

RAO MARS



FROM CYCLE TO MOTION

Linear Motors

- “RAO Mars” CJSC was established in 1988
- Total ground area is 42 ha
- Total floor area: 124 500 sq.m.
- The equipment delivered by the US-based and European companies
- Management by “Sitronics” company from 2008
- RAO Mars is the largest diversified company in region.



Our products

Linear Synchronous Motors

Advantages:

Precision:

positioning precision within nanometers; high uniformity of travel; rigidity of drive.

Dynamics:

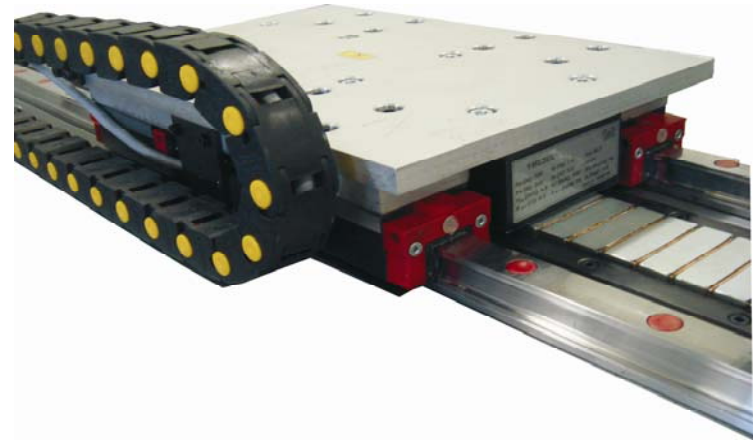
high acceleration; high end speeds till 9 m/c..

Reliability:

low wear and high precision throughout the product lifetime, low vibration and noise, few backbone components.

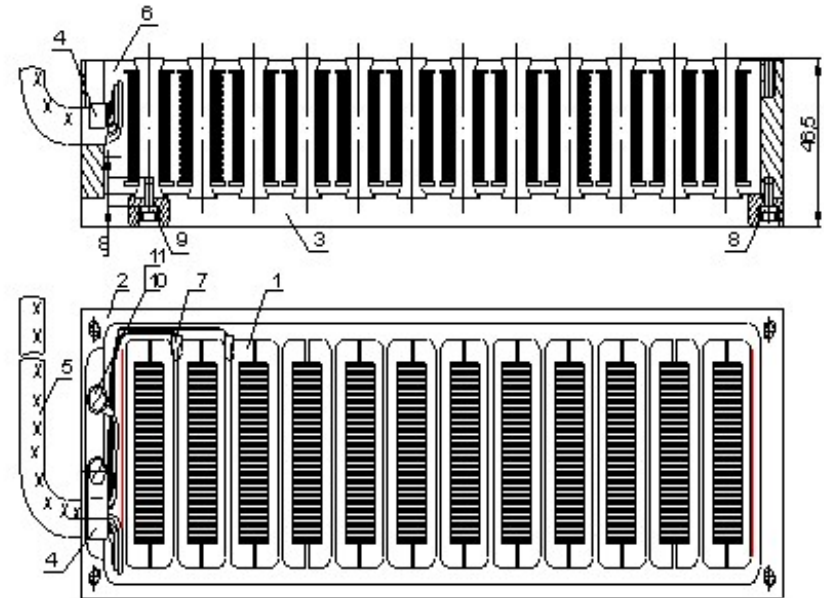
Flexibility:

program control and versatility; multiple traveling carriages and multi-access systems; few components in the system; ease of mounting and adjustment; minimal operating costs among solutions of direct drive.



Our services

- In-warranty and after-warranty servicing.
- Development and production of motors according to customers' special needs.
- Integrated direct drive servo systems with full technical service in Cologne.
- Integration of engineering services under specific applications.



Linear Motors

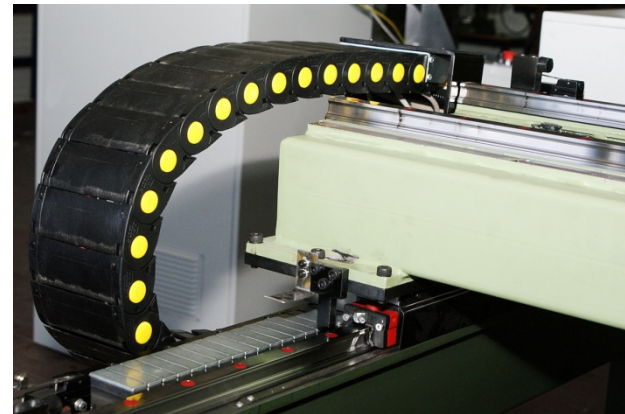
Motors Series 1ML are motors have one magnetic track. Between the armature and the magnetic track there is a large attractive force that is good for systems in need of a preloaded bearing. Preloading removes play in guideways. A feature of this motor series is small size and easy integration into available designs.

Applications: Machine building (including machine tools), systems of optical control, laser cutting and packing machines; transportation and robotics; highly dynamic equipment.

The series includes three types: 1ML25, 1ML50, and 1ML100.

Features:

Draft force range 62-520 N ;
Maximum effort ratio 2-3 ;
Integrated sensor of thermal protection;
Protection rating IP65;
Insulation heat-resistance rating F



General features of synchronous linear motors series 1ML

Features	1ML25	1ML25	1ML25	1ML50	1ML50	1ML50	1ML100	1ML100	1ML100
	S	M	L	S	M	L	S	M	L
Long-time tug with natural cooling F_a , N	62	90	125	124	180	270	250	370	520
Peak load F_p (2...3 c), N (winding 20oC)	130	200	240	250	350	550	500	740	1030
Continuous current I_a , A	2,2	2,2	2,2	2,5	2,5	2,5	3,2	3,2	3,2
Peak current I_p (2...3 c), A	4,4	4,4	4,4	5	5	5	6,4	6,4	6,4
Max. speed F_a V , m/s	10	9,2	8,8	8	6,2	5,1	3,5	2,8	2,3
Force constant K_f , N/A	28,2	40,9	56,8	49,6	72	108	78,125	115,625	162,5
Pole pitch, mm	33								
Max. speed at F_p V_{max} , m/s	9,1	8,4	8,0	7,3	5,6	4,6	3,2	2,5	2,1
Reverse EMF constant K_e	25,0	27,2	28,4	31,3	40,3	49,0	71,4	89,3	108,7

Linear Motors

Motors Series 2ML are synchronous symmetrical motors with a double-sided track. A close air gap between the armature and the magnetic track (0.6 mm) is supported by linear bearings. There is a small attractive force between the magnetic track and armature. The linear bearings are slightly loaded, ensuring a long life and high dynamic characteristics.

Applications: machine building, robotic systems, transportation, multi-access machine tools with numerical control, highly dynamic machining centers.

The series includes three types: 2ML25, 2ML50, and 2ML100.

Basic characteristics:

Range of traction 130-1000 N

Max. traction ratio 2-3

Integrated sensor of thermal protection

Protection rating IP65

Isolation thermal resistance rating F



General features of synchronous linear motors series 2 ML

Features	2ML25	2ML25	2ML25	2ML50	2ML50	2ML50	2ML100	2ML100	2ML100
	S	M	L	S	M	L	S	M	L
Long-time tug with natural cooling F_a , N	130	180	260	250	370	530	500	760	1000
Peak load F_p (2...3 c), N (winding 20oC)	250	350	550	500	750	1050	1000	1500	2000
Continuous current I_a , A	5.8	5.8	5.8	6.2	6.2	6.2	6.0	6.0	6.0
Peak current I_p (2...3 c), A	11.6	11.6	11.6	12.4	12.4	12.4	12.0	12.0	12.0
Max. speed F_a V , m/s	9.2	6.5	5.0	5.7	3.7	3.0	2.8	2.6	2,3
Force constant K_f , N/A	22.4	31	46.5	40	60	85	83	127	167
Pole pitch, mm	33								
Max. speed at F_p V_{max} , m/s	8.4	5.9	4.6	5.2	3.4	2.7	2.5	2,5	2,1
Reverse EMF constant K_e	27.2	38.5	50.0	43.9	67.6	83.3	89.3	96.2	108,7

SITRONICS



- At RAO Mars, we build high-quality products and provide the service, training and support to keep them productive.
- Our highly skilled engineers and electronics and mechanical assembly teams allow us to control quality, cost and guarantee reliability and availability.



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