GÜDEL

Heavy-duty TrackMotion

Powerful Track Motion for large robots

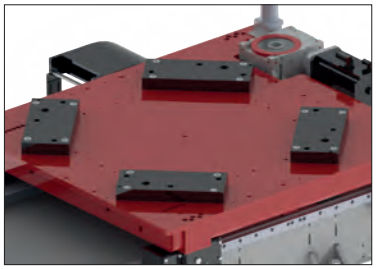
For the heavy robots – the drive axis TMF-5

The TMF-5 Traversing Axis

By creating a new TMF module in the heavy-duty range, Güdel is keeping up with the robotics manufacturers. The TMF-5 was specially developed for heavy industrial robots and is the only standardly available module on the market that can move an articulated robot with a payload over six metric tons and a static payload of over ten metric tons.

The TMF-5 can accommodate up to four independently driven carriages. Industrial robots mounted on a TMF-5 can have a payload of up to 1,300 kg. This permits fully flexible utilization in heavy-duty applications. Working as a seventh axis for robots, the TMF-5 opens new possibilities in production processes.

TMF-5 traversing axis with Kuka robot



TMF-5 standard carriage with robot specific mounting pads

TMF-5 traversing axis with ABB robot

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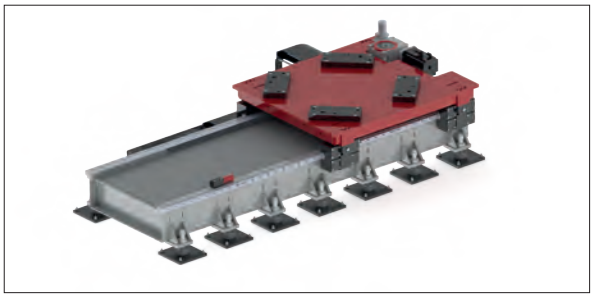
TMF-5 moves heavy industrial robots:

ABB	IRB 8700 / IRB 8700 Lean ID
Fanuc	M-900iB/400 L / M-900iB/700
Kuka	KR 1000 1300 titan PA / KR 1000 titan F / KR 1000 L950 titan PA / KR 1000 L750 titan F / KR 1000 L750 titan

Industrial robots from other manufacturers on request.



Static payload	10,400 kg
Robot weight incl. payload	6,200 kg
Number of carriages	up to 4
Guideway system	Heavy-duty guideway system with flat rails and double roller support.
Drive system	Hardened helical racks and pinions. Güdel HPG 120 gearbox. Motors as standard from ABB, Fanuc and Kuka, additional motor models on request.
Length and stroke	Track length from 3 m to 100 m in 1 m steps. Strokes from 1.4 m to 97.4 m.
Pedestal	Standard pedestal heights 300 mm/400 mm/500 mm
Floor mounting	Welding plate including anchor rods. Floor thickness min. 220 mm. Pressure absorption of 5 t/m². Concrete quality min. C25 (250 kp/cm²)
Noise emission	max. 75 dB(A)

Güdel company profile

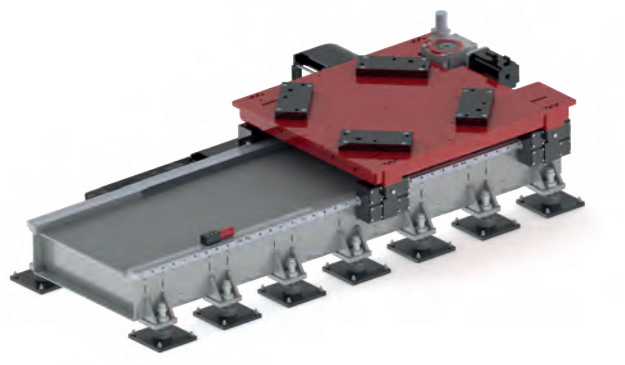
Güdel is a manufacturer of high-precision machine components and provider of sophisticated automation solutions.
Its spectrum of products ranges from linear guideways, racks, pinions and drives right through to linear axes and gantry robots. Güdel assembles its products into systems with a high degree of control intelligence and complete plant installations, which can be used in the automotive, tire, metal, rail, intra-logistics, pharmaceutical, renewable energy, wood, and aerospace industries. Güdel's technology is characterized by its innovation, quality and modularity.

TMF-5 technical data

Carrier – energy chain

Weight carriage	1,560 kg*
Energy chain	H4.56.30.250.0
Weight of energy chain	4.0 kg/m
Mounting bracket with tiewrap clamp	E4.560.30.2.C
Energy chain cross section (internal dimension):	Height: 56 mm, width: 300 mm
Precision (Repeatablity)	+/- 0.05 mm

* Weight without motors, electrical boxes, cables.



Drive data

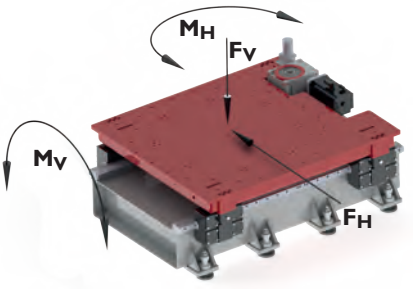
		Kuka	Fanuc	ABB	Static load
Robot type*		KR 1000 Titan	M-900iB/400 L M-900iB/700	IRB 8700	-
Static payload	**[N]**	-	-	-	104000
Speed	**m/min**	60	60	60	60
Acceleration	**m/s^{-2}**	0.8	0.8	1	1
Gearbox ratio	**[-]**	10	13.333	16	13.333
GÜDEL gearbox type HPG		120	120	120	120
Linear stroke per motor revolution	**[mm]**	26.667	20.000	16.667	20.000
Acceleration time	**[s]**	2	2	1.5	1.5
Stroke of axis while accelerating	**[m]**	1	1	0.8	0.8
Motor speed	**rpm**	2250	3000	3600	3000
Stall torque of motor	**[Nm]**	20	11	13	22
Max. torque of motor	**[Nm]**	57	38	41	74
Reduced inertia of axis	**kgm^2**	1.6E-01	6.6E-02	5.9E-02	1.3E-01
Motor type		MG_480	aiS40/4000	MU400	**

* incl. 500 mm spacer ** acc. to customer request

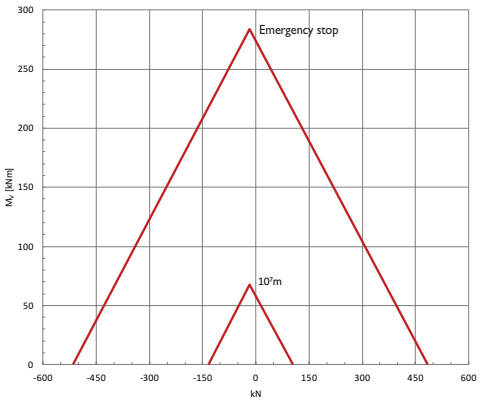
Options

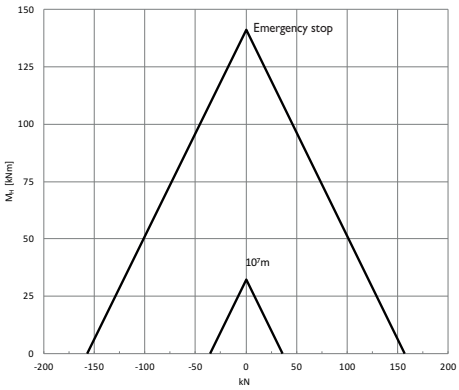
No.	Designation	No.	Designation
50	Cam rails and cams	164	Extended energy chain support
51	Mechanical multi-limit switch	166	Bottom plate in energy chain duct
52	Zero position mark	171	Feedthrough cable guide
60	Automatic lubrication system	172	Pedestal
81	Coated rollers, guideways, racks, and pinion	180	Bronze wiper
90	Y-multiple carriages linked with one drive	300	Documentation, other languages, on paper
91	Independent Y-multiple carriages, each with a drive	310	Special painting at customer request
160	Vertical dividers, insertable shelves for energy chains	311	Gaskets for low temperature
162	Enclosed energy chain	320	ATEX certification

Load diagram



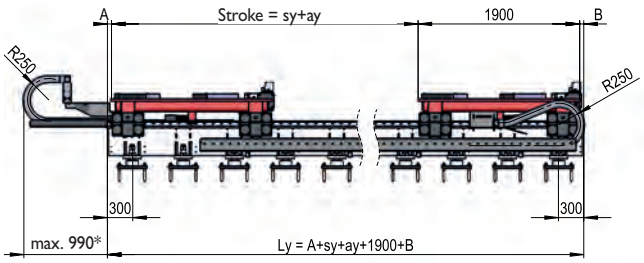
FV max. (kN): Vertical force
MV max. (kNm): Vertical moment
FH max. (kN): Horizontal force
MH max. (kNm): Horizontal moment



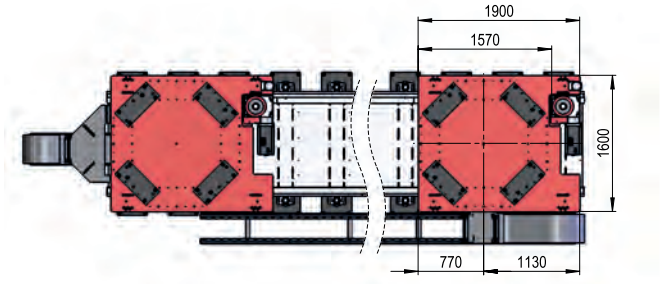


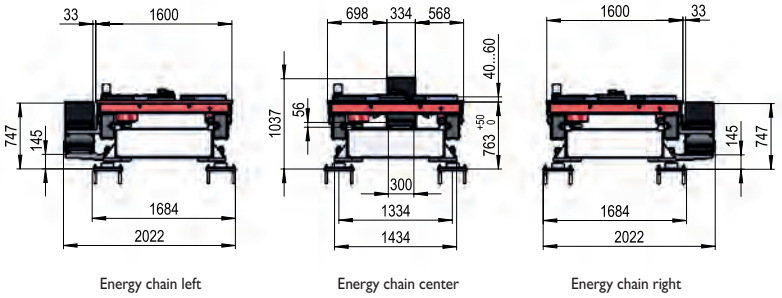
Recommended basic values for dimensioning the linear axis (Mv, Fv, Mh, Fh), emergency stop and service life 10^7 m.

Dimensions



* with energy chain sliding, central max. 1500



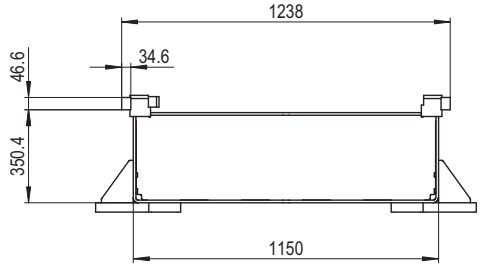


	min.	max.	
Ly	3000	-	
sy+ay	1000	98000	in 1 m steps
A/B	50	-	

Minimum recommended safety stroke ay = 50 mm

Bending and torsion values

Y-axis



Axis	Mat.	m* (kg/m)	Ix* (cm^4)	Iy* (cm^4)
Y	S235JR	500	912597	107204

* With rails

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