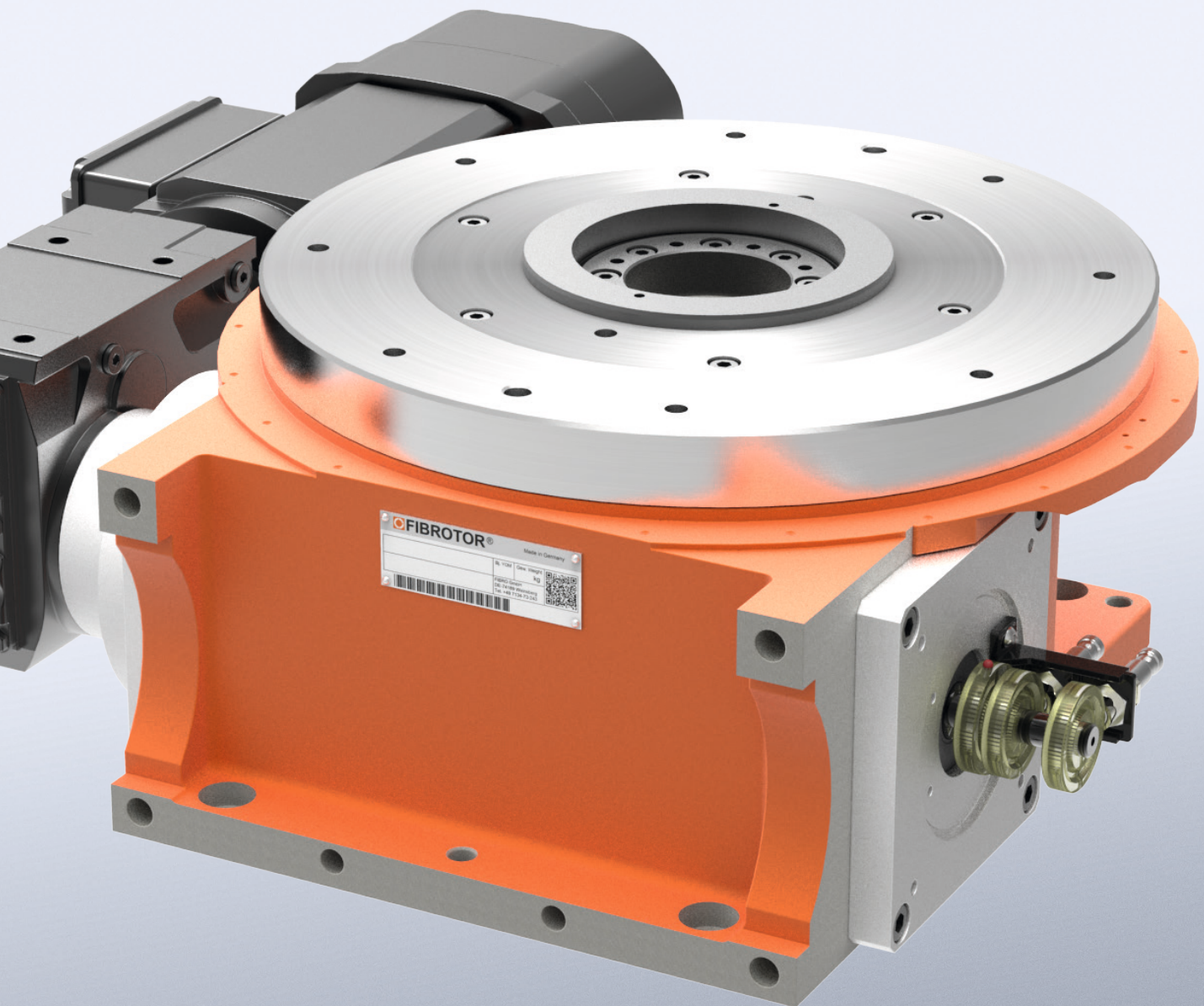
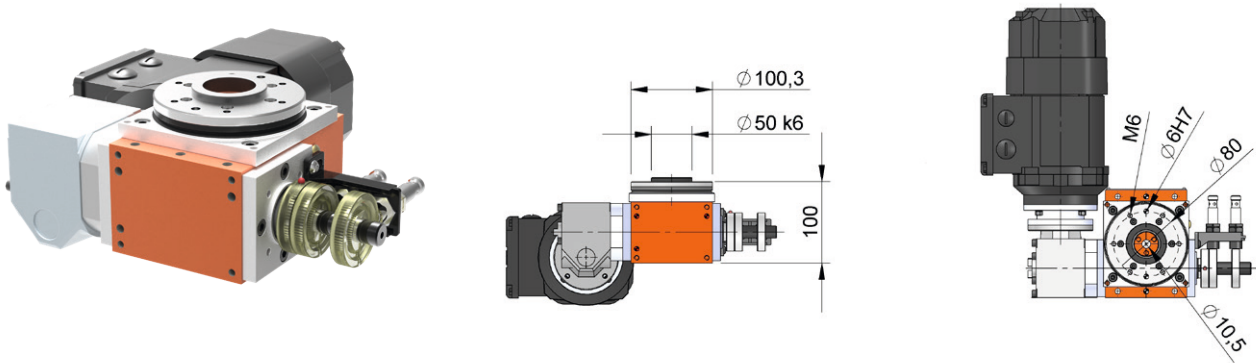


DATA SHEET COLLECTION  
FIBROTOR®  
**EM./ER.**



# FIBROTOR® EM.10/ER.10

## DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

ENCODING      EM.10/ER.10   ·         ·      ·         ·       ·      ·       ·  

TECHNICAL DATA			ENCODING	EM	ER
Table top dimensions	<b>2</b>	Standard dimensions Ø 100 mm	.0100	✓	✓
		Standard brake motor	.1	✓	✓
Drive motor	<b>3</b>	AC servomotor	.7	•	✗
		Special version	.9	•	•
		Without motor	.0	•	•
Drive arrangement	<b>4</b>	See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b>	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
		Special divisions up to T48 on request		•	✗
Additional assemblies	<b>6</b>	Without additional modules	.0	✓	✓
	<b>7</b>	Without additional modules	.0	✓	✓
		Vertical version	.3	•	•
	<b>8</b>	Centring ring	.1	✓	✓
	Centring ring and centring flange	.3	•	•	

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 40"	± 60"
	Division 16 – 24	± 50"	± 70"
	Division > 24	± 100"	
Accuracy in arc length (on Ø 100 mm)	Division 2 – 12	± 0.010 mm	± 0.015 mm
	Division 16 – 24	± 0.012 mm	± 0.017 mm
	Division > 24	± 0.024 mm	
Axial runout	Table top Ø	0.02 mm	0.02 mm
Concentricity	Centre hole on Ø	0.02 mm	0.02 mm
Plane parallelism	Table top Ø	0.04 mm	0.04 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 12	270°/90°	✓
	Division > 12	135°/45°	
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.12 kW	✓
Centre hole		Ø 10 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 12 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	100	50	50
Perm. ad-on diameter	mm	520	520	520
Perm. axial loading	N	4,000	1,500	
Perm. radial loading	N	1,000	1,000	1,000
Perm. tilting moment on positioned table top	Nm	350	200	150
Perm. tilting moment on rotating table top	Nm	100	100	50
Perm. tangential moment on positioned table top	Nm	25	25	25

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	2.39	2.16	1.95	1.78	1.20	1.00	0.80				
	J in kgm <sup>2</sup>	4.99	3.48	2.82	2.00	1.26	0.87	0.56				
3	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	6.69	4.65	3.77	2.70	1.69	1.17	0.73	0.41	0.18	0.18	
4	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	9.55	6.6	5.39	3.86	2.41	1.68	1.05	0.59	0.37	0.26	
5	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	12.6	8.79	7.13	5.11	3.19	2.22	1.39	0.78	0.49	0.35	
6	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	15.9	11.1	9.01	6.46	4.03	2.81	1.76	0.99	0.63	0.44	
8	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	21.8	15.2	12.3	8.81	5.50	3.83	2.40	1.35	0.85	0.60	
10	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	22.0	15.3	15.0	8.90	5.55	3.87	2.42	1.36	0.86	0.60	
12	$t_s$ in s	2.17	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.43	0.36	
	J in kgm <sup>2</sup>	26.6	18.5	12.2	10.8	6.71	4.67	2.92	1.64	1.04	0.73	
16	$t_s$ in s	0.98	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20		
	J in kgm <sup>2</sup>	7.69	5.39	4.27	3.10	1.92	1.35	0.87	0.46	0.32		
20	$t_s$ in s	0.98	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20		
	J in kgm <sup>2</sup>	8.67	6.07	4.81	3.47	2.16	1.52	0.98	0.52	0.36		
24	$t_s$ in s	0.98	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20		
	J in kgm <sup>2</sup>	10.7	7.49	5.94	4.28	2.67	1.87	1.21	0.64	0.44		

## INDEXING TIMES 60 Hz

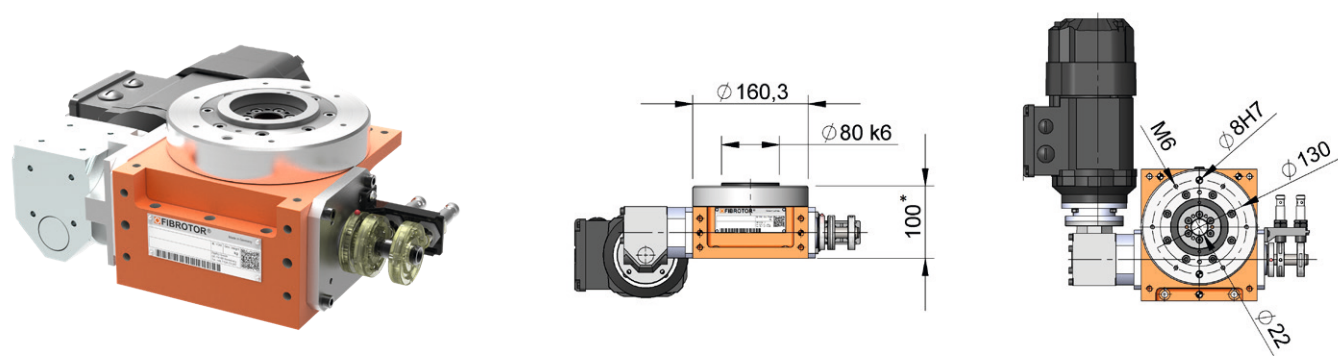
ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	1.94	1.62	1.46	1.23	0.97	0.81	0.65				
	J in kgm <sup>2</sup>	3.31	2.31	1.87	1.33	0.83	0.57	0.37				
3	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35		
	J in kgm <sup>2</sup>	4.40	3.07	2.47	1.78	1.10	0.78	0.49	0.27	0.17		
4	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	6.28	4.38	3.53	2.54	1.57	1.11	0.70	0.39	0.25	0.17	
5	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	8.31	7.33	4.68	3.37	2.08	1.47	0.93	0.52	0.33	0.22	
6	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	10.5	5.91	5.91	4.25	2.63	1.86	1.18	0.65	0.41	0.28	
8	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	14.3	10	8.06	5.80	3.58	2.53	1.61	0.89	0.57	0.39	
10	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	14.5	10.1	8.14	5.86	3.62	2.56	1.63	0.90	0.57	0.39	
12	$t_s$ in s	1.76	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35	0.29	
	J in kgm <sup>2</sup>	17.5	12.2	9.84	7.08	4.37	3.09	1.96	1.09	0.69	0.47	
16	$t_s$ in s	0.79	0.66	0.60	0.50	0.40	0.33	0.26	0.20			
	J in kgm <sup>2</sup>	5.00	3.49	2.88	2.00	1.28	0.87	0.54	0.32			
20	$t_s$ in s	0.79	0.66	0.60	0.50	0.40	0.33	0.26	0.20			
	J in kgm <sup>2</sup>	5.63	3.93	3.25	2.25	1.44	0.98	0.61	0.36			
24	$t_s$ in s	0.79	0.66	0.60	0.50	0.40	0.33	0.26	0.20			
	J in kgm <sup>2</sup>	6.95	4.85	4.01	2.78	1.78	1.21	0.75	0.44			

# FIBROTOR<sup>®</sup>

## EM.11/ER.11

### DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

\* At division 2 height 125 mm, centre hole eccentric.

### ENCODING

EM.11/ER.11 . [2] [3] [4] [5] [6] [7] [8]

TECHNICAL DATA		ENCODING	EM	ER
Table top dimensions	Standard dimensions Ø 160 mm	.0160	✓	✓
	<b>2</b> Strengthened table top bearing Ø 118 mm	.0118	•	✘
	Table top lock Ø 155 mm	.0155	•	✘
Drive motor	Standard brake motor	.1	✓	✓
	<b>3</b> AC servomotor	.7	•	✘
	Special version	.9	•	•
	Without motor	.0	•	•
Drive arrangement	<b>4</b> See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b> 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
	Special divisions up to T96 on request		•	✘
Additional assemblies	Without additional modules	.0	✓	✓
	<b>6</b> Strengthened table top bearing	.1	•	✘
	Hydraulic table top lock	.2	•	✘
	Without additional modules	.0	✓	✓
	<b>7</b> Built-in version	.1	•	✘
	Vertical version	.3	•	•
	<b>8</b> Centring ring	.1	✓	✓
Centring ring and centring flange	.3	•	•	

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 25"	± 40"
	Division 16 – 24	± 40"	± 50"
	Division > 24	± 80"	
Accuracy in arc length (on Ø 160 mm)	Division 2 – 12	± 0.010 mm	± 0.015 mm
	Division 16 – 24	± 0.015 mm	± 0.019 mm
	Division > 24	± 0.031 mm	
Axial runout	Table top Ø	0.01 mm	0.015 mm
Concentricity	Centre hole on Ø	0.01 mm	0.015 mm
Plane parallelism	Table top Ø	0.02 mm	0.03 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 14	270°/90°	✓
	Division > 14	135°/45°	
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.12 – 0.18 kW	✓
Centre hole		Ø 22 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 20 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	500	200	200
Perm. ad-on diameter	mm	800	800	800
Perm. axial loading	N	8,000	3,500	
Perm. radial loading	N	3,500	3,500	3,500
Perm. tilting moment on positioned table top	Nm	750	450	250
Perm. tilting moment on rotating table top	Nm	200	200	100
Perm. tangential moment on positioned table top	Nm	300	300	300

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	2,250	1,350	✓	✗
Perm. tilting moment with strengthened bearing moving	Nm	600	600	✓	✗
Perm. tangential moment with table top lock	Nm	450	450	✓	✗

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	1.99	1.51	1.20	0.96	0.72			
	J in kgm <sup>2</sup>	8.68	4.99	3.15	2.01	1.13			
3	$t_s$ in s	1.81	1.63	1.38	1.09	0.91	0.73	0.55	0.44
	J in kgm <sup>2</sup>	11.4	9.26	6.64	4.14	2.88	1.85	1.04	0.65
4	$t_s$ in s	1.81	1.63	1.38	1.09	0.91	0.72	0.55	0.44
	J in kgm <sup>2</sup>	16.4	13.3	9.52	5.93	4.13	2.58	1.50	0.96
5	$t_s$ in s	1.81	1.63	1.38	1.09	0.91	0.72	0.54	0.44
	J in kgm <sup>2</sup>	18.2	14.7	10.6	6.58	4.59	2.87	1.61	1.06
6	$t_s$ in s	1.63	1.47	1.24	0.98	0.82	0.65	0.49	0.39
	J in kgm <sup>2</sup>	22.7	18.5	13.1	8.19	5.73	3.60	2.04	1.32
8	$t_s$ in s	1.63	1.47	1.24	0.98	0.82	0.65	0.49	0.39
	J in kgm <sup>2</sup>	31.0	25.2	17.9	11.2	7.83	4.92	2.79	1.76
10	$t_s$ in s	1.63	1.47	1.24	0.98	0.82	0.65	0.49	0.39
	J in kgm <sup>2</sup>	39.3	31.9	22.7	14.2	9.9	6.23	3.54	2.24
12	$t_s$ in s	1.63	1.47	1.24	0.98	0.82	0.65	0.49	0.39
	J in kgm <sup>2</sup>	39.9	32.4	23.1	14.4	10.1	6.33	3.59	2.27
16	$t_s$ in s	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20
	J in kgm <sup>2</sup>	13.3	10.5	7.58	4.73	3.31	2.14	1.12	0.78
20	$t_s$ in s	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20
	J in kgm <sup>2</sup>	15.8	12.5	9.03	5.64	3.94	2.55	1.34	0.93
24	$t_s$ in s	0.82	0.73	0.62	0.49	0.41	0.33	0.24	0.20
	J in kgm <sup>2</sup>	19.6	15.5	11.2	6.98	4.88	3.16	1.66	1.15

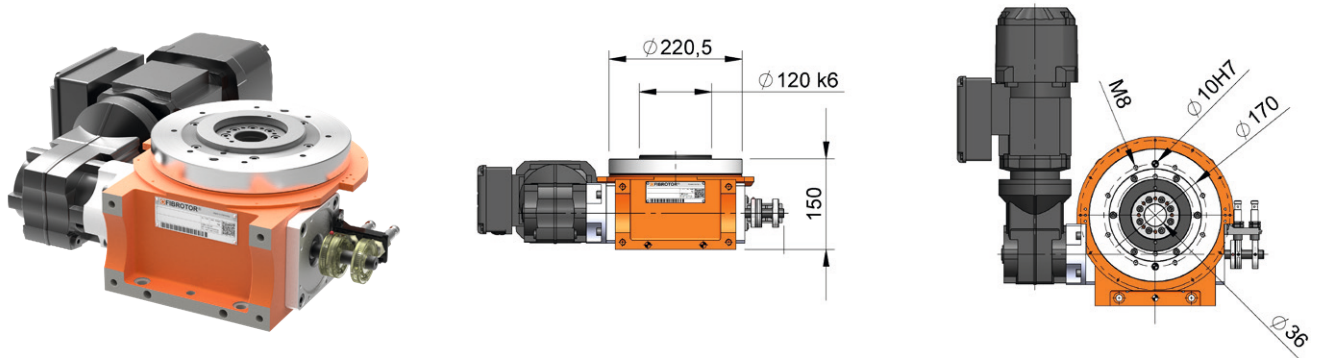
## INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	1.62	1.23	0.97	0.78				
	J in kgm <sup>2</sup>	5.75	3.31	2.05	1.32				
3	$t_s$ in s	1.47	1.32	1.12	0.88	0.74	0.59	0.44	
	J in kgm <sup>2</sup>	7.53	6.07	4.37	2.69	1.90	1.20	0.66	
4	$t_s$ in s	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35
	J in kgm <sup>2</sup>	10.8	8.70	6.26	3.86	2.73	1.73	0.96	0.60
5	$t_s$ in s	1.47	1.32	1.12	0.88	0.74	0.59	0.44	0.35
	J in kgm <sup>2</sup>	11.99	9.66	6.95	4.29	3.03	1.92	1.06	0.67
6	$t_s$ in s	1.32	1.19	1.01	0.79	0.67	0.53	0.40	0.31
	J in kgm <sup>2</sup>	14.9	12.09	8.70	5.32	3.82	2.39	1.35	0.81
8	$t_s$ in s	1.32	1.19	1.01	0.79	0.67	0.53	0.40	0.31
	J in kgm <sup>2</sup>	20.3	16.5	11.9	7.27	5.22	3.26	1.85	1.11
10	$t_s$ in s	1.32	1.19	1.01	0.79	0.67	0.53	0.40	0.31
	J in kgm <sup>2</sup>	25.8	20.9	15.1	9.22	6.63	4.14	2.35	1.41
12	$t_s$ in s	1.32	1.19	1.01	0.79	0.67	0.53	0.40	0.31
	J in kgm <sup>2</sup>	26.2	21.3	15.3	9.36	6.73	4.21	2.39	1.43
16	$t_s$ in s	0.66	0.60	0.50	0.40	0.33	0.26	0.20	0.16
	J in kgm <sup>2</sup>	8.59	7.10	4.92	3.15	2.14	1.32	0.78	0.49
20	$t_s$ in s	0.66	0.60	0.50	0.40	0.33	0.26	0.20	0.16
	J in kgm <sup>2</sup>	10.2	8.46	5.87	3.75	2.55	1.58	0.93	0.59
24	$t_s$ in s	0.66	0.60	0.50	0.40	0.33	0.26	0.20	0.16
	J in kgm <sup>2</sup>	12.7	10.5	7.26	4.64	3.16	1.95	1.15	0.73

# FIBROTOR® EM.12/ER.12

## DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

ENCODING      EM.12/ER.12                              

TECHNICAL DATA		ENCODING	EM	ER	
Table top dimensions		Standard dimensions Ø 220 mm	.0220	✓	✓
	<b>2</b>	Strengthened table top bearing Ø 190 mm	.0190	●	✗
		Table top lock Ø 220 mm	.0220	●	✗
Drive motor		Standard brake motor	.1	✓	✓
	<b>3</b>	AC servomotor	.7	●	✗
		Special version	.9	●	●
		Without motor	.0	●	●
Drive arrangement	<b>4</b>	See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b>	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
		Special divisions up to T96 on request		●	✗
Additional assemblies		Without additional modules	.0	✓	✓
	<b>6</b>	Strengthened table top bearing	.1	●	✗
		Hydraulic table top lock	.2	●	✗
		Without additional modules	.0	✓	✓
	<b>7</b>	Built-in version	.1	●	✗
		Vertical version	.3	●	●
	<b>8</b>	Centring ring	.1	✓	✓
		Centring ring and centring flange	.3	●	●



## TECHNICAL DATA

			EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12		± 18"	± 35"
	Division 16 – 24		± 25"	± 40"
	Division > 24		± 40"	
Accuracy in arc length (on Ø 220 mm)	Division 2 – 12		± 0.010 mm	± 0.019 mm
	Division 16 – 24		± 0.013 mm	± 0.021 mm
	Division > 24		± 0.031 mm	
Axial runout	Table top Ø		0.01 mm	0.02 mm
Concentricity	Centre hole on Ø		0.01 mm	0.02 mm
Plane parallelism	Table top Ø		0.03 mm	0.04 mm
Indexing/dwell angle	Division 2	330°/30°		
	Division 3 – 5	300°/60°	✓	✓
	Division 6 – 12	270°/90°		
	Division > 12	135°/45°		
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓	✓
	Brake	380 – 480 V, AC	✓	✓
Motor power	Depending on indexing time and mass moment of inertia	0.12 – 0.37 kW	✓	✓
Centre hole		Ø 35 mm	✓	✓
Working position	Any, standard: horizontal table top		●	●
Weight		ca. 35 kg		

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	800	300	300
Perm. ad-on diameter	mm	1,000	1,000	1,000
Perm. axial loading	N	12,000	5,000	
Perm. radial loading	N	8,000	8,000	8,000
Perm. tilting moment on positioned table top	Nm	2,000	1,500	600
Perm. tilting moment on rotating table top	Nm	600	600	300
Perm. tangential moment on positioned table top	Nm	400	400	400

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	6,000	4,500	✓	✗
Perm. tilting moment with strengthened bearing moving	Nm	1,800	1,800	✓	✗
Perm. tangential moment with table top lock	Nm	800	800	✓	✗

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	2.35	2.16	1.99	1.78	1.59	1.34	1.13	0.94	0.85	0.72			
	J in kgm <sup>2</sup>	26.0	21.9	18.6	14.8	11.8	8.41	5.96	4.10	3.34	2.38			
3	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.66	0.56	0.42	
	J in kgm <sup>2</sup>	34.9	29.5	25.1	20.1	16.1	11.4	8.11	5.50	4.62	3.29	2.34	1.29	
4	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.66	0.56	0.42	
	J in kgm <sup>2</sup>	50.0	42.3	36.0	28.8	23.1	16.3	11.6	7.90	6.64	4.73	3.39	1.87	
5	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.66	0.56	0.42	
	J in kgm <sup>2</sup>	77.3	65.4	55.7	44.6	35.7	25.3	18.0	12.3	10.3	7.36	5.28	2.94	
6	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.59	0.50	0.38	0.26
	J in kgm <sup>2</sup>	79.0	66.3	56.9	44.6	36.2	25.9	18.5	12.7	10.4	7.40	5.29	3.02	1.38
8	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.59	0.50	0.38	0.26
	J in kgm <sup>2</sup>	108	90.6	77.7	62.3	49.4	35.4	25.3	17.3	14.3	10.1	7.25	4.16	1.91
10	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.59	0.50	0.38	0.26
	J in kgm <sup>2</sup>	137	115	98.5	79.0	62.6	44.9	32.0	21.9	18.1	12.9	9.2	5.29	2.44
12	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.59	0.50	0.38	0.26
	J in kgm <sup>2</sup>	165	139	119	95.4	75.6	54.2	38.7	26.5	21.9	15.5	11.1	6.40	2.96
16	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.46	0.38	0.35	0.29	0.25	0.19	
	J in kgm <sup>2</sup>	46.8	39.2	33.2	27.0	21.4	15.3	10.7	7.27	6.16	4.20	3.10	1.76	
20	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.46	0.38	0.35	0.29	0.25	0.19	
	J in kgm <sup>2</sup>	66.4	55.7	47.2	38.3	30.3	21.7	15.2	10.3	8.76	5.99	4.43	2.53	
24	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.46	0.38	0.35	0.29	0.25	0.19	
	J in kgm <sup>2</sup>	82.0	68.9	58.3	47.4	37.5	26.9	18.8	12.8	10.8	7.42	5.50	3.14	

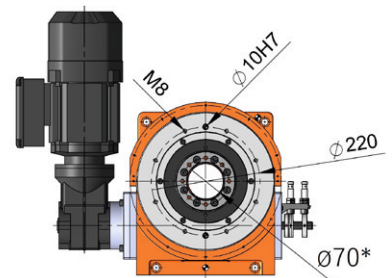
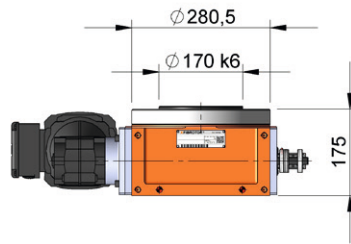
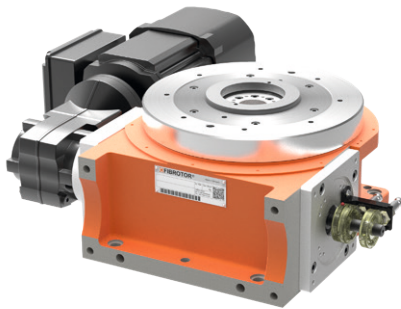
## INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	1.90	1.75	1.61	1.44	1.30	1.10	0.93	0.76	0.70				
	J in kgm <sup>2</sup>	17.0	14.3	12.2	9.72	7.91	5.64	4.01	2.66	2.24				
3	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.7	0.64	0.54	0.46	0.34	
	J in kgm <sup>2</sup>	23.0	19.4	16.5	13.2	10.6	7.64	5.37	3.71	3.09	2.17	1.56	0.60	
4	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.70	0.64	0.54	0.46	0.34	
	J in kgm <sup>2</sup>	32.9	27.8	23.7	18.8	15.2	7.7	7.71	5.33	4.45	3.14	2.26	1.20	
5	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.70	0.64	0.54	0.46	0.34	
	J in kgm <sup>2</sup>	51.0	43.0	36.7	29.1	23.6	16.9	12.0	8.28	6.91	4.90	3.54	1.90	
6	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31	0.21
	J in kgm <sup>2</sup>	52.1	43.8	37.3	29.8	24.0	17.3	12.3	8.44	6.90	4.87	3.53	1.99	0.60
8	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31	0.21
	J in kgm <sup>2</sup>	71.2	59.8	51.0	40.7	32.8	23.7	16.8	11.6	9.44	6.68	4.85	2.74	1.16
10	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31	0.21
	J in kgm <sup>2</sup>	90.3	75.8	64.6	51.6	41.6	30.0	21.3	14.6	11.9	8.48	6.17	3.49	1.55
12	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31	0.21
	J in kgm <sup>2</sup>	109	91.6	78.0	62.3	50.3	36.2	25.8	17.7	14.5	10.3	7.47	4.24	1.90
16	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.21		
	J in kgm <sup>2</sup>	30.9	26.2	22.0	17.6	14.2	10.2	7.27	4.80	4.20	2.85	2.17		
20	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.21		
	J in kgm <sup>2</sup>	43.8	37.3	31.3	25.0	20.1	14.5	10.3	6.86	5.99	4.08	3.11		
24	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.21		
	J in kgm <sup>2</sup>	54.1	46.1	38.7	30.9	24.9	17.9	12.7	8.49	7.42	5.06	3.86		

# FIBROTOR® EM.13/ER.13

## DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

\* Until division 5 centre hole 35 mm.

## ENCODING

EM.13/ER.13 .     .  .     .   .   .

## TECHNICAL DATA

		ENCODING	EM	ER
Table top dimensions	Standard dimensions Ø 280 mm	.0280	✓	✓
	<b>2</b> Strengthened table top bearing Ø 250 mm	.0250	●	✗
	Table top lock Ø 280 mm	.0280	●	✗
Drive motor	Standard brake motor	.1	✓	✓
	<b>3</b> AC servomotor	.7	●	✗
	Special version	.9	●	●
	Without motor	.0	●	●
Drive arrangement	<b>4</b> See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b> 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
	Special divisions up to T96 on request		●	✗
Additional assemblies	Without additional modules	.0	✓	✓
	<b>6</b> Strengthened table top bearing	.1	●	✗
	Hydraulic table top lock	.2	●	✗
	Without additional modules	.0	✓	✓
	<b>7</b> Built-in version	.1	●	✗
	Vertical version	.3	●	●
	<b>8</b> Centring ring	.1	✓	✓
Centring ring and centring flange	.3	●	●	

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 18"	± 30"
	Division 16 – 24	± 25"	± 35"
	Division > 24	± 35"	
Accuracy in arc length (on Ø 280 mm)	Division 2 – 12	± 0.012 mm	± 0.020 mm
	Division 16 – 24	± 0.017 mm	± 0.024 mm
	Division > 24	± 0.024 mm	
Axial runout	Table top Ø	0.01 mm	0.02 mm
Concentricity	Centre hole on Ø	0.01 mm	0.02 mm
Plane parallelism	Table top Ø	0.03 mm	0.04 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 12	270°/90°	✓
	Division > 12	135°/45°	
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.12 – 0.55 kW	✓
Centre hole	Division 2 – 5	Ø 35 mm	✓
	Division 6 – 24	Ø 70 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 70 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	1,500	400	400
Perm. assembly diameter	mm	1,400	1,400	1,400
Perm. axial loading	N	16,000	6,000	
Perm. radial loading	N	10,000	10,000	10,000
Perm. tilting moment on positioned indexing table	Nm	3,000	1,500	800
Perm. tilting moment on rotating indexing table	Nm	1,000	1,000	400
Perm. tangential moment on positioned indexing table	Nm	600	600	600

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	9,000	4,500	✓	✗
Perm. tilting moment with strengthened bearing moving	Nm	3,000	3,000	✓	✗
Perm. tangential moment with table top lock	Nm	900	900	✓	✗

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	2.35	2.16	1.99	1.78	1.59	1.34	1.13	0.94	0.85	0.71		
	J in kgm <sup>2</sup>	35.8	30.2	25.6	20.4	16.2	11.5	8.13	5.56	4.51	3.09		
3	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.65	0.55	0.41
	J in kgm <sup>2</sup>	48.2	40.8	34.7	27.8	22.2	15.6	11.1	7.51	6.29	4.31	3.03	1.59
4	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.65	0.55	0.41
	J in kgm <sup>2</sup>	69.2	58.5	49.9	39.9	31.9	22.5	16.0	10.8	9.11	6.27	4.43	2.37
5	$t_s$ in s	2.13	1.96	1.81	1.62	1.45	1.22	1.03	0.85	0.78	0.65	0.55	0.41
	J in kgm <sup>2</sup>	91.9	77.8	66.3	53.1	42.5	30.0	21.3	14.4	12.1	8.38	5.94	3.20
6	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.58	0.50	0.37
	J in kgm <sup>2</sup>	141	119	102	81.5	64.6	46.2	32.9	22.5	18.5	12.7	9.4	5.05
8	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.58	0.50	0.37
	J in kgm <sup>2</sup>	193	162	139	111	88.2	63.1	45.0	30.8	25.4	17.4	12.8	6.97
10	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.58	0.50	0.37
	J in kgm <sup>2</sup>	245	205	176	141	111	80	57.2	39.1	32.3	22.1	16.3	8.89
12	$t_s$ in s	1.92	1.76	1.63	1.46	1.30	1.10	0.93	0.77	0.70	0.58	0.50	0.37
	J in kgm <sup>2</sup>	295	248	212	170	135	97	69.1	47.3	39.0	26.7	19.8	10.70
16	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.46	0.38	0.35	0.29	0.25	0.19
	J in kgm <sup>2</sup>	83.5	70.1	59.3	48.1	38.1	27.2	19.0	12.9	10.9	7.43	5.47	3.08
20	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.64	0.38	0.35	0.29	0.25	0.19
	J in kgm <sup>2</sup>	119	99.6	84.3	68.4	54.2	38.7	27.0	18.4	15.5	10.6	7.85	4.45
24	$t_s$ in s	0.96	0.88	0.81	0.73	0.65	0.55	0.46	0.38	0.35	0.29	0.25	0.19
	J in kgm <sup>2</sup>	147	123	104	84.6	67.1	47.9	33.5	22.8	19.3	13.2	9.76	5.55

## INDEXING TIMES 60 Hz

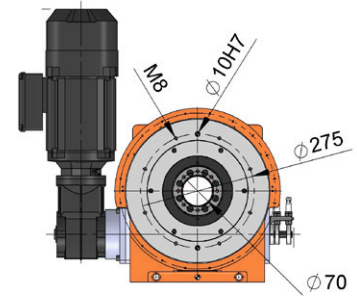
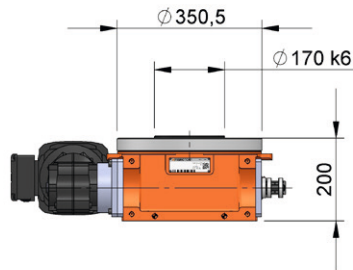
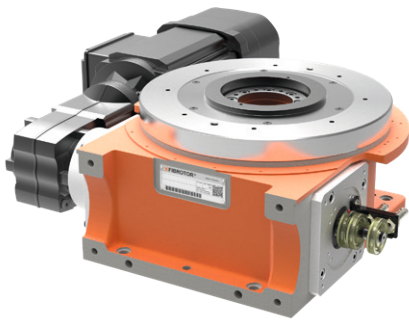
ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	1.90	1.75	1.61	1.44	1.30	1.10	0.93	0.76	0.70			
	J in kgm <sup>2</sup>	23.4	19.7	15.8	10.7	10.8	6.50	5.44	3.20	2.40			
3	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.70	0.64	0.53	0.45	0.34
	J in kgm <sup>2</sup>	31.8	26.7	22.8	18.1	14.6	10.40	7.33	5.03	4.17	2.80	1.96	0.80
4	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.70	0.64	0.53	0.45	0.34
	J in kgm <sup>2</sup>	45.6	38.4	32.8	26.0	21.1	15.1	10.6	7.30	6.07	4.10	2.90	1.57
5	$t_s$ in s	1.73	1.59	1.47	1.31	1.18	1.00	0.84	0.70	0.64	0.53	0.45	0.34
	J in kgm <sup>2</sup>	60.6	51.1	43.6	34.6	28.0	20.1	14.1	9.75	8.12	5.50	3.91	2.15
6	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31
	J in kgm <sup>2</sup>	93.1	78.2	66.6	53.2	42.8	30.9	21.9	15.0	12.2	8.6	6.24	3.20
8	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31
	J in kgm <sup>2</sup>	127	106	91.0	72.7	58.6	42.2	30.0	20.6	16.8	11.8	8.6	4.83
10	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31
	J in kgm <sup>2</sup>	161	135	115	92.2	74.3	53.3	38.1	26.1	21.3	15.0	11.0	6.18
12	$t_s$ in s	1.56	1.43	1.32	1.18	1.06	0.90	0.76	0.63	0.57	0.48	0.41	0.31
	J in kgm <sup>2</sup>	195	163	139	111	89.8	64.7	46.1	31.6	25.8	18.2	13.3	7.50
16	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.20	
	J in kgm <sup>2</sup>	55.0	46.8	39.3	31.4	25.3	18.1	12.9	8.50	7.40	5.03	3.40	
20	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.20	
	J in kgm <sup>2</sup>	78.2	66.6	55.9	44.6	36.0	25.9	18.4	12.1	10.6	7.22	4.96	
24	$t_s$ in s	0.78	0.72	0.66	0.59	0.53	0.45	0.38	0.31	0.29	0.24	0.20	
	J in kgm <sup>2</sup>	96.7	82.3	69.1	55.2	44.5	32.0	22.8	15.1	13.2	8.97	6.17	

# FIBROTOR®

## EM.14/ER.14

### DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

### ENCODING



TECHNICAL DATA		ENCODING	EM	ER	
Table top dimensions		Standard dimensions Ø 350 mm	.0350	✓	✓
	<b>2</b>	Strengthened table top bearing Ø 300 mm	.0300	●	✗
		Table top lock Ø 350 mm	.0350	●	✗
Drive motor		Standard brake motor	.1	✓	✓
	<b>3</b>	AC servomotor	.7	●	✗
		Special version	.9	●	●
		Without motor	.0	●	●
Drive arrangement	<b>4</b>	See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b>	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
		Special divisions up to T96 on request		●	✗
Additional assemblies	<b>6</b>	Without additional modules	.0	✓	✓
		Strengthened table top bearing	.1	●	✗
		Hydraulic table top lock	.2	●	✗
		Without additional modules	.0	✓	✓
	<b>7</b>	Built-in version	.1	●	✗
		Vertical version	.3	●	●
	<b>8</b>	Centring ring	.1	✓	✓
		Centring ring and centring flange	.3	●	●

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 15"	± 25"
	Division 16 – 24	± 22"	± 30"
	Division > 24	± 35"	
Accuracy in arc length (on Ø 350 mm)	Division 2 – 12	± 0.013 mm	± 0.022 mm
	Division 16 – 24	± 0.019 mm	± 0.025 mm
	Division > 24	± 0.030 mm	
Axial runout	Table top Ø	0.015 mm	0.025 mm
Concentricity	Centre hole on Ø	0.015 mm	0.025 mm
Plane parallelism	Table top Ø	0.03 mm	0.05 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 12	270°/90°	✓
	Division > 12	135°/45°	
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.09 – 0.18 kW	✓
Centre hole		Ø 70 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 120 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	2,000	500	500
Perm. ad-on diameter	mm	1,800	1,800	1,800
Perm. axial loading	N	20,000	7,000	
Perm. radial loading	N	12,500	12,500	12,500
Perm. tilting moment on positioned table top	Nm	4,500	2,250	1,100
Perm. tilting moment on rotating table top	Nm	1,500	1,500	500
Perm. tangential moment on positioned table top	Nm	900	900	900

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	13,500	7,000	✓	✘
Perm. tilting moment with strengthened bearing moving	Nm	4,500	4,500	✓	✘
Perm. tangential moment with table top lock	Nm	1,200	1,200	✓	✘

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	$t_s$ in s	3.83	3.25	2.82	2.64	2.28	1.91	1.70	1.46	1.36	1.14	0.95	0.76				
	J in kgm <sup>2</sup>	172.6	124.1	93.3	81.7	60.8	42.6	33.6	24.7	21.3	14.8	10.2	6.3				
3	$t_s$ in s	3.48	2.96	2.56	2.40	2.07	1.73	1.55	1.32	1.24	1.04	0.87	0.69	0.59	0.53	0.45	
	J in kgm <sup>2</sup>	385	278	208	183	135.8	94.7	75.9	54.9	48.4	33.9	23.6	14.7	10.6	8.00	4.50	
4	$t_s$ in s	3.48	2.96	2.56	2.40	2.07	1.73	1.55	1.32	1.24	1.04	0.87	0.69	0.59	0.53	0.45	
	J in kgm <sup>2</sup>	551	398	298	262	194	136	109	79	69.5	48.7	33.9	21.2	15.3	12.3	8.71	
5	$t_s$ in s	3.48	2.96	2.56	2.40	2.07	1.73	1.55	1.32	1.24	1.04	0.87	0.69	0.59	0.53	0.45	
	J in kgm <sup>2</sup>	729	528	395	347	258	180	144	105	92	64.7	45.1	28.2	20.5	16.4	11.7	
6	$t_s$ in s	3.13	2.66	2.31	2.16	1.86	1.56	1.39	1.19	1.12	0.94	0.78	0.62	0.53	0.47	0.40	
	J in kgm <sup>2</sup>	742	536	404	353	262	184	146	107	95	66.5	45.6	28.7	20.8	16.3	11.6	
8	$t_s$ in s	3.13	2.66	2.31	2.16	1.86	1.56	1.39	1.19	1.12	0.94	0.78	0.62	0.53	0.47	0.40	
	J in kgm <sup>2</sup>	1258	908	685	599	444	312	248	181	161	113	77.6	48.9	35.6	27.9	20.1	
10	$t_s$ in s	3.13	2.66	2.31	2.16	1.86	1.56	1.39	1.19	1.12	0.94	0.78	0.62	0.53	0.47	0.40	
	J in kgm <sup>2</sup>	1594	1151	868	759	563	396	314	230	204	143	99	62	45.2	35.5	25.6	
12	$t_s$ in s	3.13	2.66	2.31	2.16	1.86	1.56	1.39	1.19	1.12	0.94	0.78	0.62	0.53	0.47	0.40	
	J in kgm <sup>2</sup>	1552	1121	845	739	548	385	306	224	198	140	96	60	44.0	34.5	24.9	
16	$t_s$ in s	1.57	1.33	1.15	1.08	0.93	0.78	0.70	0.60	0.56	0.47	0.39	0.31	0.27	0.24	0.20	
	J in kgm <sup>2</sup>	442	317	237	209	155	109	88	64.2	55.8	39.2	26.8	16.8	12.6	9.9	6.69	
20	$t_s$ in s	1.57	1.33	1.15	1.08	0.93	0.78	0.70	0.60	0.56	0.47	0.39	0.31	0.27	0.24	0.20	
	J in kgm <sup>2</sup>	628	450	337	297	220	155	124	91	79.4	55.8	38.3	24.0	18.1	14.2	9.7	
24	$t_s$ in s	1.57	1.33	1.15	1.08	0.93	0.78	0.70	0.60	0.56	0.47	0.39	0.31	0.27	0.24	0.20	
	J in kgm <sup>2</sup>	776	557	416	367	272	191	154	113	98	69.1	47.4	29.8	22.5	17.6	12.1	

## INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

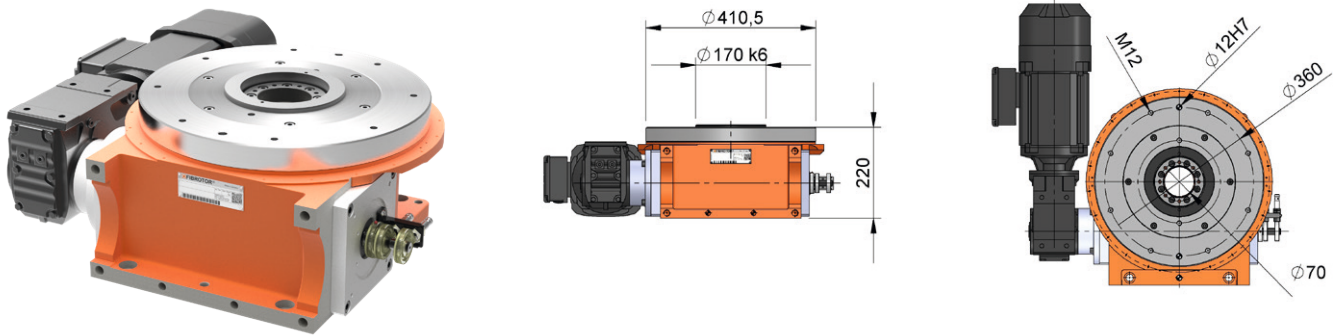
2	$t_s$ in s	3.13	2.66	2.31	2.16	1.86	1.57	1.40	1.20	1.12	0.94	0.78					
	J in kgm <sup>2</sup>	115.1	83.0	62.5	54.6	40.3	28.6	22.6	16.5	14.3	9.93	6.68					
3	$t_s$ in s	2.84	2.42	2.10	1.96	1.69	1.43	1.27	1.09	1.02	0.86	0.71	0.57	0.49	0.43	0.37	
	J in kgm <sup>2</sup>	256	186	140	122	90.4	64.6	50.8	37.0	29.5	23.0	13.0	9.8	6.00	3.80	2.00	
4	$t_s$ in s	2.84	2.42	2.10	1.96	1.69	1.43	1.27	1.09	1.02	0.86	0.71	0.57	0.49	0.43	0.37	
	J in kgm <sup>2</sup>	366	266	200	174	129	92.5	72.9	53.6	46.8	33.2	22.4	14.3	10.4	7.40	4.38	
5	$t_s$ in s	2.84	2.42	2.10	1.96	1.69	1.43	1.27	1.09	1.02	0.86	0.71	0.57	0.49	0.43	0.37	
	J in kgm <sup>2</sup>	486	352	265	231	172	123	97	71.1	62.2	44.1	29.9	19.1	14.0	10.6	7.30	
6	$t_s$ in s	2.56	2.18	1.89	1.76	1.52	1.28	1.15	0.98	0.92	0.77	0.64	0.52	0.44	0.39	0.33	
	J in kgm <sup>2</sup>	496	360	270	234	175	124	100	72.3	63.7	44.5	30.6	20.0	14.2	11.0	7.50	
8	$t_s$ in s	2.56	2.18	1.89	1.76	1.52	1.28	1.15	0.98	0.92	0.77	0.64	0.52	0.44	0.39	0.33	
	J in kgm <sup>2</sup>	841	610	458	397	296	210	169	123	108	75.7	52.1	34.2	24.4	19.0	13.5	
10	$t_s$ in s	2.56	2.18	1.89	1.76	1.52	1.28	1.15	0.98	0.92	0.77	0.64	0.52	0.44	0.39	0.33	
	J in kgm <sup>2</sup>	1066	773	581	504	376	266	215	156	140	96.0	66.2	43.5	31.0	24.3	17.2	
12	$t_s$ in s	2.56	2.18	1.89	1.76	1.52	1.28	1.15	0.98	0.92	0.77	0.64	0.52	0.44	0.39	0.33	
	J in kgm <sup>2</sup>	1038	753	566	490	366	259	209	152	134	93.5	64.4	42.4	30.2	23.6	16.8	
16	$t_s$ in s	1.28	1.09	0.94	0.88	0.76	0.64	0.57	0.49	0.46	0.38	0.32	0.26	0.22	0.20		
	J in kgm <sup>2</sup>	294	213	158	139	103	73.1	57.9	42.6	37.5	25.4	17.9	11.6	8.2	6.69		
20	$t_s$ in s	1.28	1.09	0.94	0.88	0.76	0.64	0.57	0.49	0.46	0.38	0.32	0.26	0.22	0.20		
	J in kgm <sup>2</sup>	417	302	225	197	147	104	82	60.7	53.4	36.3	25.6	16.7	11.8	9.7		
24	$t_s$ in s	1.28	1.09	0.94	0.88	0.76	0.64	0.57	0.49	0.46	0.38	0.32	0.26	0.22	0.20		
	J in kgm <sup>2</sup>	516	374	278	243	181	129	102	75.1	66.1	45.0	31.8	20.8	14.7	12.1		



# FIBROTOR®

## EM.15/ER.15

### DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

### ENCODING

EM.15/ER.15 ·     ·  ·     ·   ·  ·

TECHNICAL DATA		ENCODING	EM	ER	
Table top dimensions		Standard dimensions Ø 410 mm	.0410	✓	✓
	<b>2</b>	Strengthened table top bearing Ø 380 mm	.0380	●	✗
		Table top lock Ø 410 mm	.0410	●	✗
Drive motor		Standard brake motor	.1	✓	✓
	<b>3</b>	AC servomotor	.7	●	✗
		Special version	.9	●	●
		Without motor	.0	●	●
Drive arrangement	<b>4</b>	See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b>	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
		Special divisions up to T96 on request		●	✗
Additional assemblies	<b>6</b>	Without additional modules	.0	✓	✓
		Strengthened table top bearing	.1	●	✗
		Hydraulic table top lock	.2	●	✗
		Without additional modules	.0	✓	✓
	<b>7</b>	Built-in version	.1	●	✗
		Vertical version	.3	●	●
	<b>8</b>	Centring ring	.1	✓	✓
		Centring ring and centring flange	.3	●	●

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 12"	± 20"
	Division 16 – 24	± 20"	± 25"
	Division > 24	± 35"	
Accuracy in arc length (on Ø 410 mm)	Division 2 – 12	± 0.012 mm	± 0.020 mm
	Division 16 – 24	± 0.020 mm	± 0.025 mm
	Division > 24	± 0.035 mm	
Axial runout	Table top Ø	0.015 mm	0.03 mm
Concentricity	Centre hole on Ø	0.015 mm	0.03 mm
Plane parallelism	Table top Ø	0.04 mm	0.06 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 12	270°/90°	✓
	Division > 12	135°/45°	✓
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.25 – 1.5 kW	✓
Centre hole		Ø 70 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 150 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	2,500	600	600
Perm. ad-on diameter	mm	2,000	2,000	2,000
Perm. axial loading	N	25,000	9,000	
Perm. radial loading	N	15,000	15,000	15,000
Perm. tilting moment on positioned table top	Nm	6,000	3,000	1,500
Perm. tilting moment on rotating table top	Nm	2,000	2,000	700
Perm. tangential moment on positioned table top	Nm	1,200	1,200	1,200

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	18,000	10,000	✓	✘
Perm. tilting moment with strengthened bearing moving	Nm	6,000	6,000	✓	✘
Perm. tangential moment with table top lock	Nm	1,800	1,800	✓	✘

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	4.06	3.48	3.26	2.88	2.68	2.43	2.17	1.76	1.50	1.34	1.10	0.98	0.82	0.74	
	J in kgm <sup>2</sup>	427	313	275	214	185	152	121	79.3	57.4	45.6	30.4	23.9	16.4	12.0	
3	t <sub>s</sub> in s	3.69	3.17	2.97	2.62	2.43	2.21	1.97	1.60	1.36	1.22	1.00	0.89	0.75	0.67	0.54
	J in kgm <sup>2</sup>	576	424	372	290	249	206	163	107	77.3	62.0	41.3	32.5	22.8	18.0	10.0
4	t <sub>s</sub> in s	3.69	3.17	2.97	2.62	2.43	2.21	1.97	1.60	1.36	1.22	1.00	0.89	0.75	0.67	0.54
	J in kgm <sup>2</sup>	824	608	533	415	357	295	234	154	111	89	60	47.0	33.1	26.2	16.7
5	t <sub>s</sub> in s	3.69	3.17	2.97	2.62	2.43	2.21	1.97	1.60	1.36	1.22	1.00	0.89	0.75	0.67	0.54
	J in kgm <sup>2</sup>	1092	806	707	550	473	391	311	205	147	118	79	63	44.2	35.0	22.4
6	t <sub>s</sub> in s	3.32	2.85	2.67	2.36	2.19	1.99	1.78	1.44	1.23	1.09	0.90	0.80	0.67	0.60	0.49
	J in kgm <sup>2</sup>	1663	1225	1075	840	723	597	477	312	227	178	121	95.6	66.8	53.4	35.0
8	t <sub>s</sub> in s	3.32	2.85	2.67	2.36	2.19	1.99	1.78	1.44	1.23	1.09	0.90	0.80	0.67	0.60	0.49
	J in kgm <sup>2</sup>	2270	1673	1468	1147	987	815	652	426	311	244	166	130.9	91.5	73.2	48.5
10	t <sub>s</sub> in s	3.32	2.85	2.67	2.36	2.19	1.99	1.78	1.44	1.23	1.09	0.90	0.80	0.67	0.60	0.49
	J in kgm <sup>2</sup>	2878	2120	1861	1454	1252	1033	826	541	394	309	211	166	116.2	93.0	61.7
12	t <sub>s</sub> in s	3.32	2.85	2.67	2.36	2.19	1.99	1.78	1.44	1.23	1.09	0.90	0.80	0.67	0.60	0.49
	J in kgm <sup>2</sup>	2327	1715	1505	1175	1012	835	668	437	319	250	170	134	93.8	75.0	50
16	t <sub>s</sub> in s	1.66	1.42	1.33	1.18	1.10	0.99	0.89	0.72	0.61	0.55	0.45	0.40	0.34	0.30	0.24
	J in kgm <sup>2</sup>	986	721	632	498	432	350	283	185	132	107	71.5	56.3	40.4	31.2	19.6
20	t <sub>s</sub> in s	1.66	1.42	1.33	1.18	1.10	0.99	0.89	0.72	0.61	0.55	0.45	0.40	0.34	0.30	0.24
	J in kgm <sup>2</sup>	1397	1022	897	705	613	496	401	262	188	152	102	80.2	57.7	44.7	28.2
24	t <sub>s</sub> in s	1.66	1.42	1.33	1.18	1.10	0.99	0.89	0.72	0.61	0.55	0.45	0.40	0.34	0.30	0.24
	J in kgm <sup>2</sup>	1156	845	741	583	507	410	331	217	155	126	84.0	66.2	47.5	36.8	23.2

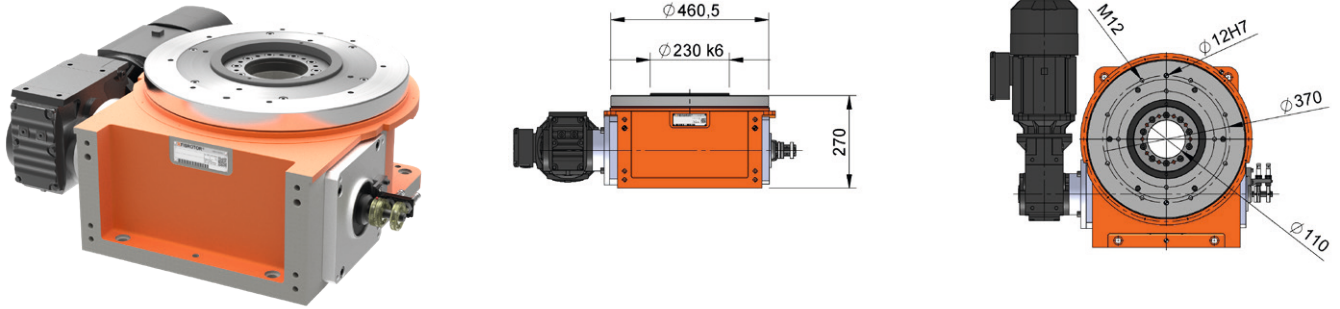
## INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	3.32	2.86	2.68	2.37	2.20	1.99	1.79	1.45	1.24	1.10	0.91	0.81	0.68		
	J in kgm <sup>2</sup>	285	211	185	145	125	101.7	82.1	48.0	38.9	30.4	20.5	16.0	8.70		
3	t <sub>s</sub> in s	3.02	2.60	2.44	2.15	2.00	1.81	1.62	1.31	1.12	1.00	0.83	0.73	0.62	0.55	0.45
	J in kgm <sup>2</sup>	385	285	251	195	168	138	110	71.7	52.1	41.3	28.2	21.6	15.3	10.8	5.00
4	t <sub>s</sub> in s	3.02	2.60	2.44	2.15	2.00	1.81	1.62	1.31	1.12	1.00	0.83	0.73	0.62	0.55	0.45
	J in kgm <sup>2</sup>	552	409	360	279	241	197	158	103	75.0	59.6	40.7	31.3	22.3	17.3	10.2
5	t <sub>s</sub> in s	3.02	2.60	2.44	2.15	2.00	1.81	1.62	1.31	1.12	1.00	0.83	0.73	0.62	0.55	0.45
	J in kgm <sup>2</sup>	731	542	477	370	320	262	210	137	100	79.3	54.3	41.8	29.9	23.3	15.3
6	t <sub>s</sub> in s	2.71	2.34	2.20	1.94	1.80	1.63	1.46	1.18	1.01	0.90	0.75	0.66	0.56	0.50	0.40
	J in kgm <sup>2</sup>	1108	826	730	567	488	400	321	209	153	121.3	83.9	64.8	46.3	36.7	17.4
8	t <sub>s</sub> in s	2.71	2.34	2.20	1.94	1.80	1.63	1.46	1.18	1.01	0.90	0.75	0.66	0.56	0.50	0.40
	J in kgm <sup>2</sup>	1512	1127	996	775	667	547	438	286	209	166	114.9	88.8	63.6	50.5	32.0
10	t <sub>s</sub> in s	2.71	2.34	2.20	1.94	1.80	1.63	1.46	1.18	1.01	0.90	0.75	0.66	0.56	0.50	0.40
	J in kgm <sup>2</sup>	1917	1429	1263	982	845	693	556	363	265	211	146	112.8	80.9	64.3	40.8
12	t <sub>s</sub> in s	2.71	2.34	2.20	1.94	1.80	1.63	1.46	1.18	1.01	0.90	0.75	0.66	0.56	0.50	0.40
	J in kgm <sup>2</sup>	1550	116	1021	794	683	560	449	293	214	170	118	91.0	65.2	51.8	32.8
16	t <sub>s</sub> in s	1.36	1.17	1.10	0.97	0.90	0.81	0.73	0.59	0.51	0.45	0.37	0.33	0.28	0.25	0.20
	J in kgm <sup>2</sup>	661	489	432	336	289	234	190	124	92.1	71.5	48.0	38.0	27.1	21.4	13.3
20	t <sub>s</sub> in s	1.36	1.17	1.10	0.97	0.90	0.81	0.73	0.59	0.51	0.45	0.37	0.33	0.28	0.25	0.20
	J in kgm <sup>2</sup>	937	694	613	476	410	332	269	176	131	102	68.5	54.3	38.8	30.7	19.0
24	t <sub>s</sub> in s	1.36	1.17	1.10	0.97	0.90	0.81	0.73	0.59	0.51	0.45	0.37	0.33	0.28	0.25	0.20
	J in kgm <sup>2</sup>	775	574	507	394	339	274	223	145	108	84.0	56.5	44.7	31.9	25.2	15.8

# FIBROTOR® EM.16/ER.16

## DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

## ENCODING



TECHNICAL DATA		ENCODING	EM	ER	
Table top dimensions		Standard dimensions Ø 460 mm	.0460	✓	✓
	<b>2</b>	Strengthened table top bearing Ø 394 mm	.0394	●	✗
		Table top lock Ø 440 mm	.0440	●	✗
Drive motor		Standard brake motor	.1	✓	✓
	<b>3</b>	AC servomotor	.7	●	✗
		Special version	.9	●	●
		Without motor	.0	●	●
Drive arrangement	<b>4</b>	See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b>	2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
		Special divisions up to T30 on request		●	✗
Additional assemblies	<b>6</b>	Without additional modules	.0	✓	✓
		Strengthened table top bearing	.1	●	✗
		Hydraulic table top lock	.2	●	✗
		Without additional modules	.0	✓	✓
	<b>7</b>	Built-in version	.1	●	✗
		Vertical version	.3	●	●
	<b>8</b>	Centring ring	.1	✓	✓
	Centring ring and centring flange	.3	●	●	

## TECHNICAL DATA

		EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12	± 12"	± 20"
	Division 16 – 24	± 18"	± 25"
	Division > 24	± 30"	
Accuracy in arc length (on Ø 460 mm)	Division 2 – 12	± 0.013 mm	± 0.022 mm
	Division 16 – 24	± 0.020 mm	± 0.028 mm
	Division > 24	± 0.030 mm	
Axial runout	Table top Ø	0.015 mm	0.03 mm
Concentricity	Centre hole on Ø	0.015 mm	0.03 mm
Plane parallelism	Table top Ø	0.040 mm	0.06 mm
Indexing/dwell angle	Division 2	330°/30°	
	Division 3 – 5	300°/60°	✓
	Division 6 – 12	270°/90°	✓
	Division > 12	135°/45°	
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓
	Brake	380 – 480 V, AC	✓
Motor power	Depending on indexing time and mass moment of inertia	0.37 – 2.2 kW	✓
Centre hole		Ø 110 mm	✓
Working position	Any, standard: horizontal table top		●
Weight		ca. 220 kg	

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load incl. workforce	kg	4,000	800	800
Perm. ad-on diameter	mm	2,400	2,400	2,400
Perm. axial loading	N	32,000	11,000	
Perm. radial loading	N	20,000	20,000	20,000
Perm. tilting moment on positioned table top	Nm	9,000	4,200	2,300
Perm. tilting moment on rotating table top	Nm	3,000	3,000	900
Perm. tangential moment on positioned table top	Nm	1,400	1,400	1,400

## ADDITIONAL OPTIONS

		Horizontal	Vertical	EM	ER
Perm. tilting moment with strengthened bearing in position	Nm	27,000	12,400	✓	✘
Perm. tilting moment with strengthened bearing moving	Nm	9,000	9,000	✓	✘
Perm. tangential moment with table top lock	Nm	1,900	1,900	✓	✘

## INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	3.93	3.45	2.89	2.61	2.29	2.16	1.84	1.67	1.45	1.35	1.14	1.03	0.91	0.73		
	J in kgm <sup>2</sup>	793	611	428	349	268	238	173	142	107	92.2	65.3	53.0	37.0	17.2		
3	t <sub>s</sub> in s	3.57	3.13	2.63	2.38	2.08	1.97	1.67	1.52	1.32	1.23	1.04	0.94	0.83	0.66	0.52	
	J in kgm <sup>2</sup>	1068	821	579	474	362	324	233	192	145	125	89.2	72.6	56.2	31.4	13.7	
4	t <sub>s</sub> in s	3.57	3.13	2.63	2.38	2.08	1.97	1.67	1.52	1.32	1.23	1.04	0.94	0.83	0.66	0.52	
	J in kgm <sup>2</sup>	1529	1175	829	679	518	464	333	276	208	180	128	105	81.1	50.7	27.1	
5	t <sub>s</sub> in s	3.57	3.13	2.63	2.38	2.08	1.97	1.67	1.52	1.32	1.23	1.04	0.94	0.83	0.66	0.52	
	J in kgm <sup>2</sup>	2026	1557	1099	900	687	616	442	366	276	239	170	139	108	67.7	41.4	
6	t <sub>s</sub> in s	3.22	2.82	2.37	2.14	1.87	1.77	1.51	1.37	1.19	1.10	0.94	0.84	0.74	0.60	0.47	
	J in kgm <sup>2</sup>	2074	1590	1123	915	698	626	455	374	282	241	175	140	108	70.5	42.6	
8	t <sub>s</sub> in s	3.22	2.82	2.37	2.14	1.87	1.77	1.51	1.37	1.19	1.10	0.94	0.84	0.74	0.60	0.47	
	J in kgm <sup>2</sup>	2832	2172	1534	1250	954	855	622	511	385	329	240	191	148	96.8	58.8	
10	t <sub>s</sub> in s	3.22	2.82	2.37	2.14	1.87	1.77	1.51	1.37	1.19	1.10	0.94	0.84	0.74	0.60	0.47	
	J in kgm <sup>2</sup>	3591	2754	1944	1585	1210	1084	788	649	489	418	305	243	188	123	74.9	
12	t <sub>s</sub> in s	3.22	2.82	2.37	2.14	1.87	1.77	1.51	1.37	1.19	1.10	0.94	0.84	0.74	0.60	0.47	
	J in kgm <sup>2</sup>	4337	3326	2349	1915	1462	1309	952	784	591	505	368	294	228	149	90.8	
16	t <sub>s</sub> in s	1.61	1.41	1.18	1.07	0.94	0.88	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30	0.24	
	J in kgm <sup>2</sup>	1227	941	659	541	417	366	265	218	163	142	103	82	63.6	41.1	25.7	
20	t <sub>s</sub> in s	1.61	1.41	1.18	1.07	0.94	0.88	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30	0.24	
	J in kgm <sup>2</sup>	1742	1336	935	769	593	519	377	310	233	202	147	117	90.5	59.0	37.0	
24	t <sub>s</sub> in s	1.61	1.41	1.18	1.07	0.94	0.88	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30	0.24	
	J in kgm <sup>2</sup>	2154	1652	1156	950	733	642	466	383	288	250	182	145	112	73.2	46.3	

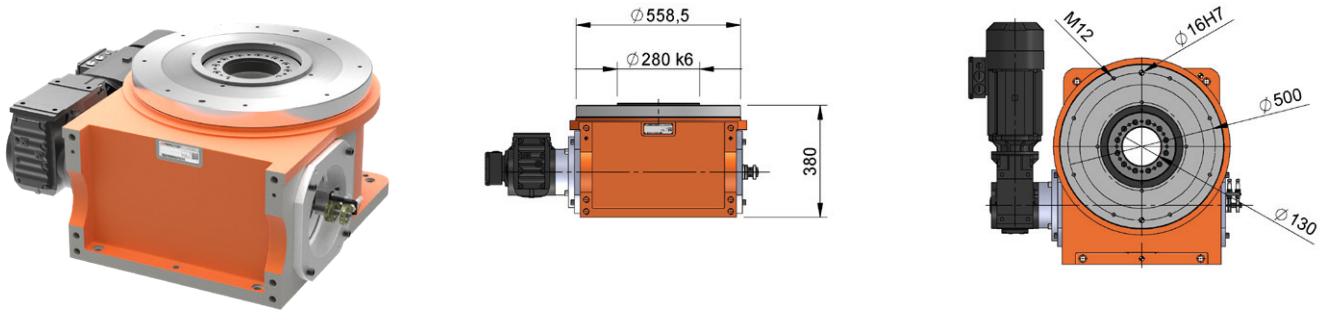
## INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	3.23	2.84	2.39	2.16	1.89	1.79	1.52	1.38	1.20	1.11	0.95	0.85	0.75		
	J in kgm <sup>2</sup>	535	400	292	238	182	163	117	90.0	72.47	61.8	42.0	29.4	19.0		
3	t <sub>s</sub> in s	2.94	2.58	2.17	1.96	1.72	1.62	1.38	1.26	1.09	1.01	0.86	0.78	0.68	0.55	0.43
	J in kgm <sup>2</sup>	724	557	394	321	247	219	158	132	98.1	84.0	60.5	49.5	35.0	16.8	6.5
4	t <sub>s</sub> in s	2.94	2.58	2.17	1.96	1.72	1.62	1.38	1.26	1.09	1.01	0.86	0.78	0.68	0.55	0.43
	J in kgm <sup>2</sup>	1036	798	564	460	354	314	227	189	141	121	87.2	71.5	53.9	32.6	13.8
5	t <sub>s</sub> in s	2.94	2.58	2.17	1.96	1.72	1.62	1.38	1.26	1.09	1.01	0.86	0.78	0.68	0.55	0.43
	J in kgm <sup>2</sup>	1374	1057	748	610	469	416	301	251	187	161	116	92.7	72.0	46.5	23.5
6	t <sub>s</sub> in s	2.64	2.32	1.95	1.77	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49	0.39
	J in kgm <sup>2</sup>	1394	1076	760	626	479	425	311	254	191	164	117	96	72.9	46.5	25.5
8	t <sub>s</sub> in s	2.64	2.32	1.95	1.77	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49	0.39
	J in kgm <sup>2</sup>	1903	1470	1038	855	655	581	425	347	261	225	160	132	100	64.0	40.0
10	t <sub>s</sub> in s	2.64	2.32	1.95	1.77	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49	0.39
	J in kgm <sup>2</sup>	2413	1863	1316	1084	831	737	540	441	331	285	204	168	127	81.58	51.1
12	t <sub>s</sub> in s	2.64	2.32	1.95	1.77	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49	0.39
	J in kgm <sup>2</sup>	2915	2251	1589	1309	1004	890	652	533	400	345	246	203	154	98.87	62.0
16	t <sub>s</sub> in s	1.32	1.16	0.98	0.88	0.77	0.73	0.62	0.57	0.49	0.46	0.39	0.35	0.31	0.25	0.19
	J in kgm <sup>2</sup>	824	636	454	366	279	251	181	152	112	98.7	70.5	56.5	44.0	28.0	15.5
20	t <sub>s</sub> in s	1.32	1.16	0.98	0.88	0.77	0.73	0.62	0.57	0.49	0.46	0.39	0.35	0.31	0.25	0.19
	J in kgm <sup>2</sup>	1171	904	645	519	397	357	257	217	160	141	101	80.8	63.1	40.5	22.7
24	t <sub>s</sub> in s	1.32	1.16	0.98	0.88	0.77	0.73	0.62	0.57	0.49	0.46	0.39	0.35	0.31	0.25	0.19
	J in kgm <sup>2</sup>	1447	1117	797	642	491	442	318	269	198	174	125	100	78.3	50.4	28.4

# FIBROTOR® EM.17/ER.17

## DIMENSIONS



CAD-files and technical data can be downloaded from [www.fibrotor.de](http://www.fibrotor.de)

ENCODING      EM.17/ER.17                           

TECHNICAL DATA		ENCODING	EM	ER
Table top dimensions	Standard dimensions Ø 558 mm	.0558	✓	✓
	<b>2</b> Strengthened table top bearing Ø 480 mm	.0480	●	✗
	Table top lock Ø 548 mm	.0548	●	✗
Drive motor	Standard brake motor	.1	✓	✓
	<b>3</b> AC servomotor	.7	●	✗
	Special version	.9	●	●
	Without motor	.0	●	●
Drive arrangement	<b>4</b> See planning documents under <a href="http://www.fibrotor.de/downloads">www.fibrotor.de/downloads</a>	.XXX	✓	✓
Division	<b>5</b> 2, 3, 4, 5, 6, 8, 10, 12, 16, 20, 24	.XX	✓	✓
	Special divisions up to T96 on request		●	✗
Additional assemblies	Without additional modules	.0	✓	✓
	<b>6</b> Strengthened table top bearing	.1	●	✗
	Hydraulic table top lock	.2	●	✗
	Without additional modules	.0	✓	✓
	<b>7</b> Built-in version	.1	●	✗
	Vertical version	.3	●	●
	<b>8</b> Centring ring	.1	✓	✓
	Centring ring and centring flange	.3	●	●

TECHNICAL DATA			EM	ER
Indexing accuracy in arc seconds (increased indexing accuracy on request only for EM)	Division 2 – 12		± 10"	± 20"
	Division 16 – 24		± 15"	± 25"
	Division > 24		± 25"	
Accuracy in arc length (on Ø 558 mm)	Division 2 – 12		± 0.014 mm	± 0.027 mm
	Division 16 – 24		± 0.020 mm	± 0.034 mm
	Division > 24		± 0.034 mm	
Axial runout	Table top Ø		0.02 mm	0.04 mm
Concentricity	Centre hole on Ø		0.02 mm	0.04 mm
Plane parallelism	Table top Ø		0.04 mm	0.08 mm
Indexing/dwell angle	Division 2	330°/30°		
	Division 3 – 5	300°/60°	✓	✓
	Division 6 – 12	270°/90°		
	Division > 12	135°/45°		
Voltage	Motor	230/400 V, 50 hz 266/460 V, 60 hz	✓	✓
	Brake	380 – 480 V, AC	✓	✓
Motor power	Depending on indexing time and mass moment of inertia	0.55 – 3.0 kW	✓	✓
Centre hole		Ø 130 mm	✓	✓
Working position	Any, standard: horizontal table top		●	●
Weight		ca. 450 kg		

## LOAD DATA

		Horizontal	Vertical	Upside-Down
Perm. transport load	kg	5,500	1,000	1,000
Perm. ad-on diameter	mm	2,800	2,800	2,800
Perm. axial loading	N	70,000	12,000	
Perm. radial loading	N	25,000	25,000	25,000
Perm. tilting moment on positioned table top	Nm	12,000	5,000	3,000
Perm. tilting moment on rotating table top	Nm	4,000	4,000	1,100
Perm. tangential moment on positioned table top	Nm	1,600	1,600	1,600

ADDITIONAL OPTIONS			EM	ER	
Perm. tilting moment with strengthened bearing in position	Nm	Horizontal			
		Vertical	15,000	✓	✗
			36,000		
Perm. tilting moment with strengthened bearing moving	Nm	Horizontal	12,000	✓	✗
		Vertical	12,000		
Perm. tangential moment with table top lock	Nm	2,500	2,500	✓	✗



INDEXING TIMES 50 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	3.88	3.39	2.87	2.60	2.29	2.16	1.84	1.67	1.45	1.35	1.14	1.03	0.91	0.73
	J in kgm <sup>2</sup>	1348	1028	736	603	467	415	300	247	185	160	100.0	71.5	46.8	20.5
3	t <sub>s</sub> in s	3.53	3.08	2.61	2.36	2.08	1.97	1.67	1.52	1.32	1.22	1.04	0.94	0.82	0.66
	J in kgm <sup>2</sup>	1821	1386	994	812	630	565	405	335	252	215	155	126	84.0	40.0
4	t <sub>s</sub> in s	3.53	3.08	2.61	2.36	2.08	1.97	1.67	1.52	1.32	1.22	1.04	0.94	0.82	0.66
	J in kgm <sup>2</sup>	2607	1984	1423	1163	903	810	581	481	362	308	223	182	138	77.5
5	t <sub>s</sub> in s	3.53	3.08	2.61	2.36	2.08	1.97	1.67	1.52	1.32	1.22	1.04	0.94	0.82	0.66
	J in kgm <sup>2</sup>	3454	2629	1887	1542	1197	1074	771	638	480	410	297	242	183	118
6	t <sub>s</sub> in s	3.17	2.77	2.35	2.12	1.87	1.77	1.51	1.37	1.19	1.10	0.93	0.84	0.74	0.60
	J in kgm <sup>2</sup>	3505	2676	1925	1566	1218	1091	793	652	491	419	299	243	188	122
8	t <sub>s</sub> in s	3.17	2.77	2.35	2.12	1.87	1.77	1.51	1.37	1.19	1.10	0.93	0.84	0.74	0.60
	J in kgm <sup>2</sup>	4787	3655	2629	2139	1664	1490	1084	891	672	574	409	333	258	168
10	t <sub>s</sub> in s	3.17	2.77	2.35	2.12	1.87	1.77	1.51	1.37	1.19	1.10	0.93	0.84	0.74	0.60
	J in kgm <sup>2</sup>	6069	4633	3334	2713	2110	1890	1375	1131	852	728	519	423	328	214
12	t <sub>s</sub> in s	3.17	2.77	2.35	2.12	1.87	1.77	1.51	1.37	1.19	1.10	0.93	0.84	0.74	0.60
	J in kgm <sup>2</sup>	7330	5596	4027	3277	2549	2283	1661	1366	1030	880	628	512	396	259
16	t <sub>s</sub> in s	1.59	1.39	1.18	1.06	0.94	0.89	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30
	J in kgm <sup>2</sup>	2087	1594	1148	926	727	652	462	379	285	247	179	143	110	71.1
20	t <sub>s</sub> in s	1.59	1.39	1.18	1.06	0.94	0.89	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30
	J in kgm <sup>2</sup>	2964	2264	1631	1315	1034	926	657	539	405	352	256	204	157	102
24	t <sub>s</sub> in s	1.59	1.39	1.18	1.06	0.94	0.89	0.75	0.68	0.59	0.55	0.47	0.42	0.37	0.30
	J in kgm <sup>2</sup>	3663	2799	2016	1626	1278	1145	812	667	502	435	317	253	195	127

INDEXING TIMES 60 Hz

ONLY IN COMBINATION WITH FIBRO FREQUENCY INVERTER

2	t <sub>s</sub> in s	3.20	2.80	2.38	2.15	1.89	1.79	1.52	1.38	1.20	1.11	0.94	0.85	0.75	
	J in kgm <sup>2</sup>	840	700	470	340	317	284	175	167	116	91.0	52.4	36.5	23.0	
3	t <sub>s</sub> in s	2.91	2.55	2.16	1.95	1.72	1.63	1.38	1.26	1.09	1.01	0.86	0.77	0.68	0.55
	J in kgm <sup>2</sup>	1236	948	679	553	429	385	275	229	170	146	98.0	68.0	44.0	20.3
4	t <sub>s</sub> in s	2.91	2.55	2.16	1.95	1.72	1.63	1.38	1.26	1.09	1.01	0.86	0.77	0.68	0.55
	J in kgm <sup>2</sup>	1770	1358	973	793	616	553	395	329	245	210	151	120	85.0	41.5
5	t <sub>s</sub> in s	2.91	2.55	2.16	1.95	1.72	1.63	1.38	1.26	1.09	1.01	0.86	0.77	0.68	0.55
	J in kgm <sup>2</sup>	2346	1801	1291	1051	817	733	525	437	326	279	201	161	125	69.0
6	t <sub>s</sub> in s	2.62	2.29	1.94	1.76	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49
	J in kgm <sup>2</sup>	2393	1827	1310	1078	835	740	542	442	332	285	203	167	126	71.0
8	t <sub>s</sub> in s	2.62	2.29	1.94	1.76	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49
	J in kgm <sup>2</sup>	3269	2496	1790	1473	1142	1012	741	605	454	391	279	230	174	111
10	t <sub>s</sub> in s	2.62	2.29	1.94	1.76	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49
	J in kgm <sup>2</sup>	4144	3165	2270	1868	1448	1284	940	768	577	497	354	292	221	141
12	t <sub>s</sub> in s	2.62	2.29	1.94	1.76	1.55	1.46	1.25	1.13	0.98	0.91	0.77	0.70	0.61	0.49
	J in kgm <sup>2</sup>	5006	3823	2743	2257	1750	1552	1137	928	697	601	429	354	268	171
16	t <sub>s</sub> in s	1.31	1.15	0.97	0.88	0.77	0.73	0.62	0.57	0.49	0.45	0.39	0.35	0.31	0.25
	J in kgm <sup>2</sup>	1416	1090	775	637	487	437	315	265	195	164	122	98.0	76.0	48.3
20	t <sub>s</sub> in s	1.31	1.15	0.97	0.88	0.77	0.73	0.62	0.57	0.49	0.45	0.39	0.35	0.31	0.25
	J in kgm <sup>2</sup>	2011	1549	1101	906	693	622	448	378	278	234	175	140	109	70.1
24	t <sub>s</sub> in s	1.31	1.15	0.97	0.88	0.77	0.73	0.62	0.57	0.49	0.45	0.39	0.35	0.31	0.25
	J in kgm <sup>2</sup>	2486	1915	1361	1120	857	770	554	468	345	290.38	217	174	136	87.3



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