20 4,5 2,65 22,7 0,4	93,5 66 11,4 13,1 25 5,5 3,15 14 0,5

[1] other bores and voltages on request
[2] 2 keyways spaced at 180°.
[3] other material pairs on request

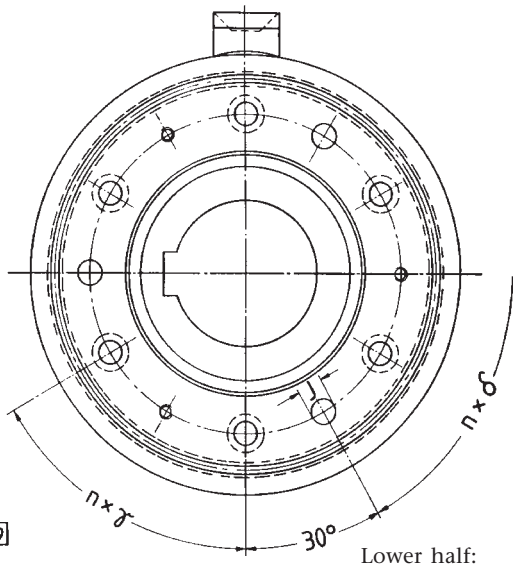
Tolerances For bores and keyways see section 1 "Technical information"
Plug connection See chapter "Accessories"
Sale through Ortlinghaus AG, Zug/Switzerland.

Electromagnetic stationary field tooth clutches
For dry- or wet-running

Ortlinghaus SEIT 1898
DIE TECHNIK DER KONTROLLIERTEN MOMENTE



3 grooves spaced at 120°,
offset 60° relative to plug connection.



Upper half:
Version for **wet-running**
Series 0013-000- . . -004100

Lower half:
Version for **dry-running**
Series 0013-050- . . -004100
J: Fit dowel pins at installation!

Important: Secure with Loctite type 262!

Series / Size			0013-0.0-Size-004100 07	11	15	23	31	43
M_{stat}		Nm	40	80	200	400	800	1600
n_{max}		min^{-1}	4000	4000	3800	3700	3300	3000
DC voltage		V			24			
Power consumption		20 °C W	26	37	42	63	85	86
		80 °C W	21	30	34	51	69	70
J	coil body	$kgcm^2$	5	10	18	60	108	181
	drive armature	$kgcm^2$	4	7	19	40	114	215
Weight		kg	1,6	2,5	3,8	5,9	8,8	14
Recommended bores[2]	A max	H7	**22**	**30**	**35**	**42[1]**	**55[1]**	65[1]
	Keyway	DIN 6885	**6x1,6**	**8x2**	**10x2,4**	**12x2,2**	**16x4,3**	18x2,3
	A	H7	**20**	**25**	**30**	**40**	**50[1]**	
	Keyway	DIN 6885	**6x2,8**	**8x3,3**	**8x3,3**	**12x3,3**	**14x3,8**	
	A	H7			**25**	**35**	**40[1]**	
	Keyway	DIN 6885			**8x3,3**	**10x3,3**	**12x3,3**	
	A	H7				**30**		
	Keyway	DIN 6885				**8x3,3**		
Diameter	D/D1		80/81,5	95	114	134	165	195
	B		35	45	53	63	80	90
	C		55	65	80	95	120	150
	E		28	38	50	55	80	90
	F H7		40	50	60	70	90	100
Bores	H		5,5	6,5	6,5	8,5	8,5	10,5
	n x γ		3x120°	3x120°	3x120°	3x120°	6x60°	6x60°
	J prebored for dowel pins		4,5	5,5	7,5	9,5	9,5	11,5
	n x δ		2x180°	2x180°	2x180°	2x180°	3x120°	3x120°
External groove	groove width x a		6x3	6x3	6x4	8x5	8x6	10x8
Length dimensions	L		51	53	56	61	70	84
	M		28	31	30	37	45	55
	O		6	6	7,5	9	11	12
	R		3,5	4	4	5	5	7
	s air gap		0,5	0,5	0,5	0,6	0,6	0,8

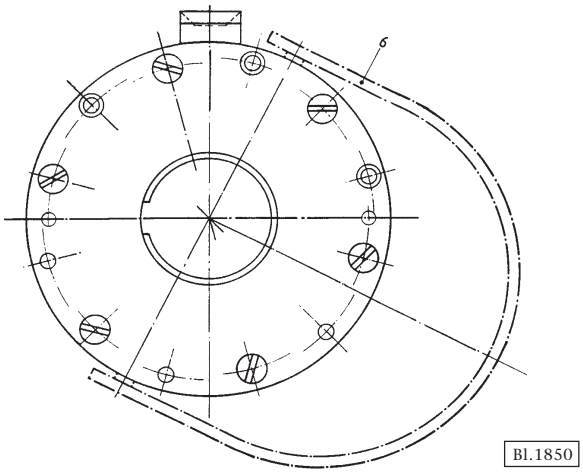
[1] 2 keyways spaced at 180°.
[2] Bore diameters in bold print are available ex stock.

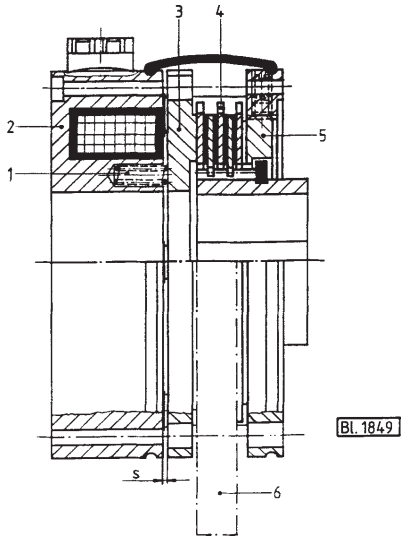
Tolerances — For bores and keyways see section 1 "Technical information"

Plug connection and flat plug — See chapter "Accessories"

Spring-applied multi-plate brakes and twin-face brakes

Operation and installation



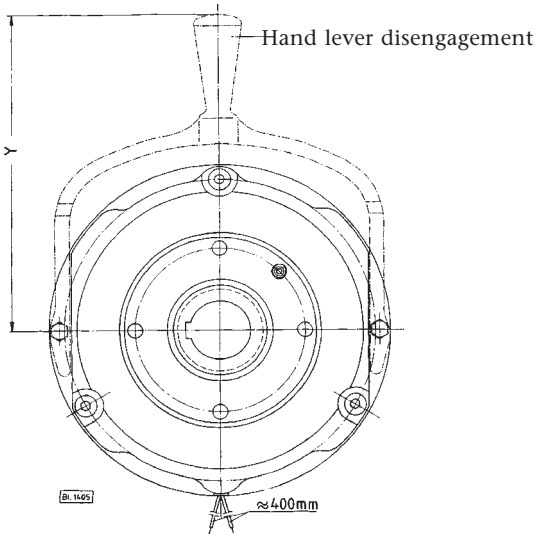


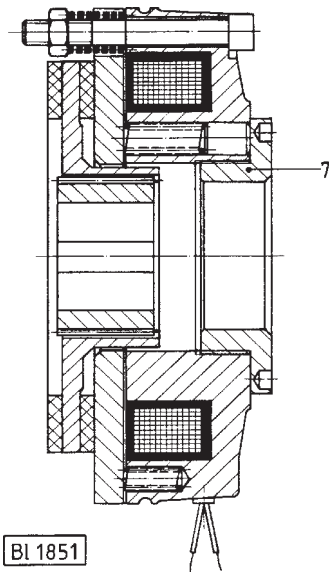
Spring-applied multi-plate brakes, series 0028, 0228

The braking torque is generated by springs (**1**), which are inserted in the coil body (**2**). These press the plate stack (**4**) against the stop plate (centering ring) (**5**), which is secured to the machine frame, via the armature plate (**3**), hence applying the brake. When the operating voltage is applied to the coil, this attracts the armature plate (**3**) to the coil body and the brake is released.

If it is important that the braking time remains constant as far as possible, the wear on the friction linings can be compensated for by adjusting the air gap (**s**).

The following devices are available to enable the brake to be released manually in the case of the operating voltage failing: push-off or pull-off screws in accordance with the fitting situation or hand lever (**6**).





Spring-applied two-face brakes series 0207

The operation of these brakes is the same as for the brake described above.

These brakes are also available with a facility for setting the braking torque. With the aid of an adjusting ring (**7**), the initial pressure in the springs can be varied within certain limits.

Application and installation

Spring-applied multi-plate brakes

Series 0028 and 0228 are available with friction combinations for dry- or wet-running. For this reason these brakes are well suited for machine drives of all types where a high braking torque and high thermal capacity are important.
In the case of dry-running brakes, the friction linings must be protected against penetration of grease and other contamination. For this reason an dust cover for the plate chamber is available.

Power is supplied to the coil body either in the form of 24 V DC via a flat plug or connection box or as 220 V AC at a connection box with integrated rectifier.

Magnetic leakage flux can affect the switching behaviour of the brakes and must be kept as small as possible. If the brake is mounted on a through shaft, an annular gap of adequate size must be provided between the coil body, armature plate bore and the shaft in order to prevent deflection of the magnetic field. This is particularly important in connection with electric motors where magnetization of the shaft can lead to the releasing of the brake being delayed.
Sufficient space must be provided for maintenance work such as setting the air gap and replacing the plates as well as for actuating the hand brake-releasing lever.

Spring-applied twin-face brakes

Supplied for dry-running (generally in open arrangements), the series 0207 brakes can be used universally thanks to their simple construction and the low level of maintenance they require. However, account must be taken of the somewhat lower range of braking torques they provide. They are extensivly used as safety brakes on electric motors.

With these brakes the power is supplied via cables which are connected to the coil body.

Here again care must be taken that sufficient space is left for maintenance work, e.g. for the setting of the braking torque, and in particular for the actuation of the hand lever disengagement.

Seperate clutch and brake working together

A spring-applied brake is often installed in conjunction with an electromagnetically actuated clutch. The spring pressure causes the brake to release slowly, therefore to prevent the clutch engaging before the brake is released (Fig. a), a microswitch can be mounted on the brake (Fig. b). When the armature plate is attracted to the coil body, the microswitch sends a pulse to the clutch contactor. The microswitch can also be replaced by a time relay (Fig. c). The clutch will then not receive power until the brake has been released (approx. 0.1 - 0.2 s), this being controlled via the microswitch or time relay.

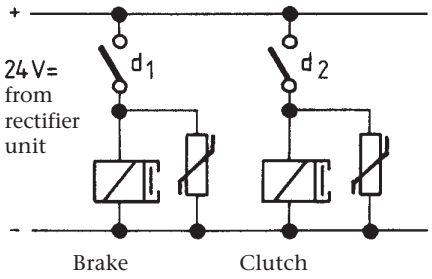


Fig. a

Control by micro-switch

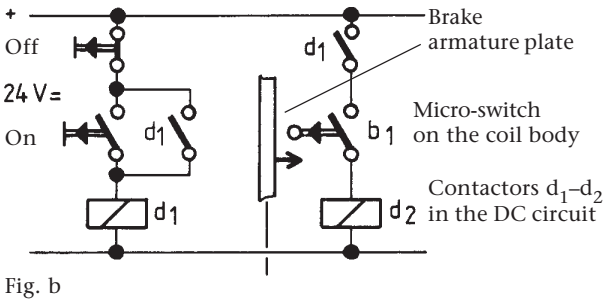


Fig. b

Control by time relay

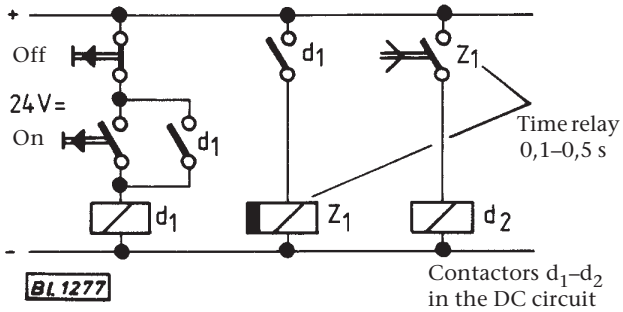
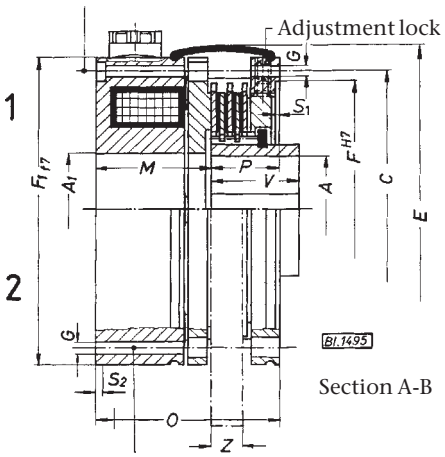
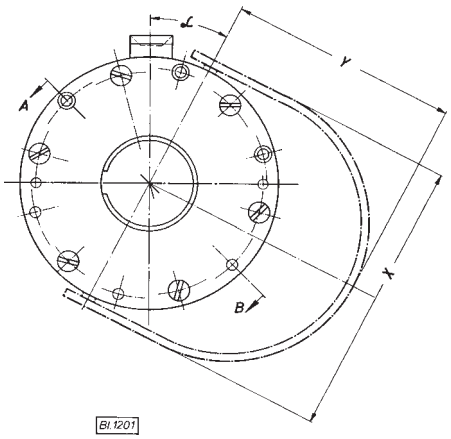
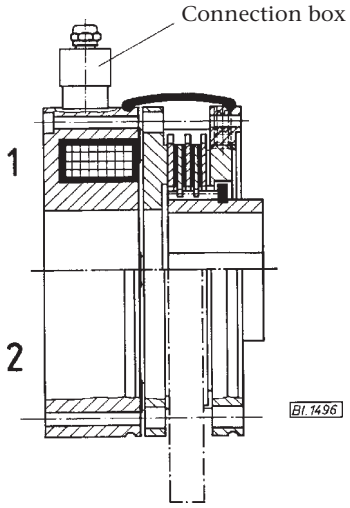


Fig. c

6 holes spaced at 60°







Series 0028-.0.-..-002
Upper half **1**: Version for centering in centre ring (**F**). Screws are included.
Lower half **2**: Version for centering on coil body ($\mathbf{F_1}$).

Series 0228-.0.-..-002
Connection box 220 V AC and built-in rectifier or connection box with terminal for 24 V DC.

Series / Size			0028-.0.-Size-002/0228-.0.-Size-002000 03	07	11	15	23	31	43
M_{dyn}		Nm	7,5	17,5	35	75	150	300	600
n_{max}		min^{-1}	4000	3200	2700	2100	1800	1600	1450
DC voltage		V				24			
Power consumption		20 °C W	28	39	43	54	108	124	139
		80 °C W	22	31	35	44	87	101	113
J internal		$kgcm^2$	1	2	5	16	24	43	115
Weight		kg	2	3,5	5,5	11	16	26	42
ØA prebored			16	18	18	20	25	25	30
ØA1[1]			31	39	45	62	67	72	80
Recommended bores[2]	A max	H7	28	36	44	60	65	70	78
	Keyway	DIN 6885	8x2	10x2,4	12x2,2	18x2,3	18x2,3	20x4,9	22x5,4
	A	H7	**25**	**35**	**40**	**50**	**60**	**60**	**70**
	Keyway	DIN 6885	**8x3**	**10x3,3**	**12x3,2**	**14x3,8**	**18x4,3**	**18x4,3**	**20x4,7**
	A	H7	**20**	**30**	**30**	**40**	**50**	**50**	**60**
	Keyway	DIN 6885	**6x2,8**	**8x3,3**	**8x3**	**12x3,2**	**14x3,6**	**14x3,8**	**18x4,4**
	A	H7				**40**	**40**		**45**
	Keyway	DIN 6885				**10x3,3**	**12x3,2**		**14x3,8**
Diameter	C		88	100	120	150	170	195	222
	E		106	125	142	175	200	235	265
	F H7		75	90	110	140	160	180	205
	F_1 f7		100	115	135	165	190	220	250
	G		5,5	5,5	6,5	6,5	8,5	10,5	12,5
Length dimensions	M		41	41,5	48	60,5	67,5	75	84
	O		61	65	75	95	105	120	138
	P		20	23,5	27	34,5	37,5	45	54
	S_1		2,5	2,5	2,5	2,5	3	3	5
	S_2[3]		1,5	1,5	1,5	2	3	3	4
	V		30	35	40	45	55	60	70
	X		111	127	149	179	206	236	270
	Y		90	100	120	145	200	265	290
	Z		12	12	15	15	16	16	18
	α°		29	28	26	27	27	27	26

[1] With a continuous shaft, the shaft-Ø must be at least 6 mm less than the coil body bore A1.
[2] Bore diameters in bold print are available ex stock.
[3] Only for version with centering on the coil body.

Plug connection and flat plug
See chapter "Accessories", page 4.49.00

Friction combinations
Standard version steel/organic friction lining for dry-running.
The plate chamber must be sealed to prevent entry of lubricants.
On request steel/brass for wet-running.

Tolerances
For bores and keyways see section 1

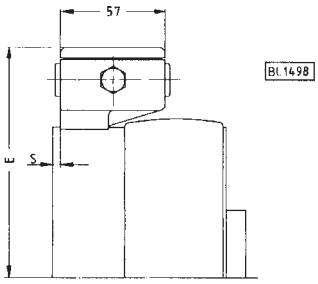
Key for design variations

0028-. 0 .- size-002000 **0228-. 0 .- size-002000**			Terminals or connection box no.
-. 00- **-. 01-**	Without dust protection	Without hand lever disengagement with hand lever disengagement	
-. 02- **-. 03-**	with dust protection	Without hand lever disengagement with hand lever disengagement	
0028-00 .- **0028-20 .-** **0028-40 .-**	Centering on coil body	Plug connection 24V DC Connection box 220 V AC, with integrated rectifier Connection box and terminal 24 V DC	0085-330-00-00. 2028-140-Size-010 2028-140-Size -000
0028-10 .- **0028-30 .-** **0028-50 .-**	Centering on centre ring	Plug connection 24 V DC Connection box 220 V AC, with integrated rectifier Connection box and terminal 24 V DC	0085-330-00-00. 2028-140-Size-010 2028-140-Size-000
0228-00 .- **0228-40 .-**	Centering on coil body	Connection box 220 V AC, with integrated rectifier Connection box 24 V DC	0085-342-00-0.. 0085-341-00-000
0228-10 .- **0228-50 .-**	Centering on centre ring	Connection box 220 V AC, with integrated rectifier Connection box 24 V DC	0085-342-00-0.. 0085-341-00-000

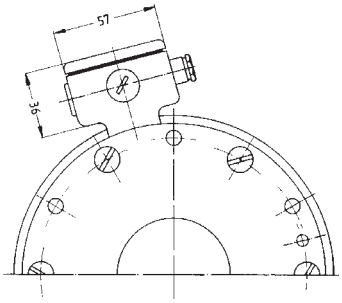
Example of order: Electromagnetic spring-applied multi-plate brake, size 31
centering in centre ring, with plug connection
without dust protection, without hand lever disengagement
} **Series 0028-100-31-002000**

Connection boxes

2028-140-Size-000000
Connected voltage 24 V DC
Type of protection IP 54

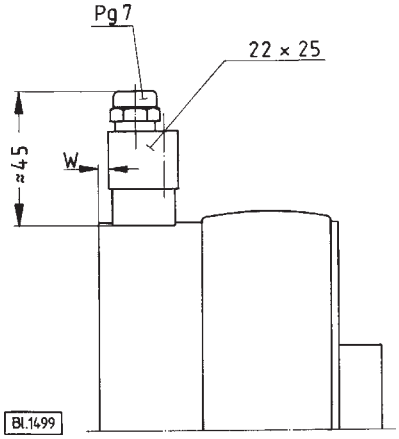


2028-140-Size-010000
Connected voltage 220 V AC and integrated rectifier
Type of protection IP 54



Series	**0028-.0.-Size-002000**						
Size	**03**	**07**	**11**	**15**	**23**	**31**	**43**
E	95	102	113	128	141	156	171
S	–	–	2	2,5	4,5	6,5	10,5

0085-341-00-000000
Connected voltage 24 V DC



0085-342-00-001200
Max. load to 1.2 A

0085-342-00-030000
Max. load to 3 A

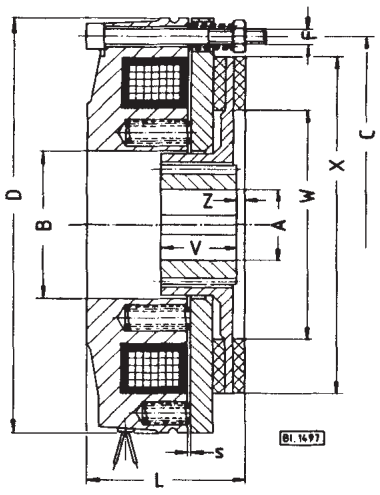
Connected voltage 220 V AC, with integrated rectifier

Series	**0228-.0.-Size-002000**						
Size	**03**	**07**	**11**	**15**	**23**	**31**	**43**
W	1,5	1,5	3	4,5	5,5	7,5	11,5

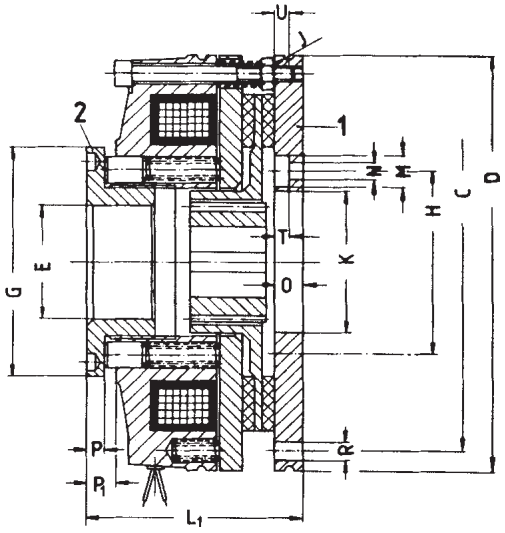
Key for design variations

0207- . 0 . - size-000000			
-00 .- **-10 .-**	Without support plate With support plate	With flying leads 24 V DC	
-. 00- **-. 01-**	Without hand lever disengagement With hand lever disengagement	Without dust protection	
-. 02- **-. 03-**	Without hand lever disengagement With hand lever disengagement	With dust protection	
-. 04- **-. 05-**	Without hand lever disengagement	Without dust protection With dust protection	With torque adjustment
-. 06- **-. 07-**	With hand lever disengagement	Without dust protection With dust protection	With torque adjustment

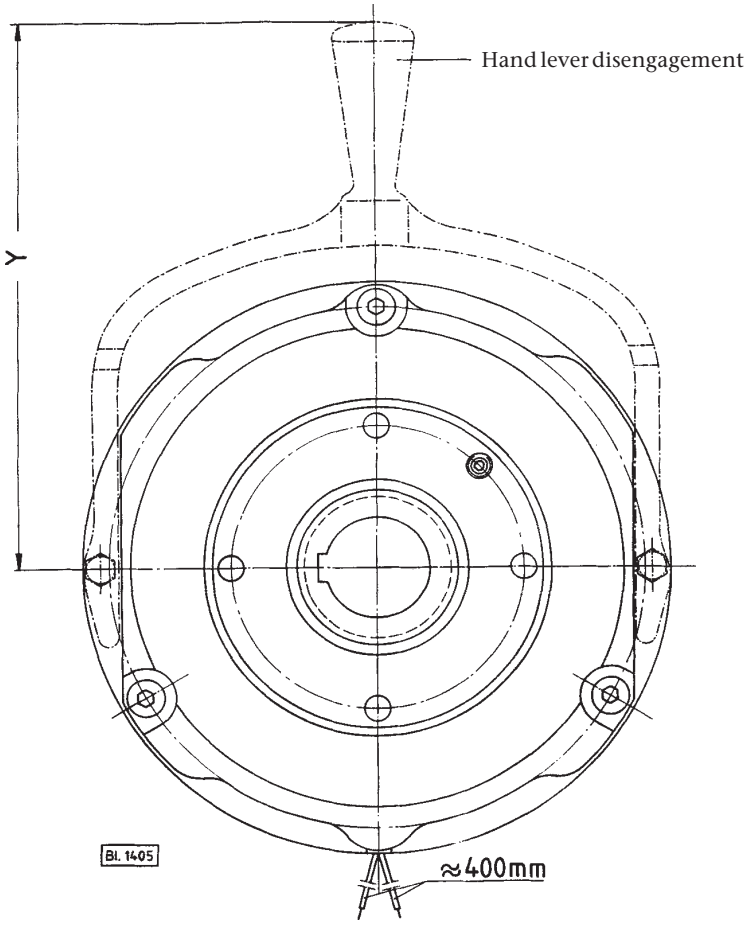
Example of order: Electromagnetic spring-applied twin-face brake, size 31, without support plate, with leads lead out, 24 V DC, with hand lever disengagement, with dust protection } **Series 0207-003-31-000000**



Series 0207-000
Standard version



Series 0207-104
With support plate (**1**) and central torque adjustment (**2**)



Series / Size			0207-.0.-Size-000000 02	03	07	11	15	17	23	31
M_{dyn}		Nm	4	8	16	32	60	80	150	240
n_{max}		min^{-1}	3000	3000	3000	3000	3000	3000	3000	2500
DC voltage		V				24				
Power consumption		20 °C W	23	26	30	40	52	61	65	70
		80 °C W	18,5	21	24	32	42	49	53	57
J	internal	$kgcm^2$	0,3	0,8	2	4,5	17	36	40	99
Weight		kg	1	1,5	3,5	5,2	8,5	10,2	15	25
ØA	prebored		8	10	12	15	18	20	25	30
ØA max		H7	11	15	24	28	34	38	45	50
Keyway		DIN 6885	4x1,8	5x2,3	8x2	8x2	10x2,4	10x2,4	14x2,1	14x3,8
Diameter	B		27	35	45	52	60	67	78	90
	C		72	90	112	132	145	170	196	230
	D		83	100	125	145	160	185	212	250
	E		–	25	35	40	48	55	62	72
	F		3xM4	3xM5	3xM6	3xM6	3xM8	3xM8	3xM8	6xM8
	G		–	52	68	80	90	102	115	135
	H		30	45	56	62	74	84	100	120
	K_{H7}		20	30	40	45	55	65	75	90
	M		8	10	11	11	15	15	15	15
	N		3x4,5	3x5,5	3x6,6	3x6,6	3x9	3x9	3x9	6x9
	R		3x4,3	3x5,3	3x6,4	3x6,4	3x8,4	3x8,4	3x8,4	6x8,4
	W		47	54	66	80	90	104	124	148
	X		62	77	96	117	127	152	176	210
Length dimensions	J		–	1,5	1,5	1,5	2	2	2	2
	L		34,5	39,5	48	54	63	69	83	96
	L_1		–	53	66	73	86	92	107	120
	O		6	7	9	9	11	11	11	11
	P		–	4	5	6	7	7	7	7
	P_1		–	6,5	9	10	12	12	13	13
	s air gap		0,2	0,2	0,2	0,3	0,3	0,3	0,3	0,4
	T		3,5	4,2	4,8	4,8	6	6	6	6
	U		–	3,5	4,5	4,5	5,5	5,5	5,5	5,5
	V		18	20	20	25	30	30	35	40
	Y		–	108,5	123	134	158	183	224	264
	Z		1,8	2,5	3,5	3	3	3	4,5	6,5

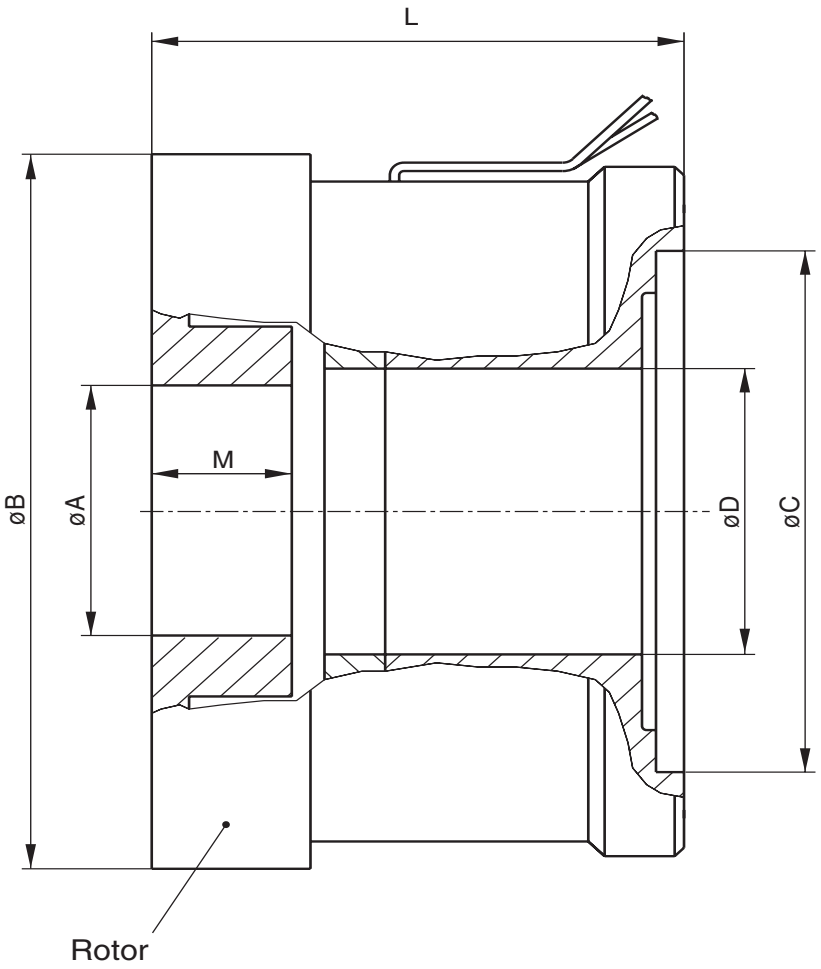
The brakes can also be supplied with spacer bushes, series **0207-.0.-..-010**

Sale through Ortlinghaus AG, Zug, Switzerland

Friction combinations **Only for dry-running;** the friction linings must be kept free of lubricants!

Tolerances For bores and keyways see section 1 "Technical information"

Accessories From page 4.49.00

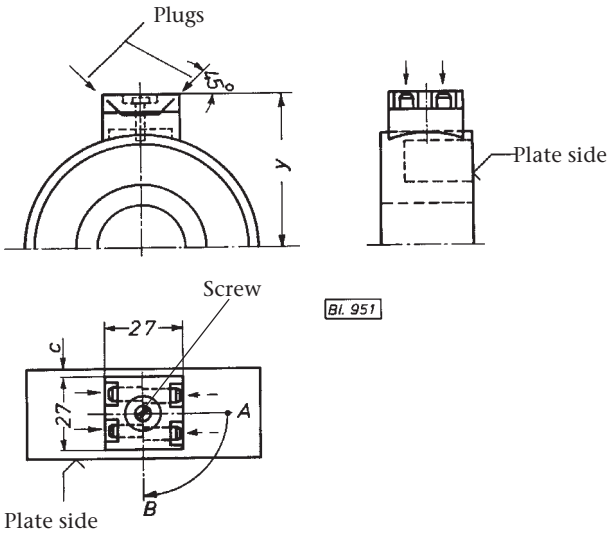


Order no.	**Mstat** Nm	**Mdyn** Nm	**P20** W[1)]	**P80** W[1)]	**A** mm	**B** mm	**C** mm	**D** mm	**L** mm	**M** mm
0208-001-03-001000	2	1,8	11,5	9,3	15	57		23	27	10
0208-000-05-011000	10	9	24	19,6	24	100	66	40	42	20
0208-000-04-002000	13,5	12	21	17	30	85	62	34	57	15
0208-000-04-003000	14	12	26	21	25,5	85	62	34	40	15
0208-001-05-001000	40	35	32	26		84			74	
0208-000-07-001000	35	31	48	39	80	134		60	42	

Other design variations and sizes on request.

[1)] Voltage 24 DCV

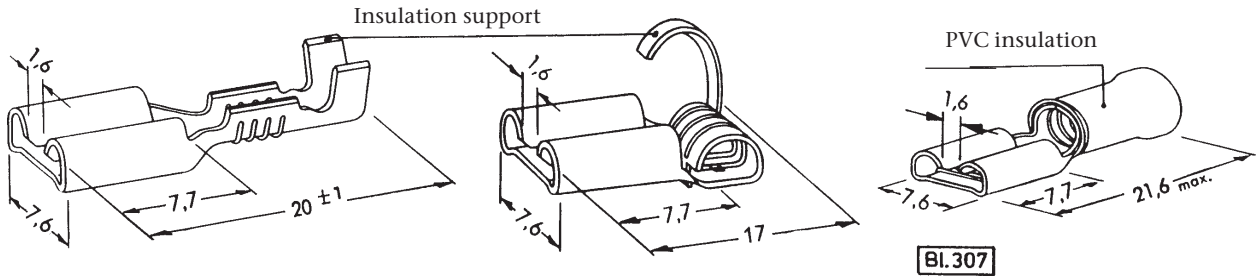
Plug connections 0085-330-00-00.000



The plug connection shown is the standard version (**A**). It can be turned 90° (to position **B**) to meet the particular fitting conditions.
Take care when carrying out adjustment of the plug connection!
Loosen the screw, turn the terminal **only in the direction of the arrow** and tighten up the screw again. Take care not to squeeze the connection wires or to draw them around the thread of the screw!
When ordering please state the required plug position:
Position A: 0085-330-00-000000
Position B: 0085-330-00-001000

Size		03	07	11	15	23	27	31	32	43	47	51	55	59
Series **0010**	c		1	1,5	1,5	2,5	2,5	4	4	5	7	7,5	9,5	12,5
	y		54	62	72	82	88	97	97	112	120	135	162	170
Series **0013**	c		0,5	0,5	1,5	2,5		4		5				
	y		54	62	72	82		97		112				
Series **0028**	c	1,5	1,5	3	4,5	5,5		7,5		11,5				
	y	64	72	82	97	110		125		140				

Flat plug 0085-380-00-001000

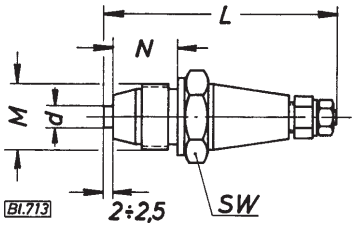


Flat plug — Right-angle plag — Insulated flat plug

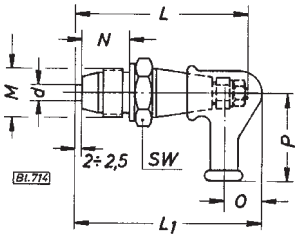
	Order no.	Wire section mm²	Insulation Ø mm
Flat plug Hand plier	**0085-380-00-000000** **0085-390-00-000000**	1,0 – 2,5 0,3 – 2,5	3,0 – 4,3 —
Right-angle plug Hand plier	**0085-380-00-001000** **0085-390-00-001000**	0,8 – 3,3 0,8 – 3,3	2,8 – 5,3 —
Insulated flat plug Hand plier	**0085-380-00-002000** **0085-390-00-002000**	1,0 – 2,5 1,0 – 2,5	2,6 – 4,0 —

The relivant hand pliers permit solderless, fully crimped connections to be created. The conductor is surrounded completely without any cavities and with high resistance to pulling out, protection against corrosion is also provided. The insulation support on the plug is pressed around the cable insulation in the crimping process and provides protection against vibration, bending of the conductors and pushing-back of the insulation. It is possible to solder the flat plug and right-angle plug versions after crimping of the connection point and the insulation support has been carried out with conventional hand pliers.

Plug-type brushholders, standard version



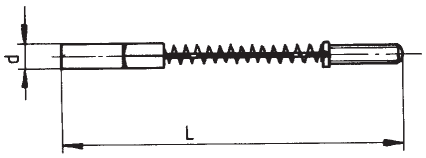
Version without protective cap



Version with protective cap

Protective cap	Order number for plug-type brushholders Copper graphite for dry-running	Woven bronze for wet-running	Replace. brush Size	Thread M	Brush-Ø d	L	L1	N	O	P	SW
without	**0085-102-00-003**	**0085-122-00-003**	00	M18x1,5	6	66	69	17	13	32	22
	0085-102-01-003	**0085-122-01-003**	01	M16x1,5	6	69	74	20	13	32	19
	0085-102-03-003	**0085-122-03-003**	03	M14x1,5	5	55	59	12	13	32	17
with	**0085-103-00-003**	**0085-123-00-003**	00	M18x1,5	6	61	64	17	13	32	22
	0085-103-01-003	**0085-123-01-003**	01	M16x1,5	6	69	74	20	13	32	19
	0085-103-03-003	**0085-123-03-003**	03	M14x1,5	5	55	59	12	13	32	17

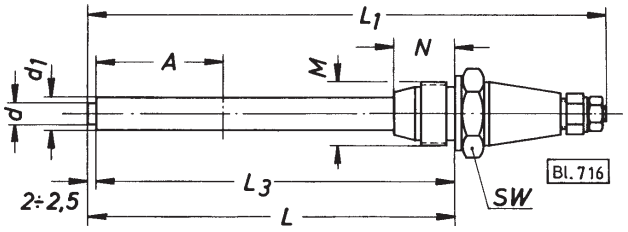
Replacement brushes



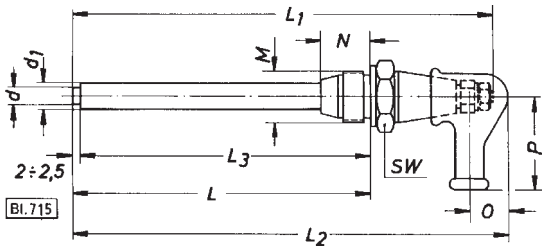
Brush-holders Size	Order number for replacement brushes Copper graphite for dry-running	Woven bronze for wet-running	Brush-Ø d	l
00	**0085-210-00-003**	**0085-231-00-003**	6	86
03	**0085-210-03-003**	**0085-231-03-003**	5	69

Bl.1839

Plug-type brushholders, extended version



Version without protective cap

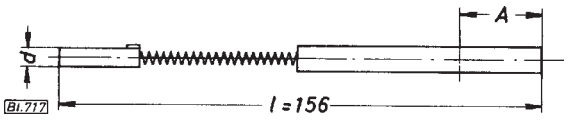


Version with protective cap

Protective cap	Order number for plug-type brushholders Copper graphite for dry-running	Woven bronze for wet-running	Replace. brush Size	Thread M	Brush-Ø d	Ød1	L	L1	L2	L3	N	O	P	SW
without	**0085-102-00-010**	**0085-122-00-010**	00	M18x1,5	6	9	100	145	150	98	20	13	32	22
	0085-102-01-010	**0085-122-01-010**	01	M16x1,5	6	9	100	145	150	98	20	13	32	19
with	**0085-103-00-010**	**0085-123-00-010**	00	M18x1,5	6	9	100	145	150	98	20	13	32	22
	0085-103-01-010	**0085-123-01-010**	01	M16x1,5	6	9	100	145	150	98	20	13	32	19

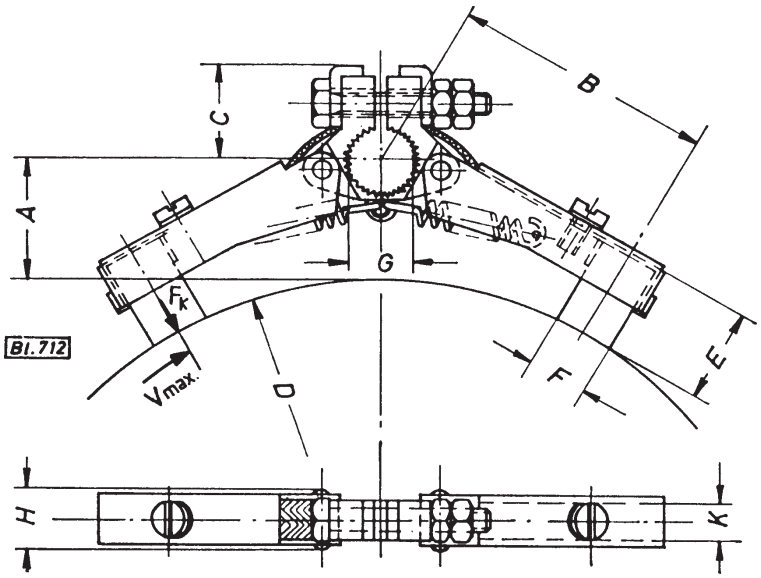
Where required the current leads and brushes can be shortened by the Dimension A (A max. = 70 mm).

Replacement brushes



Brush-holders Size	Order number for replacement brushes Copper graphite for dry-running	Woven bronze for wet-running	Brush-Ø d	l
00/01	**0085-210-00-010**	**0085-231-00-010**	6	156

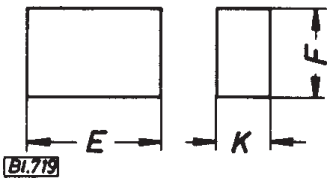
Caliper-type brushholder



v_{max} = 15 m/s
F_K = Contact pressure (N)

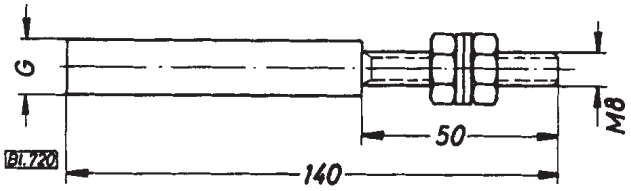
Caliper-type brushholders Order number	Type of running	ØD clutch Series 0006	0011	0012	Clutch Size	Dimensions A	B	C	E	F	G	H	K	F_K in N
0085-134-01-000 **0085-144-01-000**	dry wet	– 85 100 110 128 154 200 –	– 82 95 114 134 165 195 210	70 82 95 114 134 165 195 –	03 07 11 15 23 31 43 47	25 22 21 20,5 19,5 19 18 18	~ 42	15	16	10	10	11	6,4	3 8
0085-134-02-000 **0085-144-02-000**	dry wet	245 – 295 –	240 290 – 310	240 – – –	51 55 59 59	26 25 25 24,5	~ 50	20	20	16	13	12	8	5 10

Replacement brushes



Replacement brushes Order number	Caliper-type brushes Size	Version	Type of running	Dimensions E	F	K
0085-200-01-000 **0085-221-01-000**	01	Copper graphite Woven bronze	dry wet	16	10	6,3
0085-200-02-000 **0085-221-02-000**	02	Copper graphite Woven bronze	dry wet	20	16	8

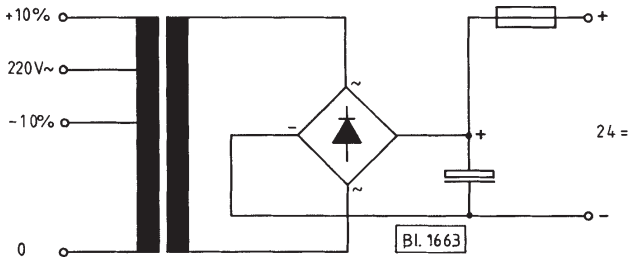
Mounting pins (insulated)



Mounting pins Order number	Caliper-type brushholder size	ØG
0085-370-01-000	01	10
0085-370-02-000	02	13

Rectifier units

Electromagnetic clutches and brakes are mainly designed for 24 V DC. The rectifier units produce this voltage from the AC power supply.
Each device consists of a transformer, Bridge rectifier, smoothing capacitor, connection terminals and fuse.
Adjustment or correction of the DC voltage can be obtained to some extent with the aid of the different transformer connections. The smoothing capacitor serves for the preliminary alignment of the residual ripple in the DC voltage. In order to reduce the residual ripple further, additional capacitors can be fitted parallel to the initial one (rated voltage of the capacitors $U_N \geq 35$ V).

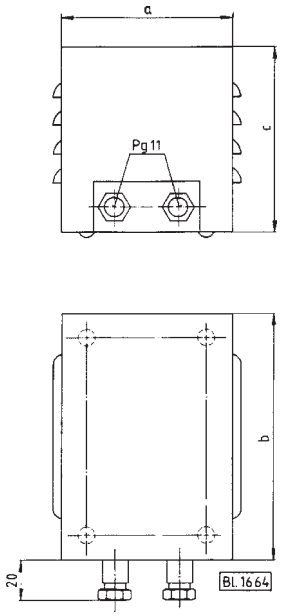


Technical data:

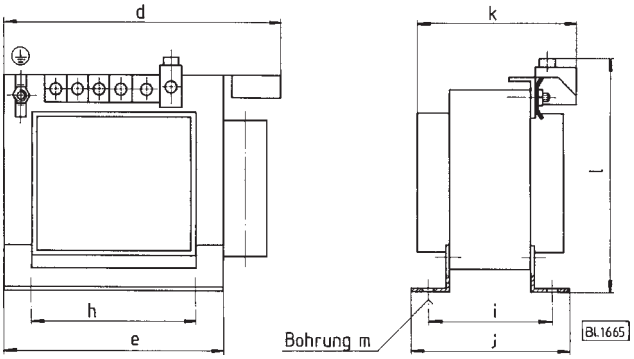
Primary voltage:	220 V AC, 50 Hz bis 60 Hz
Secondary voltage:	24 V DC
Residual ripple:	approx. 20 %
	(1,8 A version approx. 10 %)
Secondary current:	1,8 A, 5 A, 12 A

Other voltages and currents on request.

Closed version:
0085-000-24- . . . 100
Type of protection
to DIN 40050 IP 20



Open version:
0085-030-24- . . . 100
Type of protection to DIN 40050 IP 20



Rectifier unit 24 V DC Order number	Secondary current in A	Dimensions a	b	c	d	e	h	i	j	k	l	m
0085-0 . 0-24-018100	1,8	110	140	110	102	65	50	52	64	92	82	4,8
0085-0 . 0-24-050100	5	110	140	110	135	97	84	62	76	86	105	5,8
0085-0 . 0-24-120100	12	180	180	150	160	120	90	70	85	113	117	7

Clutch/brake Series	0006	0008	0009	0010	0011	0012	0013	0028	0207	Rectifier unit Order number
Size	07-23	00-13	00-17	07+11	07-23	03-11	07+11	03+07	02-11	**0085-0 . 0-24-018100**
Size	31-59	17-42	25-42	15-51	31-55	15-51	15-43	11-23	15-31	**0085-0 . 0-24-050100**
Size				55-59	59			31+43		**0085-0 . 0-24-120100**

Electronic load relays
Order number 0085-669-04-020000

The electronic load relay is a compact, fully electric, switching element for contactless switching of resistive and inductive DC loads, such as for example electromagnetically actuated clutches, brakes and valves.
It is characterised by a fast, accurately repeatable and wear free switching.
Due to fast demagnetisation of the inductive loads, the negative voltage when switching off is limited to - 30 volts.
The relay has a low voltage fuse and 3 LEDs which indicate the state of the relay. The green LED lights up when the supply voltage is applied and the fuse is in order. The yellow LED lights up when the control voltage is applied and switches the outlet through. When the red LED lights up, the relay is in an unacceptable state.
The control output of the relay recognises an open output in the switched-on state, a short circuit after load voltage and also any unacceptable heating of the relay. In all these cases the control output C switches from high to low and the red LED lights up. If the fuse F fails, output C likewise changes from high to low. In this case the red LED does not light up, and the green LED goes out.
The control and load circuits of the relay are galvanically isolated from each other. The load relay is fitted by simply snapping onto a TS 35 carrier rail.

Technical data

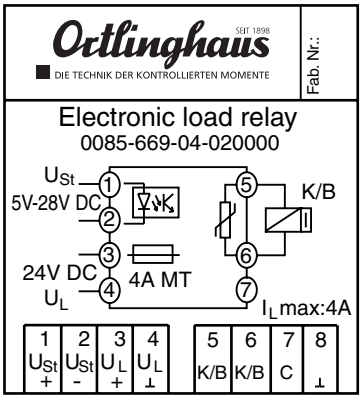
Control voltage	5V - 28V DC (smoothed)
Load voltage	24V DC +/- 10%
Residual ripple (load voltage)	20%
Voltage drop (input/output)	0,5V
Load current	max. 4A
Control out C	24V DC - max. 100 mA
Lead cross-sectional area	max. 2,5mm²
Fuse	4A MT low voltage glass tube fuse
Ambient temperature	0° - 50° C

Connections

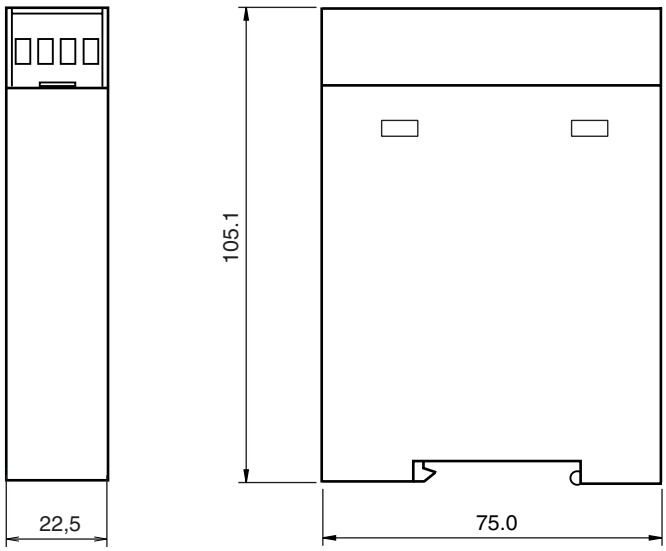
1	U_{ST}	control voltage	5V - 28V DC
2	U_{ST}	control voltage	Ground
3	U_L	load voltage	24V DC
4	U_L	load voltage	Ground
5	K/B	output	
6	K/B	output	Ground
7	C	Control out	
8			Ground

Further relays on request.

Schematic circuit diagram



Dimensions



Fast starting devices
Order number 0085-609-02-020000

This device serves to shorten the switching time of electromagnetically actuated clutches and brakes.

Operation

Electromagnetically actuated clutches and brakes are designed in the main for operating voltages of 24 V DC. With normal excitation and this voltage, the variation of the current and voltage with time is as shown in Fig. 1. A varistor should be fitted directly to the inductance to be switched in order to limit the negative voltage spikes.
If the inductance is triggered with the rapid starting device, the course of the current and voltage is as shown in Fig. 2. In this case over-excitation of the solenoid coil with approx. 90 V takes place at switching. The increased current resulting from this brings about a shortening of the switching time of up to 75% depending on the particular inductance. The duration of the over-excitation can be set in the range 2 ms to 50 ms with the aid of two trimming resistances on the printed circuit board.
The rapid starting device functions electronically without mechanical relays. The control voltage U_C is separated galvanically from the over-excitation and load voltages with opto-electronic couplers. The state of the device is shown with LEDs:

LED 1 (green) load switched
LED 2 (yellow) load voltage present
LED 3 (red) over-excitation voltage present

Technical data

Control voltage:	6 V–24 V DC (smoothed)
Load voltage:	24 V DC (e.g. rectifier unit 0085-0.0-24-018000)
Over-excitation voltage:	approx. 90 V
Max. load current:	2 A (48 W)
Over-excitation time:	2 ms – 50 ms
Ambient temperature:	0 °C – 40 °C
Max. switching frequency:	200 operations/min.

Terminal loading (on the mounting plate)

Terminal 1:	Terminal 2:
1 + 24 V DC	1 L_1
2 ⊥	2 N
3 + U_C	3 ⏚
4 ⊥ U_C	
5 K/B	
6 K/B	

Schematic diagram for course of voltage and current

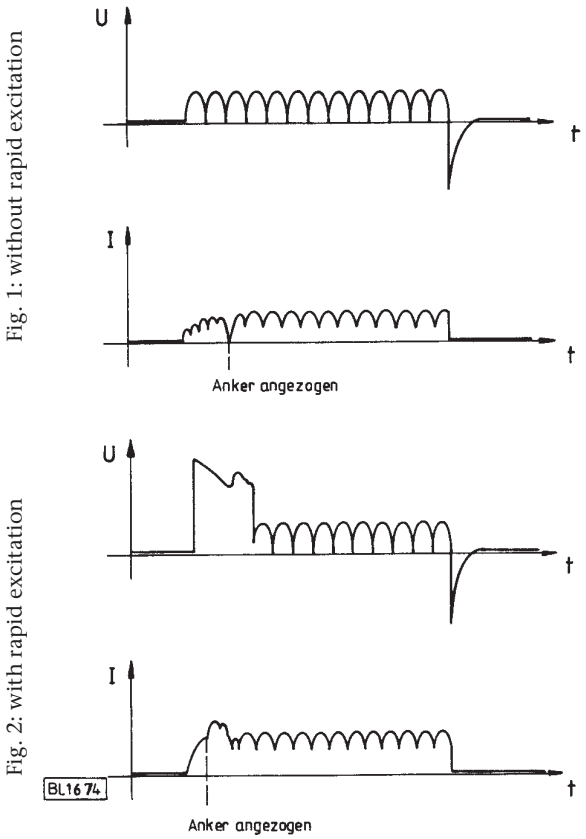
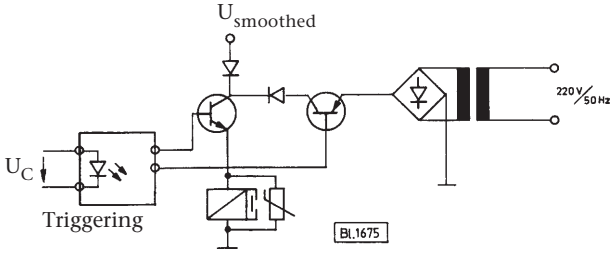


Fig. 1: without rapid excitation

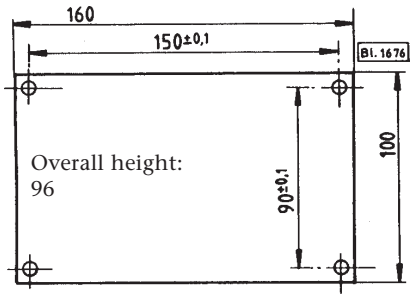
Fig. 2: with rapid excitation

Anker angezogen = armature drawn

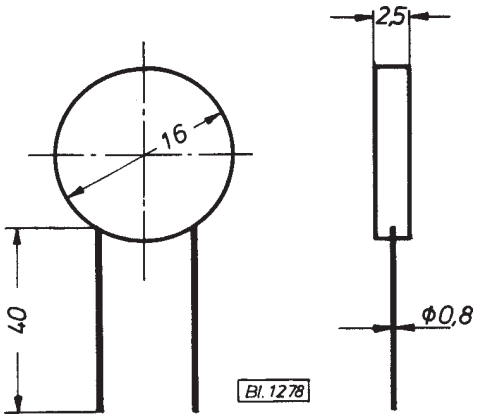
Schematic circuit diagram



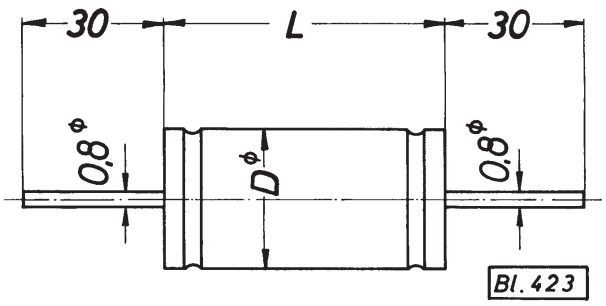
Mounting plate



Special varistors
Order number 0085-800-00-000000
50 V, for all series and sizes



Spark-quenching capacitors



Clutch/brake								Spark-quenching capacitor			
Series	0006 0011	0008 0009 0081	0010	0012	0013	0028 0228	0207	Order number	µF	Dimensions D	 L
Size	07-31	00-33	07-31	03-31	07-31	03-23	02-23	**0085-500-02-000000**	2	20	45
Size	43-59		32-59	43-51	43	31+43	31	**0085-500-04-000000**	4	20	75