ICH Linear Direct Drives

Powerful Precision – As Much As You Want

Increase productivity and reduce operating costs – with the ICH linear motors from Kollmorgen you considerably improve overall equipment effectiveness. Cross the costs for maintenance work out of your calculations! Linear direct drives from Kollmorgen increase throughput compared with other drive systems by up to 40% and enable smaller, lighter machines with high energy efficiency due to their compact design.

ICH Linear Direct Drives

- Maintenance-free iron-core linear motors with high power density
- Direct power transmission without mechanical components
- Special motor design ensures very quiet running
- Feed force of 405 N to 12726 N (peak) and 175 N to 5341 N (continuous operation)
- Optional analog or digital hall effect sensors
- Compatible with all servo drives and safety and energy-saving modules
- Comprehensive development support from the Kollmorgen support team

Wide Range of Speed – from µm/s to km/h

Slower than 1 µm/s or faster than 5 m/s – the ICH linear motors from Kollmorgen move the load at all speeds precisely and with extremely low speed variations of ±0.01%.

High System Dynamics Over 10 G

ICH linear motors are distinguished by their quick and powerful acceleration. The larger motors typically achieve values between 3 G and 5 G; smaller motors more than 10 G. The primary limiting factor is the machine's management system.

Low Power Fluctuation and High Synchronization

Iron-core linear motors boast high power density, but also a certain degree of cogging depending on the system. The motor design from Kollmorgen reduces cogging to a minimum. The ICH linear motors thus impress with their high power density with low power fluctuation and precise synchronization.

Precise Positioning to Fractions of a µm

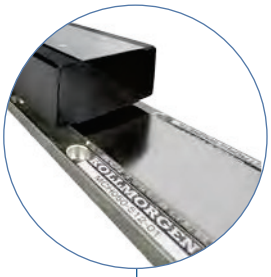
Positioning accuracy is limited by the resolution of the feedback system. In combination with the AKD servo drives from Kollmorgen you can develop linear drives that position quickly and precisely.

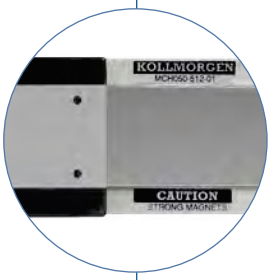
Unlimited Travel

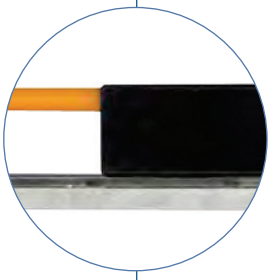
The secondary parts can be supplied in lengths 64, 128, 256, and 512 mm and can be combined into travel distances as long as you wish.

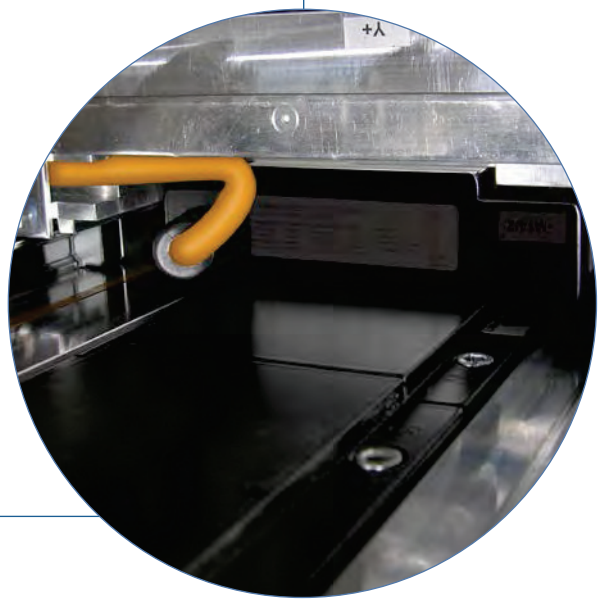
Simple Drive Design with Few Parts

Drives with linear motors with no housing require fewer parts and are considerably simpler in structure than rotary motors. The ICH linear motors from Kollmorgen merely require an air gap of 0.8 mm – moreover, no critical adjustments are necessary.









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Feedback System

All brushless motors require a feedback system for the commutation. Kollmorgen offers digital hall effect sensors which are used in the same way as with rotary servo motors from the servo drive to the commutation. In applications with particularly demanding synchronization requirements, digital hall effect sensors are used and the servo drive supplies sinusoidal currents.

For exact position determination, linear encoders – whose signals are simultaneously used for the commutation – are frequently employed. The signals of the hall effect sensors can be used during the start phase in addition to the commutation.

Options

- Hall effect sensors (analog* or digital)
- Thermal overload protection PTC+KTY
- Different cable options

* In development

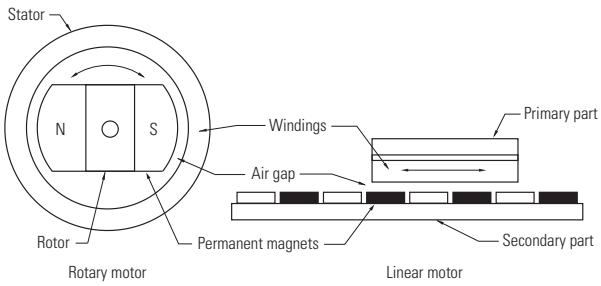
Applications Lurking Everywhere!

The ICH linear motors can be used in almost all motion tasks in many industries:

- Machine tools:
  Tool positioning for drilling, milling, grinding, and laser cutting
- Semi-conductor industry:
  Handling, checking and separating wafers, wire bonding, TAB, ion implantation, lithography
- Textile industry:
  Tufting machines
- Metrology:
  Coordinate measuring devices
- Assembly production:
  Placement machinery, screen prints, glue dispensers, drilling and checking printed circuits
- Medical devices:
  Patient positioning systems
- Preform injection molding machinery
- Plasma cutting machinery
- Flight simulators
- Acceleration slides, catapults

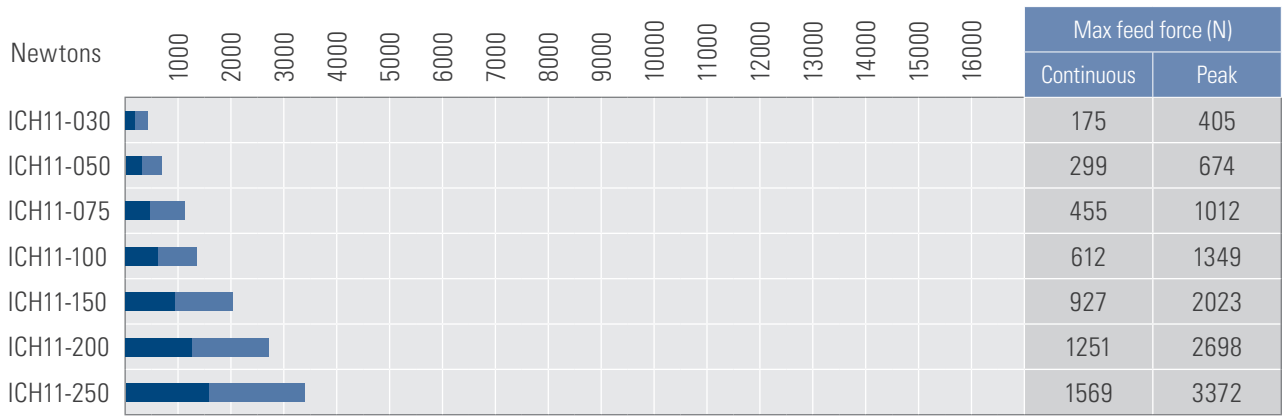
Functional Principle

Linear motors function according to the same principle as conventional rotary motors. Rotor and stator are rolled out flat and are no longer connected together mechanically. They then form the two components "primary part" (stator, coil part) and "secondary part" (rotor, magnet section). The load is coupled directly to the moving part – usually the primary part – while the secondary part is fixed to the machine as a magnet guide. However, in special applications the primary part may be fixed while the secondary part moves. The functional principle remains the same.



ICH Linear Direct Drives

ICH Series Performance Overview



	Max feed force (N)	
	Continuous	Peak
ICH11-030	175	405
ICH11-050	299	674
ICH11-075	455	1012
ICH11-100	612	1349
ICH11-150	927	2023
ICH11-200	1251	2698
ICH11-250	1569	3372
ICH22-030	342	710
ICH22-050	584	1184
ICH22-075	889	1775
ICH22-100	1203	2367
ICH22-150	1823	3551
ICH22-200	2445	4734
ICH22-250	3067	5918
ICH33-030	511	1065
ICH33-050	769	1909
ICH33-075	1171	2863
ICH33-100	1575	3818
ICH33-150	2387	5727
ICH33-200	3201	7636
ICH33-250	4016	9545
ICH44-030	600	1527
ICH44-050	1023	2545
ICH44-075	1557	3818
ICH44-100	2095	5090
ICH44-150	3175	7636
ICH44-200	4258	10181
ICH44-250	5341	12726

ICH Linear Direct Drives

Iron-core Linear Motors

Performance Data

Model	Winding [2]	Feed force [N]		Current [A]		Weight primary part [kg]	Secondary part type	Weight secondary part [kg/m]
		Peak	Continuous [1]	Peak	Continuous			
ICH11-030	A1	405	175	8,9	2,9	2.5	MCH-030	5.4
	A5			15.5	5.0			
ICH11-050	A1	674	299	8.9	2,9	3.5	MCH-050	7.6
	A5			15.5	5.1			
ICH11-075	A1	1012	455	8.9	3,0	4.8	MCH-075	10.4
	A5			15,2	5.2			
ICH11-100	A1	1349	612	8.9	3,0	6.1	MCH-100	13.2
	A5			15.5	5.2			
ICH11-150	A1	2023	927	17.9	6.1	8.6	MCH-150	18.8
	A5			30,9	10.6			
ICH11-200	A1	2698	1251	30.6	10.6	11.2	MCH-200	24.4
	A5			53.0	18.3			
ICH11-250	A1	3372	1569	30.6	10.6	13.8	MCH-250	30.0
	A5			53.0	18.4			
ICH22-030	A1	710	342	8.9	2.8	4.9	MCH-030	5.4
	A5			15.5	4.9			
ICH22-050	A1	1184	584	8.9	2,9	6.8	MCH-050	7.6
	A5			15.5	5.0			
ICH22-075	A1	1775	889	17.9	5.9	9.3	MCH-075	10.4
	A5			30,9	10.2			
ICH22-100	A1	2367	1203	30.6	10.2	11.8	MCH-100	13.2
	A5			53.0	17.0			
ICH22-150	A1	3551	1823	30.6	10.4	16.8	MCH-150	18.8
	A5			53.0	17.9			
ICH22-200	A1	4734	2445	30.6	10.4	21.7	MCH-200	24.4
	A5			53.0	18.0			
ICH22-250	A1	5918	3067	30.6	10.5	26.7	MCH-250	30.0
	A5			53.0	18.1			
ICH33-030	A1	1065	511	8.9	2.8	7.2	MCH-030	5.4
	A5			15.5	4.9			
ICH33-050	A1	1909	769	30.6	8.8	10.2	MCH-050	7.6
	A5			53.0	15.2			
ICH33-075	A1	2863	1171	30.6	8.9	13.8	MCH-075	10.4
	A5			53.0	15.5			
ICH33-100	A1	3818	1575	30.6	9.0	17.5	MCH-100	13.2
	A5			53.0	15.6			
ICH33-150	A1	5727	2387	30.6	9.1	24.9	MCH-150	18.8
	A5			53.0	15.8			
ICH33-200	A1	7636	3201	45.9	13.8	32.2	MCH-200	24.4
	A5			79.5	23.8			
ICH33-250	A1	9545	4016	45.9	13.8	39.6	MCH-250	30.0
	A5			79.5	23.9			
ICH44-030	A1	1527	600	15.3	4.3	9.6	MCH-030	5.4
	A5			26,5	7.4			
ICH44-050	A1	2545	1023	15.3	4.4	13.5	MCH-050	7.6
	A5			26,5	7.6			
ICH44-075	A1	3818	1557	30.6	8.9	18.3	MCH-075	10.4
	A5			53.0	15.4			
ICH44-100	A1	5090	2095	30.6	9.0	23.2	MCH-100	13.2
	A5			53.0	15.6			
ICH44-150	A1	7636	3175	61.2	18.2	33.0	MCH-150	18.8
	A5			106.0	31.5			
ICH44-200	A1	10181	4258	61.2	18.3	42.7	MCH-200	24.4
	A5			106.0	31.7			
ICH44-250	A1	12726	5341	61.2	18.4	52.5	MCH-250	30.0
	A5			106.0	31.8			

1) Continuous feed force with maximum winding temperature 2) Other windings are possible – please ask us about them

ICH Coil Assembly Dimensions

Type	A [mm]	B [mm]	C [mm]
ICH xx-030	60	58.6 ±0.1	16
ICH xx-050	80	58.6 ±0.1	36
ICH xx-075	105	58.6 ±0.1	32
ICH xx-100	130	58.6 ±0.1	36
ICH xx-150	180	60.6 ±0.1	32
ICH xx-200	230	60.6 ±0.1	36
ICH xx-250	280	60.6 ±0.1	32

MCH Magnet Way Dimensions

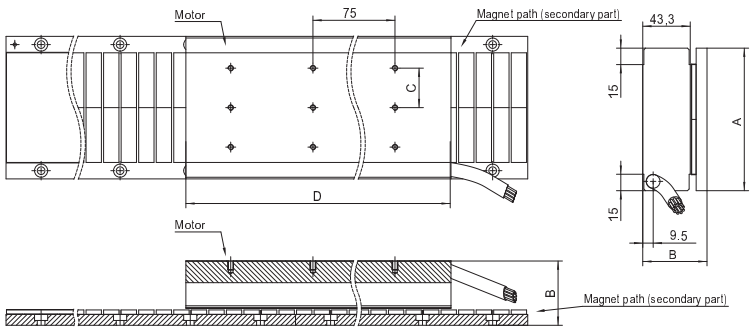
Type	F [mm]	G [mm]	H [mm]
MCH030-XXX-01	60	10	14.4
MCH050-XXX-01	80	10	14.4
MCH075-XXX-01	105	10	14.4
MCH100-XXX-01	130	10	14.4
MCH-150-XXX-01	180	12	16.4
MCH200-XXX-01	230	12	16.4
MXH250-XXX-01	280	14	18.8

Primary Part Length

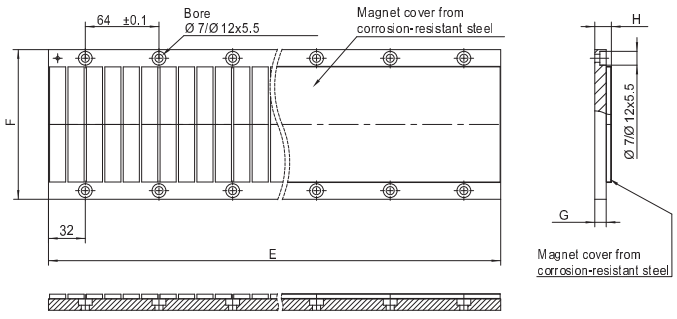
Type	D [mm]
ICH11-xxx	190
ICH22-xxx	375
ICH33-xxx	542
ICH44-xxx	718

Secondary Part Length

Type	E [mm]
MCHXXX-064-01	64
MCHXXX-128-01	128
MCHXXX-256-01	256
MCHXXX-512-01	512



Primary and secondary part assembly



Secondary part per segment

Model Nomenclature

ICH Linear Direct Drives

ICH 22 - 050 - A1 - TY - C1 - 0

ICH Series
Iron **C**ore **H**igh Voltage

Design Length Identifier
11, 22, 33, 44

Coil Width
030, 050, 075, 100
150, 200, 250

Winding
A1, A5

Thermal Protection
TY PTC and KTY
(Standard)

Reserved for Customizations
00, 01, 02, etc.

Cable Options

Open ends

C1	400 mm
C2	200 mm
C3	100 mm
C4	1200 mm

With connected connector

P1	400 mm
P2	200 mm
P3	100 mm
P4	1200 mm

ICH Linear Direct Drives - Hall Sensors

(Order code for hall sensors when ordered seperatly)

HD - Y - Px

Hall-Option
HD = Digital
HA = Analog*

Winding Phase Connection
Y = Y (Star) Winding
D = Δ (Triangle) Winding

Cable Options
Px - Cable with Sub-D connector
P1 = 400 mm
P2 = 200 mm
P3 = 100 mm
P4 = 1200 mm

* In Preparation