

INDUCTION DYNAMOMETERS OF THE SERIES ASD UP TO 1000 kW

The ASD series asynchronous dynamometers are designed for measuring the mechanical output at the tested machine shaft and for making out controlled braking and driving torques. They allow to load and drive tested rotating equipment (electric machine, combustion engine, gearbox, etc.). The ASD series dynamometers enable to work in four-quadrant mode, i.e. they can both brake and drive tested equipment in both directions of rotation.

Asynchronous dynamometers are supplied by frequency converters which enable to recuperate braking energy to the electric network via a recuperative unit or to use it for supplying the intermediate circuits of other frequency converters.

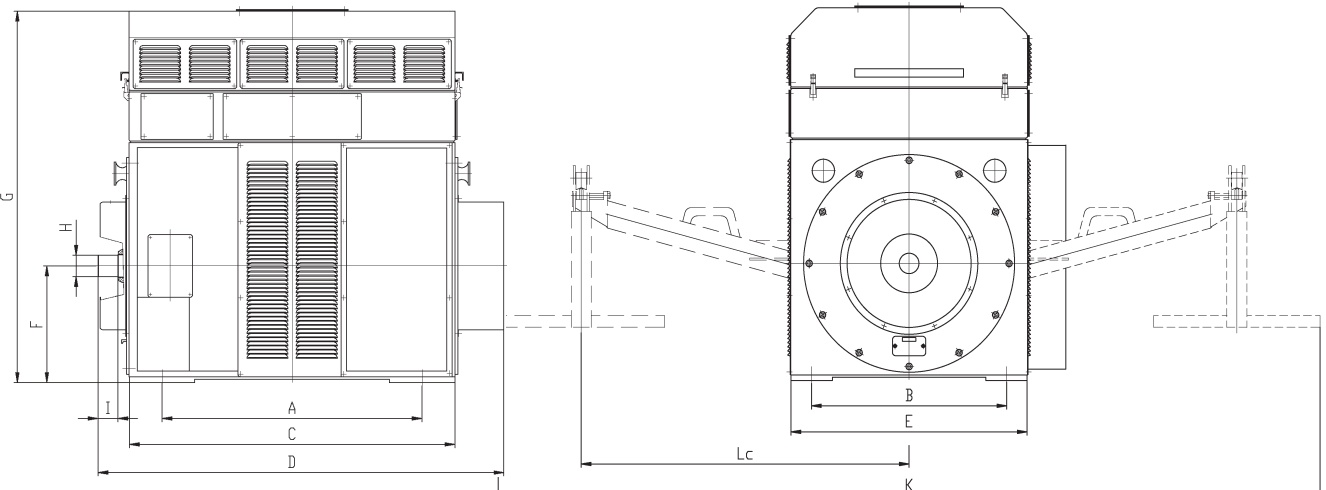
The advantage of the ASD series dynamometers is a low moment of inertia, wide range of operating speed and operation with low maintenance demands.

Messerfolg Brno offers two variants of ASD dynamometers. Dynamometers of **ASD P** type measure torque by a force sensor located between the inner tilting part and the machine's outer frame. Dynamometers of **ASD S** type use a strain-gauge shaft for torque measuring located straight on the output end of the dynamometer shaft.

Messerfolg Brno supplies, according to customers' requirements, also complete test stands with asynchronous dynamometers for testing laboratories of electric rotating machines, gearboxes, hand tools and other equipment. Apart from the load drive with dynamometer, such stands further include a measuring system with converters and multifunctional system measuring instruments, control and operating part, PC set and application software. The basic software always includes the measuring part for data collection and analysis with the possibility of report printing. Extended custom versions of the application software are also available upon customers' requirements.



DYNAMOMETER TYPE ASD P			ASD 15K-4 ASD P015-40093		ASD 30K-2 ASD P030-20036		ASD 46K-2 ASD P046-20220		ASD 50K-4 ASD P050-40312		ASD 85K-4 ASD P085-40541		ASD 100K-4 ASD P100-40637		ASD 153K-4 ASD P153-40947	
PARAMETERS OF THE DYNAMOMETER			Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor
Rated power output	P _n	kW	15	13	30	30	46	42	50	45	85	77	100	100	153	145
Power output at n _{max}	P _{nmax}	kW	6	5,2	30	30	26	20	25	23	40	32	55	52	105	100
Rated torque	M _{n1}	Nm	93	80,6	35,8	35,8	220	200	312	281	541	490	637	637	974	923
Torque at n	M _{n2}	Nm	47,8	56,4	28,7	28,7	108,7	160,4	159	179	225	283	265	281	487	462
Torque at n _{max}	M _{nmax}	Nm	9,5	8,3	28,7	28,7	41,3	31,8	40,0	36,6	64,0	51,0	88	83	201	191
Maximum torque	M _{max}	Nm	150		50		200		450		800		1 000		1 300	
Calibration torque	M _{kai}	Nm	100		40		200		300		700		900		1 000	
Rated speed	n ₁	min ⁻¹	1 540	1 540	8 000	8 000	2 000	2 000	1 530	1 530	1 500	1 500	1 500	1 500	1 500	1 500
Speed	n ₂	min ⁻¹	3 000	2 200	10 000	10 000	4 050	2 500	3 000	2 400	3 600	2 600	3 600	3 400	3 000	3 000
Maximum speed	n _{max}	min ⁻¹	6 000		10 000		6 000		6 000		6 000		6 000		5 000	
Minimum operating speed	n _{min}	min ⁻¹	50		50		50		50		50		50		50	
No-load current	I ₀	A	11,6		17,1		25,4		32,9		69,0		76,0		130,0	
Rated current	I _{n1}	A	27,1		52,4		82,4		87,1		167,0		180,0		268,4	
Rated voltage	U _{n1}	V	360	360	390	390	345	360	360	360	400	400	400	400	400	400
Voltage at n	U _{n2}	V	360	360	390	390	360	360	360	360	400	400	400	400	400	400
Rated frequency	f _{n1}	Hz	50	53	132	135	65	68	50	52	49	51	49	51	49	51
Frequency at n	f _{n2}	Hz	100	76	164	169	132	85	98	82	117	89	118	116	98	102
Maximum frequency	f _{nmax}	Hz	195	203	164	169	198	202	198	202	197	203	198	202	164	169
Power factor	-		0,79		0,88		0,87		0,86		0,78		0,81		0,78	
TECHNICAL DATA																
Calibration arm	L _C	m	0,5099		1,0194		1,0194		1,0194		1,0194		1,0194		1,0194	
Calibration weight	m _{KAL}	kg	20		4		20		30		70		90		100	
Sensors of winding temperature			KTY84		PTC		KTY84		KTY84		KTY84		KTY84		KTY84	
Temperature sensor rear bearing (AS)			Pt100		Pt100		Pt100		Pt100		Pt100		Pt100		Pt100	
Temperature sensor rear bearing (BS)			Pt100		Pt100		Pt100		Pt100		Pt100		Pt100		Pt100	
Moment of inertia	J	kgm ²	0,0766		0,053		0,2626		0,4289		0,445		0,925		0,925	
Colour of dynamometer			RAL7035		RAL7035		RAL7035		RAL7035		RAL7035		RAL7035		RAL7035	
Weight	m	kg	235		520		285		450		733		1 220		1 225	
Speed sensor type			ROD426		ERO1420		ROD426		ROD426		ROD426		ROD426		ROD426	
Pulse number			1 024		1 024		1 024		1 024		1 024		1 024		1 024	
Force sensor type			SM250		Z6FC3/50		SM250		SM500		Z6FC3 5kN		Z6GC3		Z6GC3	
Rated force			F _N N		460		1 112		2 224		5 000		5 000		5 000	
Coupling type			Rotex, Modulflex		Modulflex		Rotex, Modulflex		Rotex, Modulflex		Modulflex		Modulflex		Modulflex	
MECHANICAL DIMENSIONS - mm																
A			312		430		INFO VERTICAL TYPE		420		600		700		700	
B			320		406				440		406		510		510	
C			403		588				514		750		852		852	
D			708		715				806		977		1 033		1 033	
E			480		490				506		520		630		630	
F			200		225				250		250		315		315	
G			660		855				766		880		1 000		1 000	
H			38H6		35H6				48H6		45H6		60H6		60H6	
I			80		50				110		50		52		52	
K			1 270		2 400		2 150		2 400		2 570		2 570			



ASD 200K-4 ASD P200-4/1275		ASD 220K-8 ASD P220-4/1834		ASD 220K-4 ASD P220-8/1868		ASD 330K-8 ASD P330-8/2801		ASD 400K-4 ASD P400-4/1863		ASD 440K-8 ASD P440-8/2735		ASD 500K-4 ASD P500-4/3183		ASD 660K-4 ASD P660-4/4400		ASD 800K-4 ASD P800-4/5496	
Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor
200	190	220	210	220	205	330	315	400	380	440	420	500	500	660	625	800	765
110	105	150	143	120	105	185	170	350	315	260	250	320	320	660	625	800	765
1 275	1 210	934	891	1 868	1 740	2 801	2 674	1 863	1 770	3 735	3 565	3 183	3 183	4 400	4 171	5 496	5 256
529	504	467	501	1 051	1 058	1 576	1 583	849	907	2 101	2 111	1 326	1 326	1 575	1 492	1 910	1 825
175	167	239	228	287	250	505	464	557	501	709	682	509	509	1 575	1 492	1 910	1 825
1 800		1 400		2500		4 000		2500		5 000		4 500		6 000		7 000	
1 500		1 000		2300		3 500		2000		4 500		3500		5000		6 000	
1 500	1 500	2 250	2 250	1 125	1 125	1 125	1 125	2 050	2 050	1 125	1 125	1 500	1 500	1 430	1 430	1 390	1 390
3 600	3 600	4 500	4 000	2 000	1 850	2 000	1 900	4 050	4 000	2 000	1 900	3 600	3 600	4 000	4 000	4 000	4 000
6 000		6 000		4 000		3 500		6 000		3 500		6 000		4 000		4 000	
50		50		5		5		50		5		50		10		10	
153		135		201		281		304		340		378		326		415	
369		380		408		606		684		775		881		756		980	
370	370	380	380	387	400	390	400	400	400	400	400	400	400	585	585	540	540
400	400	380	380	400	400	400	400	400	400	400	400	400	400	660	660	600	600
49	51	74	76	74	76	74	76	68	69	74	76	50	51	47	48	46	47
118	122	148	135	131	125	132	129	148	135	132	128	119	121	132	135	132	134
198	202	198	202	264	269	232	235	198	202	232	235	199	202	132	135	132	134
0,82		0,86		0,76		0,77		0,81		0,79		0,82		0,83		0,85	

1,0194	1,0194	1,0194	1,0194	1,0194	1,0194	1,0194	1,0194	1,0194
150	100	230	350	200	450	350	500	600
KTY84	KTY84	KTY84	KTY84	KTY84	KTY84	KTY84	KTY84	KTY84
Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100
Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100	Pt100
1,9	1,8	3,46	6,75	2,441	11,1	7,66	6,56	16,82
RAL7035	RAL7035	RAL7035	RAL7035	RAL7035	RAL7035	RAL7035	RAL7035	RAL7035
1 820	1 180	1 905	2 460	2 080	2 715	2 715	3 140	4 100
ROD426	ROD426	ROD426	ROD426	ROD426	ROD426	ROD426	ROD426	ROD426
2 048	1 024	4 096	4 096	1 024	4 096	1 024	1 024	1 024
Z6GC3	Z6GC3	Z6FC3/10	3410/2000/C3	Z6GC3	3410/2000/C3	3410C3	3420-G	3420-G
5 000	5 000	10 000	20 000	10 000	20 000	20 000	44 483	44 483
Modulflex	Modulflex	Modulflex	Modulflex	Modulflex	Modulflex	Modulflex	Modulflex	Modulflex

790	700	790	850	890	950	1 100	1 100	1 230
610	510	610	686	610	686	686	686	750
992	852	992	1 052	1 092	1 152	1 302	1 320	1 460
1 234	1 060	1 234	1 301	1 336	1 401	1 551	1 551	1 760
740	630	740	820	740	820	820	820	880
355	315	355	400	355	400	400	400	450
1 130	1 005	1 130	1 220	1 130	1 220	1 220	1 220	1 350
65H6	60H6	65H6	85H6	65H6	85H6	85H6	85H6	95H6
60	52	60	70	60	70	70	70	85
2 570	2 570	2 570	2 700	2 570	2 700	2 700	2 700	2 900

Accessories for drivers with dynamometers

Control unit with measuring M350

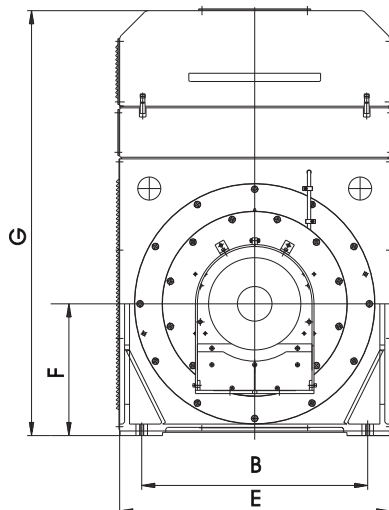
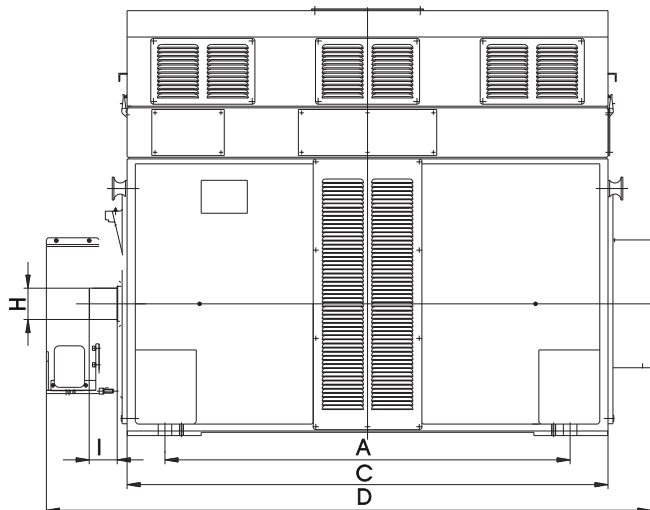


Frequency converters SIEMENS



Frequency converters Controltechniques

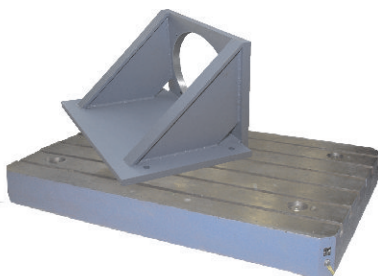
DYNAMOMETER TYPE ASD S	ASD S050-4/0312		ASD SP085-4/0541		ASD S100-4/0637		ASD S153-4/0947		ASD S200-4/1275		ASD S220-4/0934	
PARAMETERS OF THE DYNAMOMETER	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor
Rated power output P _n kW	50	45	85	77	100	100	153	145	200	190	220	210
Power output at n _{max} P _{nmax} kW	25	23	40	32	55	52	105	100	110	105	150	143
Rated torque M _{n1} Nm	312	281	541	490	637	637	974	923	1 275	1 210	934	891
Torque at n M _{n2} Nm	159	179	225	283	265	281	487	462	529	504	467	501
Torque at n _{max} M _{nmax} Nm	40,0	36,6	64,0	51,0	88	83	201	191	175	167	239	228
Maximum torque M _{max} Nm	450		800		1 000		1 300		1 800		1 400	
Calibration torque M _{kal} Nm	300		700		900		1 000		1 500		1 000	
Rated speed n ₁ min ⁻¹	1 530	1 530	1 500	1 500	1 500	1 500	1 500	1 500	1 500	1 500	2 250	2 250
Speed n ₂ min ⁻¹	3 000	2 400	3 600	2 600	3 600	3 400	3 000	3 000	3 600	3 600	4 500	4 000
Maximum speed n _{max} min ⁻¹	6 000		6 000		6 000		5 000		6 000		6 000	
Minimum operating speed n _{min} min ⁻¹	50		50		50		50		50		50	
No-load current I ₀ A	32,9		69,0		76,0		130,0		153		135	
Rated current I _{n1} A	87,1		167,0		180,0		268,4		369		380	
Rated voltage U _{n1} V	360	360	400	400	400	400	400	400	370	370	380	380
Voltage at n U _{n2} V	360	360	400	400	400	400	400	400	400	400	380	380
Rated frequency f _{n1} Hz	50	52	49	51	49	51	49	51	49	51	74	76
Frequency at n f _{n2} Hz	98	82	117	89	118	116	98	102	118	122	148	135
Maximum frequency f _{nmax} Hz	198	202	197	203	198	202	164	169	198	202	198	202
Power factor -	0,86		0,78		0,81		0,78		0,82		0,86	
TECHNICAL DATA												
Sensors of winding temperature												
Temperature sensor rear bearing (AS)												
Temperature sensor rear bearing (BS)												
Moment of inertia J kgm ²												
Colour of dynamometer												
Weight m kg												
Speed sensor type												
Pulse number												
Coupling type												
MECHANICAL DIMENSIONS - mm												
A												
B												
C												
D												
E												
F												
G												
H												
I												



ASD S220-8/1868		ASD S330-8/2801		ASD S400-4/1863		ASD S440-8/3735		ASD S500-4/3183		ASD S660-4/4400		ASD S800-4/5496	
Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor	Brake	Motor
220	205	330	315	400	380	440	420	500	500	660	625	800	765
120	105	185	170	350	315	260	250	320	320	660	625	800	765
1 868	1 740	2 801	2 674	1 863	1 770	3 735	3 565	3 183	3 183	4 400	4 171	5 496	5 256
1 051	1 058	1 576	1 583	849	907	2 101	2 111	1 326	1 326	1 575	1 492	1 910	1 825
287	250	505	464	557	501	709	682	509	509	1 575	1 492	1 910	1 825
2500		4 000		2500		5 000		4 500		6 000		7 000	
2300		3 500		2000		4 500		3500		5000		6 000	
1 125	1 125	1 125	1 125	2 050	2 050	1 125	1 125	1 500	1 500	1 430	1 430	1 390	1 390
2 000	1 850	2 000	1 900	4 500	4 000	2 000	1 900	3 600	3 600	4 000	4 000	4 000	4 000
4 000		3 500		6 000		3 500		6 000		4 000		4 000	
5		5		50		5		50		10		10	
201		281		304		340		378		326		415	
408		606		684		775		881		756		980	
387	400	390	400	400	400	400	400	400	400	585	585	540	540
400	400	400	400	400	400	400	400	400	400	660	660	600	600
74	76	74	76	68	69	74	76	50	51	47	48	46	47
131	125	132	129	148	135	132	128	119	121	132	135	132	134
264	269	232	235	198	202	232	235	199	202	132	135	132	134
0,76		0,77		0,81		0,79		0,82		0,83		0,85	
KTY84		KTY84		KTY84		KTY84		KTY84		KTY84		KTY84	
Pt100		Pt100		Pt100		Pt100		Pt100		Pt100		Pt100	
Pt100		Pt100		Pt100		Pt100		Pt100		Pt100		Pt100	
3,46		6,75		2,441		11,1		7,66		6,56		16,82	
RAL7035		RAL7035		RAL7035		RAL7035		RAL7035		RAL7035		RAL7035	
1 905		2 460		2 080		2 715		2 715		3 140		4 100	
ROD426		ROD426		ROD426		ROD426		ROD426		ROD426		ROD426	
4 096		4 096		1 024		4 096		1 024		1 024		1 024	
Modulflex		Modulflex		Modulflex		Modulflex		Modulflex		Modulflex		Modulflex	
790		850		890		950		1 100		1 100		1 230	
610		686		610		686		686		686		750	
992		1 052		1 092		1 152		1 302		1 320		1 460	
1 234		1 301		1 336		1 401		1 551		1 551		1 760	
740		820		740		820		820		820		880	
355		400		355		400		400		400		450	
1 130		1 220		1 130		1 220		1 220		1 220		1 350	
65H6		85H6		65H6		85H6		85H6		85H6		95H6	
60		70		60		70		70		70		85	

Accessories for drivers with dynamometers

Base plate, preparations



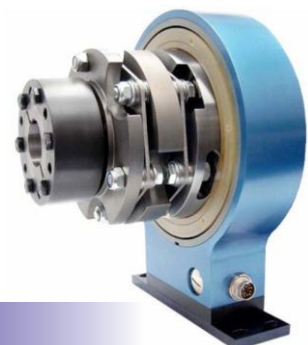
Cupling KTR

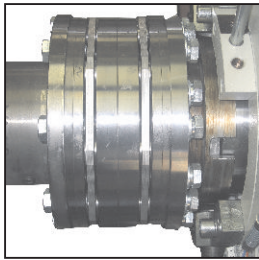


Cupling Rexnord

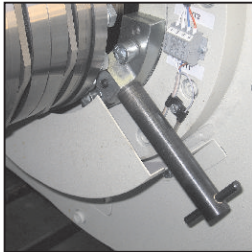


Cupling DR-2554





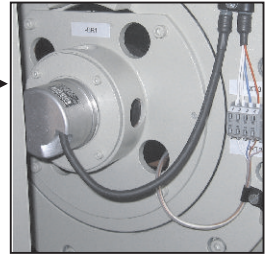
COUPLING
MODULFLEX



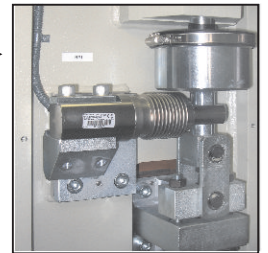
LOCKING



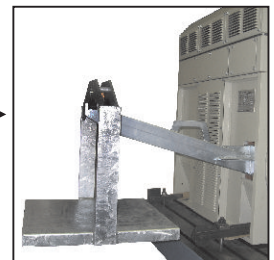
MASD P



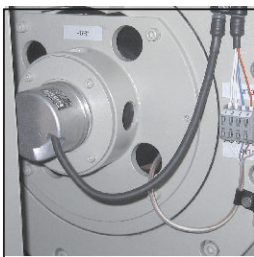
SPEED SENSOR



FORCE SENSOR



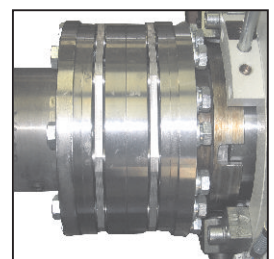
CALIBRATION ARMS
AND PANS FOR WEIGHTS



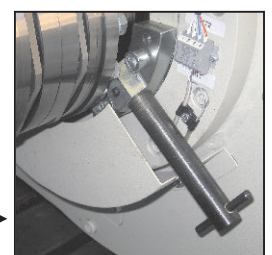
SPEED SENSOR



MASD S



COUPLING
MODULFLEX



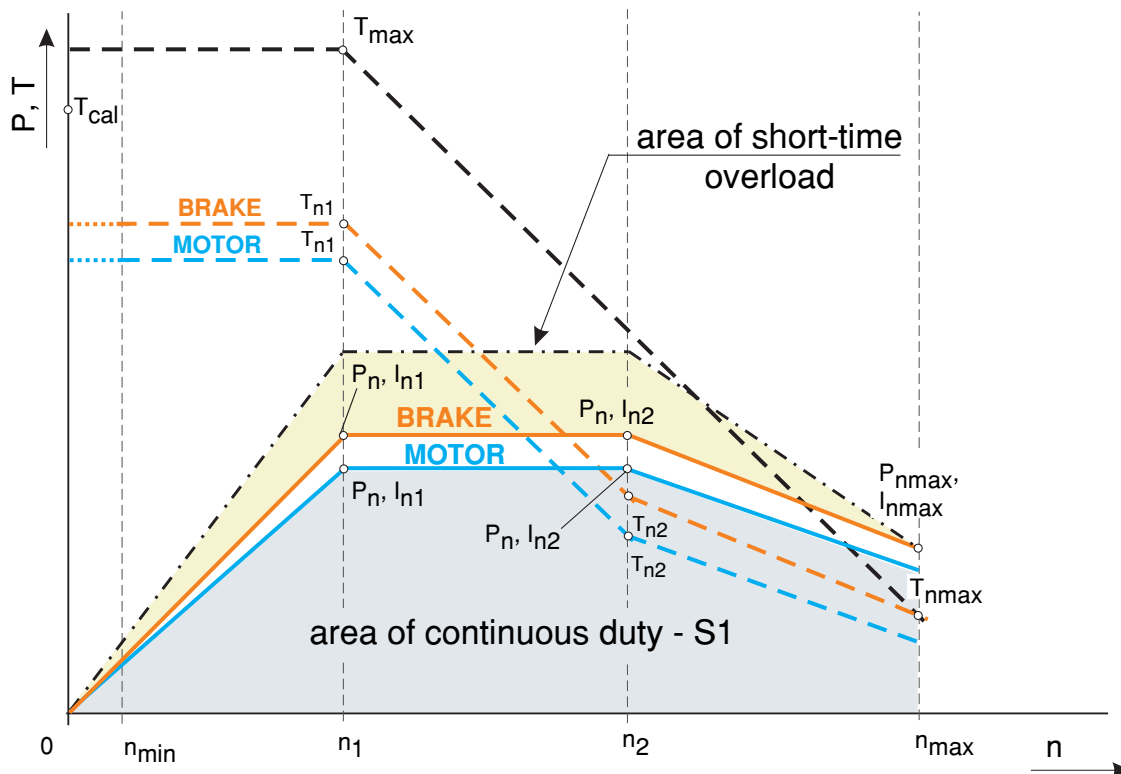
LOCKING

Type key of MASD series asynchronous dynamometers

A	S	D		S	1	0	0	-	4	/	7	0	0	0
1	2	3		4	5	6	7		8					

- 1 Asynchronous dynamometer
- 3 Type P, S
- 4 Power in kW
- 6 Number of poles, 2, 4, 6, 8
- 8 Rated torque

Torque-speed and power characteristics of induction dynamometer



Symbols used in the diagram:

n_{min}	[min ⁻¹]	- minimum operating speed
n_1	[min ⁻¹]	- rated speed at working points 1
n_2	[min ⁻¹]	- speed at working points 2
n_{max}	[min ⁻¹]	- maximum speed
T_{n1}	[Nm]	- rated torque at working points 1
T_{n2}	[Nm]	- torque at working points 2
T_{nmax}	[Nm]	- torque at maximum speed
T_{cal}	[Nm]	- calibration torque
P_n	[kW]	- rated power output
P_{nmax}	[kW]	- power output at maximum speed
I_{n1}	[A]	- rated current at working points 1
I_{n2}	[A]	- current at working points 2
I_{nmax}	[A]	- current at maximum speed

- - - - - torque-speed characteristics brake
- - - - - torque-speed characteristics motor
- - - - - maximum short-time torque
- - - - - power characteristics brake
- - - - - power characteristics motor
- - - - - maximum short-time power

**Examples of applications
of MASD series asynchronous
dynamometers**



*Siemens Elektromotory, s.r.o.
Manufacturing plant Frenštát p. R.*



Siemens Electric Machines s.r.o., Drásov



*TATRA a.s.,
Kopřivnice*



ČVUT, Praha