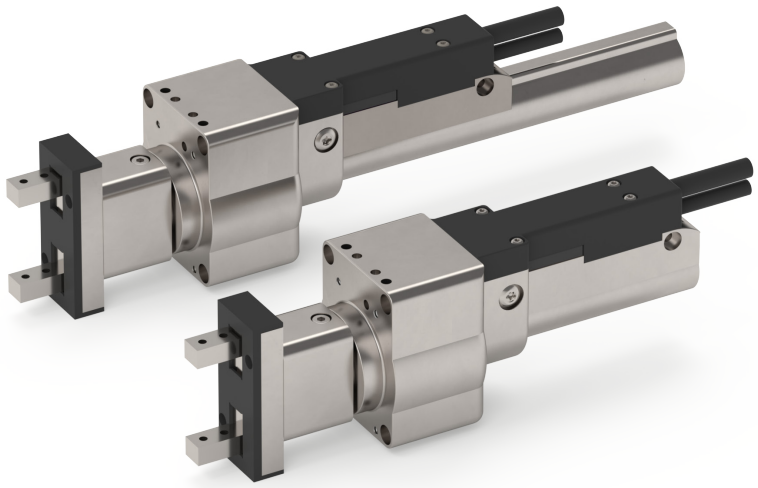
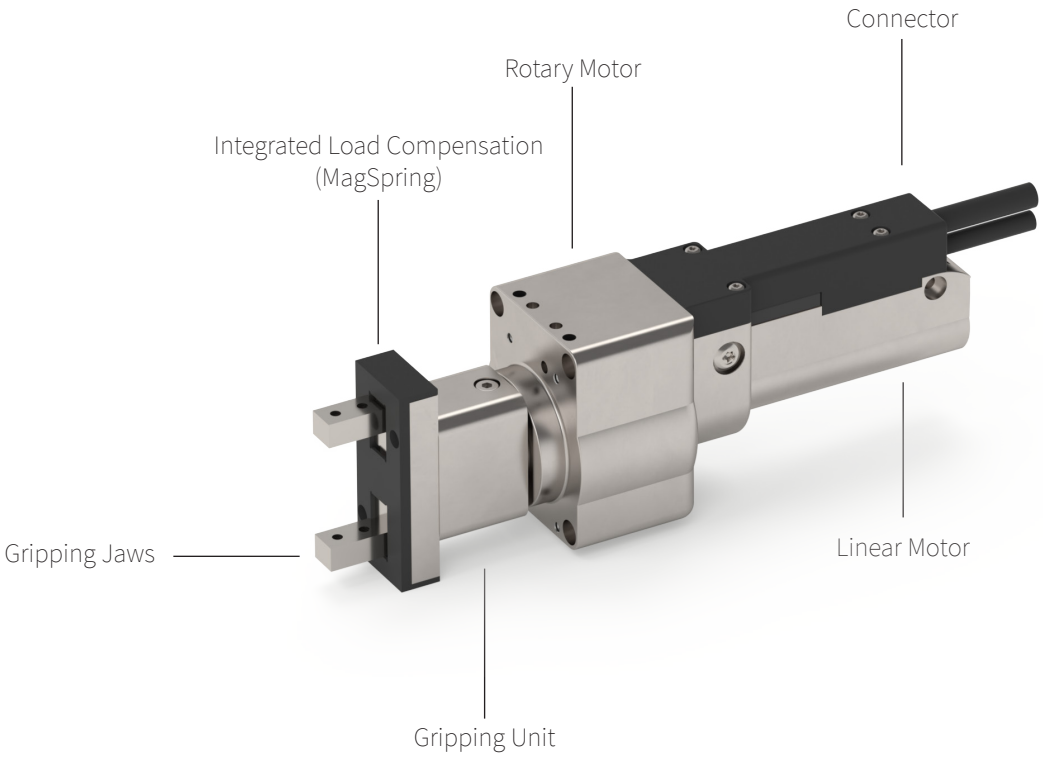
GRIPPER MODULES GM51



- Electric servo rotary gripper with additional magnetic holding force
- Highly dynamic gripping, closing and opening times of less than 20 ms
- Smooth gripping thanks to freely programmable motion profiles
- Free finger positioning and force control via servo motor
- Maintains MagSpring in case of power failure, easy manual opening
- Clever design for neat cable routing directly with trailing chain connection
- Low power consumption in open and closed position
- Compatible with all common fieldbuses

GRIPPER MODULES GM51



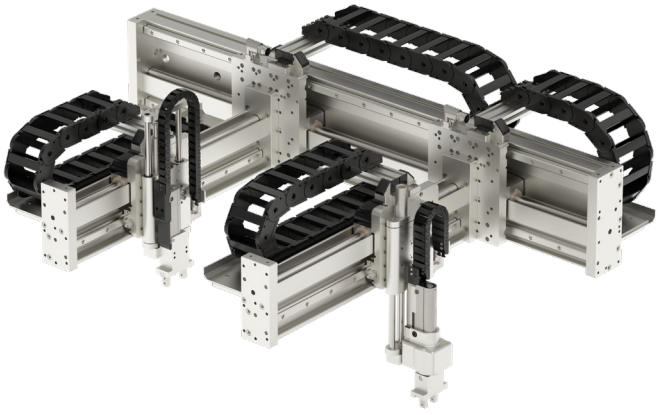
Grippers GM51

The LinMot GM51 gripper is a highly dynamic solution for demanding applications. With extremely fast closing and opening times of less than 20 milliseconds, it enables efficient and reliable gripping. Freely programmable motion profiles can be used to make the gripping process particularly gentle, making it easier to handle sensitive objects. The gripper's servo motor allows individual finger positioning and adjustable force control, so gripping can be customised.

The GM51 has an integrated rotary motor with endless rotation. This makes the gripper particularly suitable for dynamic positioning, assembly and screwing tasks, and the accuracy of the absolute encoder provides high precision angular positioning. In addition, the position of the gripper fingers is monitored by the linear motor, eliminating the need for external sensors and cables that interfere with rotation. The GM51 has a integrated adapter for drag chains and cables.

Combination with guides and modules

The combination of the GM51 parallel gripper with the FM01 and EM01 guides and the DM01 and DM03 modules enables complete pick-and-place and pick-rotate-and-place applications thanks to the simple coupling and modular design of the LinMot components. The GM51 is also available with passive load compensation (MagSpring). A combination that offers maximum precision, speed and safety even under the most demanding conditions.



PERFORMANCE DATA GM51-23SX80F-XP-K_35-18_E50X08-NG(_MS03)

Performance Data Gripper Module GM51-23Sx80F-XP-K_35-18_E50x08-NG(_MS03)				
Stroke				
Max. Opening/Closing Stroke Range	mm	(in)	18	(0.71)
Force				
Max. Clamping Force (<0.75 s) with MagSpring / without MagSpring	N	(lbf)	56 / 45	(12.59 / 10.12)
Max. Continuous Clamping Force Closing Direction with MagSpring / without MagSpring	N	(lbf)	19 / 9	(4.27 / 2.02)
Max. Continuous Clamping Force Opening Direction with MagSpring / without MagSpring	N	(lbf)	7 / 7	(1.57 / 1.57)
Max. Continuous Clamping Force Through the MagSpring (no power)	N	(lbf)	11	(2.47)
Max. Torque Rotary Motor	Nm	(lbf)	1.03	(9.15)
Continuous Torque Rotary Motor	Nm	(lbf)	0.32	(2.83)
Velocity				
Minimum Opening/Closing Time	s		0.02	
Max. Rotary Speed	rpm		3500*	
Position Detection				
Position Resolution	mm	(in)	0.002	(0.00008)
Repeatability Linear Motor	mm	(in)	±0.05	(±0.002)
Repeatability Rotary Motor	°	°	±0.05	(±0.002)
Electrical Data				
Max. Current Gripper Motor @ 48 / 72VDC	A_{pk}		7.4	
Max. Current Rotary Motor @ 48 / 72VDC	A_{pk}		20.8	
Rated Current Linear Motor	A_{pk}		TBD	
Rated Current Rotary Motor	A_{pk}		TBD	
Mechanical Data				
Gripper Width	mm	(in)	70	(2.76)
Gripper Length	mm	(in)	67.6	(2.66)
Gripper Height	mm	(in)	244.8	(9.64)
Gripper Mass	g	(lb)	1100	(2.43)
Ambient Temperature	°C		-10 bis 60	
IP Protection Class			IP 30	
Drive				
Power Supply Drive	VDC		24-72	
Number of Required Drives	Pcs.		2	
Communication Protocols			PROFINET, PROFIdrive, EtherNet/IP, EtherCAT, CANopen, sercos, Ethernet Powerlink	

*Theoretical speed of rotation without load at rated voltage U_p

PERFORMANCE DATA GM51-23SX160H-XP-K_35-18_E50X08-NG(_MS03)

Performance Data Gripper Module GM51-23Sx160H-XP-K_35-18_E50x08-NG(_MS03)				
Stroke				
Max. Opening/Closing Stroke Range	mm	(in)	22	(0.87)
Force				
Max. Clamping Force (<0.75 s) with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Closing Direction with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Opening Direction with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Through the MagSpring (no power)	N	(lbf)	tbd	tbd
Max. Torque Rotary Motor	Nm	(lbf)	tbd	tbd
Continuous Torque Rotary Motor	Nm	(lbf)	tbd	tbd
Velocity				
Minimum Opening/Closing Time	s		tbd	
Max. Rotary Speed	rpm		3000*	
Position Detection				
Position Resolution	mm	(in)	0.005	(0.0002)
Repeatability Linear Motor	mm	(in)	±0.05	(±0.002)
Repeatability Rotary Motor	°	°	±0.05	(±0.002)
Electrical Data				
Max. Current Gripper Motor @ 48 / 72VDC	A_{pk}		9.4	
Max. Current Rotary Motor @ 48 / 72VDC	A_{pk}		24.6	
Rated Current Linear Motor	A_{pk}		TBD	
Rated Current Rotary Motor	A_{pk}		TBD	
Mechanical Data				
Gripper Width	mm	(in)	tbd	tbd
Gripper Length	mm	(in)	tbd	tbd
Gripper Height	mm	(in)	tbd	tbd
Gripper Mass	g	(lb)	tbd	tbd
Ambient Temperature	°C		-10 bis 60	
IP Protection Class			IP 30	
Drive				
Power Supply Drive	VDC		24-72	
Number of Required Drives	Pcs.		2	
Communication Protocols			PROFINET, PROFIdrive, EtherNet/IP, EtherCAT, CANopen, sercos, Ethernet Powerlink	

*Theoretical speed of rotation without load at rated voltage U_r

PERFORMANCE DATA GM51-37SX60-XP-N_48-22_E70X18-NG(_MS03)

Performance Data Gripper Module GM51-37Sx60-XP-N_48-22_E70x18-NG(_MS03)				
Stroke				
Max. Opening/Closing Stroke Range	mm	(in)	22	(0.87)
Force				
Max. Clamping Force (<0.75 s) with MagSpring / without MagSpring	N	(lbf)	128 / 97	(28.78 / 21.81)
Max. Continuous Clamping Force Closing Direction with MagSpring / without MagSpring	N	(lbf)	42 / 12	(9.44 / 2.70)
Max. Continuous Clamping Force Opening Direction with MagSpring / without MagSpring	N	(lbf)	10 / 10	(2.25 / 2.25)
Max. Continuous Clamping Force Through the MagSpring (no power)	N	(lbf)	31	(6.97)
Max. Torque Rotary Motor	Nm	(lbf)	3.92	(34.69)
Continuous Torque Rotary Motor	Nm	(lbf)	1.21	(10.71)
Velocity				
Minimum Opening/Closing Time	s		0.03	
Max. Rotary Speed	rpm		3000*	
Position Detection				
Position Resolution	mm	(in)	0.005	(0.0002)
Repeatability Linear Motor	mm	(in)	±0.05	(±0.002)
Repeatability Rotary Motor	°	°	±0.05	(±0.002)
Electrical Data				
Max. Current Gripper Motor @ 48 / 72VDC	A_{pk}		9.4	
Max. Current Rotary Motor @ 48 / 72VDC	A_{pk}		24.6	
Rated Current Linear Motor	A_{pk}		TBD	
Rated Current Rotary Motor	A_{pk}		TBD	
Mechanical Data				
Gripper Width	mm	(in)	103	(4.06)
Gripper Length	mm	(in)	104.8	(4.13)
Gripper Height	mm	(in)	294.2	(11.58)
Gripper Mass	g	(lb)	2770	(6.11)
Ambient Temperature	°C		-10 bis 60	
IP Protection Class			IP 30	
Drive				
Power Supply Drive	VDC		24-72	
Number of Required Drives	Pcs.		2	
Communication Protocols			PROFINET, PROFIdrive, EtherNet/IP, EtherCAT, CANopen, sercos, Ethernet Powerlink	

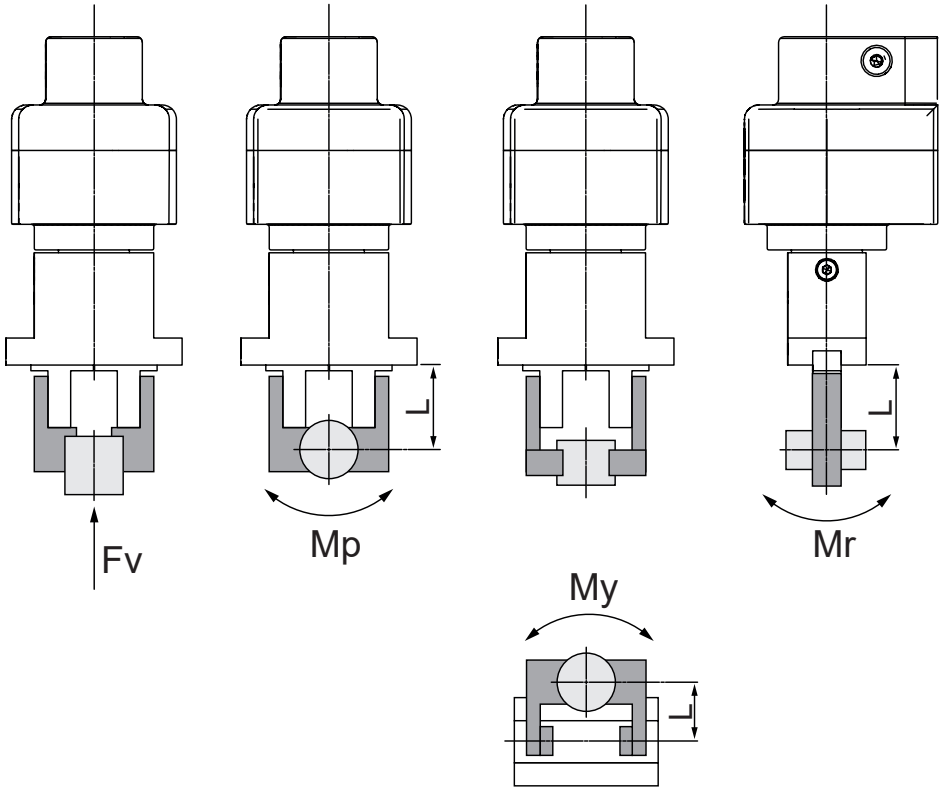
*Theoretical speed of rotation without load at rated voltage U_z

PERFORMANCE DATA GM51-37SX120F-XP-N_48-22_E70X18-NG(_MS03)

Performance Data Gripper Module GM51-37Sx120F-XP-N_48-22_E70x18-NG(_MS03)				
Stroke				
Max. Opening/Closing Stroke Range	mm	(in)	22	(0.87)
Force				
Max. Clamping Force (<0.75 s) with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Closing Direction with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Opening Direction with MagSpring / without MagSpring	N	(lbf)	tbd	tbd
Max. Continuous Clamping Force Through the MagSpring (no power)	N	(lbf)	tbd	tbd
Max. Torque Rotary Motor	Nm	(lbf)	tbd	tbd
Continuous Torque Rotary Motor	Nm	(lbf)	tbd	tbd
Velocity				
Minimum Opening/Closing Time	s		tbd	
Max. Rotary Speed	rpm		3000*	
Position Detection				
Position Resolution	mm	(in)	0.005	(0.0002)
Repeatability Linear Motor	mm	(in)	±0.05	(±0.002)
Repeatability Rotary Motor	°	°	±0.05	(±0.002)
Electrical Data				
Max. Current Gripper Motor @ 48 / 72VDC	A_{pk}		9.4	
Max. Current Rotary Motor @ 48 / 72VDC	A_{pk}		24.6	
Rated Current Linear Motor	A_{pk}		TBD	
Rated Current Rotary Motor	A_{pk}		TBD	
Mechanical Data				
Gripper Width	mm	(in)	tbd	tbd
Gripper Length	mm	(in)	tbd	tbd
Gripper Height	mm	(in)	tbd	tbd
Gripper Mass	g	(lb)	tbd	tbd
Ambient Temperature	°C		-10 bis 60	
IP Protection Class			IP 30	
Drive				
Power Supply Drive	VDC		24-72	
Number of Required Drives	Pcs.		2	
Communication Protocols			PROFINET, PROFIdrive, EtherNet/IP, EtherCAT, CANopen, sercos, Ethernet Powerlink	

*Theoretical speed of rotation without load at rated voltage U_r

CALCULATION OF THE LOAD MOMENTS



L: Distance to the point at which the load is applied (mm).

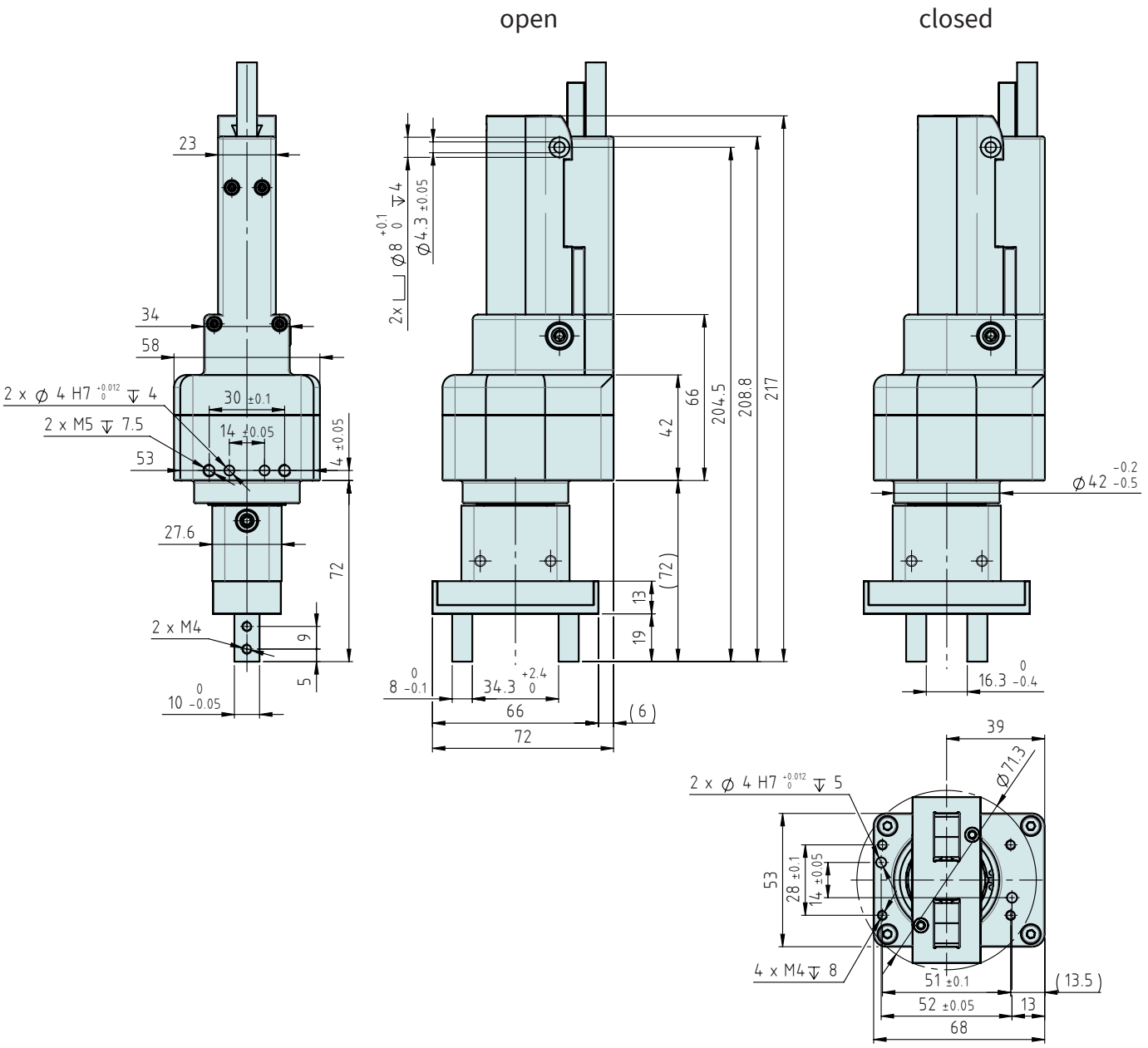
Model	Allowable vertical load Fv (N)	Maximum allowable moment		
		Pitch moment Mp (Nm)	Yaw moment My (Nm)	Roll moment Mr (Nm)
GM51-23	147	1.32	1.32	2.65
GM51-37	343	3.0	3.0	6.0

Values for load and moment in the table indicate static values.

Calculation of allowable external force (when moment load is applied)	Calculation example
$\textbf{Allowable load F (N)} = \frac{\textbf{M (maximum allowable moment) (N} \cdot \textbf{m)}}{\textbf{L x} \frac{\textbf{10}^{-3}}{*}}$ (*Unit conversion constant)	When a static load of = 10N is operating, which applies pitch moment to point L = 30mm from the GM51-23 guide. $\textbf{Allowable load F (N)} = \frac{\textbf{1.32}}{\textbf{30 x 10}^{-3}} = \textbf{44.0 (N)}$ $\textbf{Load f} = \textbf{10 (N)} < \textbf{44.0 (N)}$ Therefore, it can be used.

DOC.-NO. 0185-0225-E / VERSION 1V1
SUBJECT TO ALTERATIONS

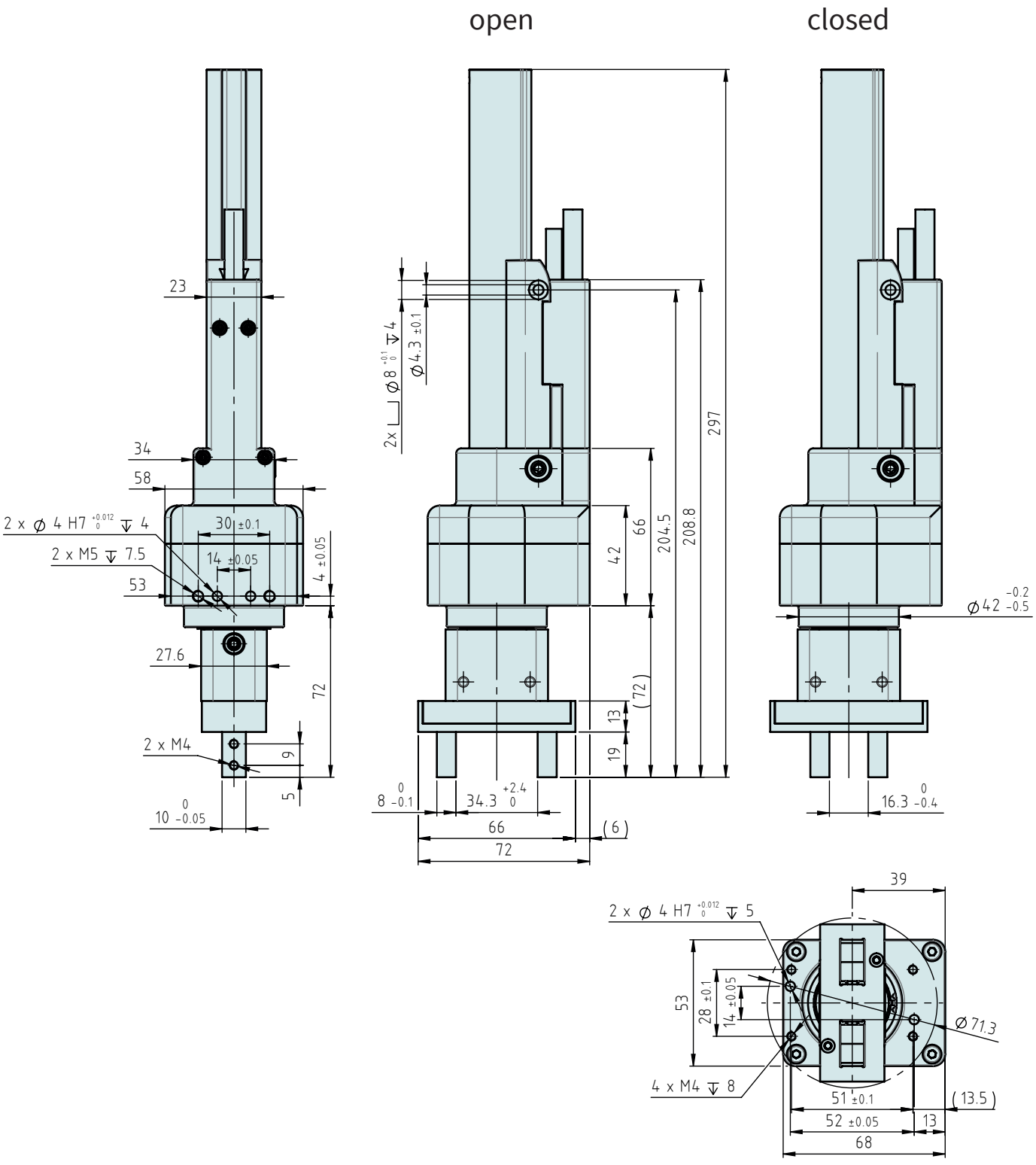
GRIPPER GM51-23SX80F-XP-K_35-18_E50X08-NG(_MS03)



Dimensions in mm

Item	Description	Item-No.
GM51-23Sx80F-XP-K_35-18_E50x08-NG	Rotary Gripper Module, stroke 18 mm	0150-6599
GM51-23Sx80F-XP-K_35-18_E50x08-NG_MS03	Rotary Gripper Module, stroke 18 mm, with holding force	0150-6302

GRIPPERGM51-23SX160H-XP-K_35-18_E50X08-NG(_MS03)



Dimensions in mm

Item	Description	Item-No.
GM51-23Sx160H-XP-K_35-18_E50x08-NG	Rotary Gripper Module, stroke 18 mm	0150-6668
GM51-23Sx160H-XP-K_35-18_E50x08-NG_MS03	Rotary Gripper Module, stroke 18 mm, with holding force	0150-6665

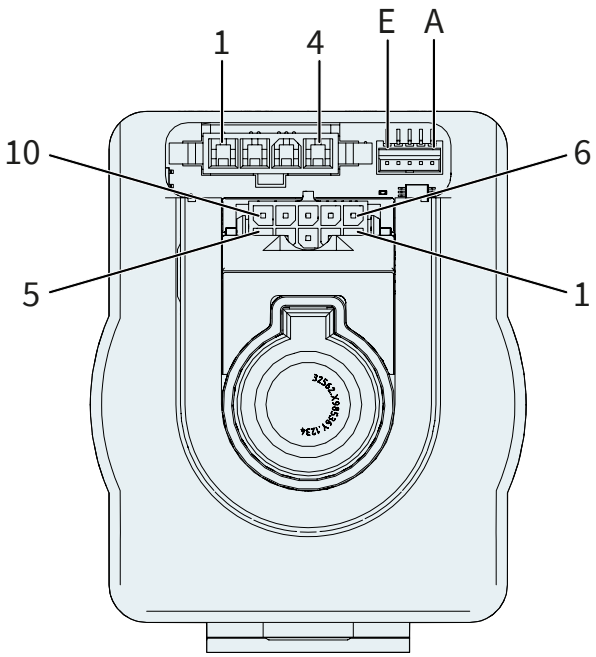
CONNECTOR GM51-23 LINEAR MOTOR / ROTARY MOTOR

NG-connector rotary motor (top)

Motor connector wiring	NG-connector	Wire color motor cable
Phase 2-	Pin 1	grey
Phase 2+	Pin 2	blue
Phase 1-	Pin 3	pink
Phase 1+	Pin 4	red
Temp Sensor	Pin E	black
Sensor Cos	Pin D	green
Sensor Sin	Pin C	yellow
GND	Pin B	Inner Shield
+5V	Pin A	white
Housing		Outer Shield

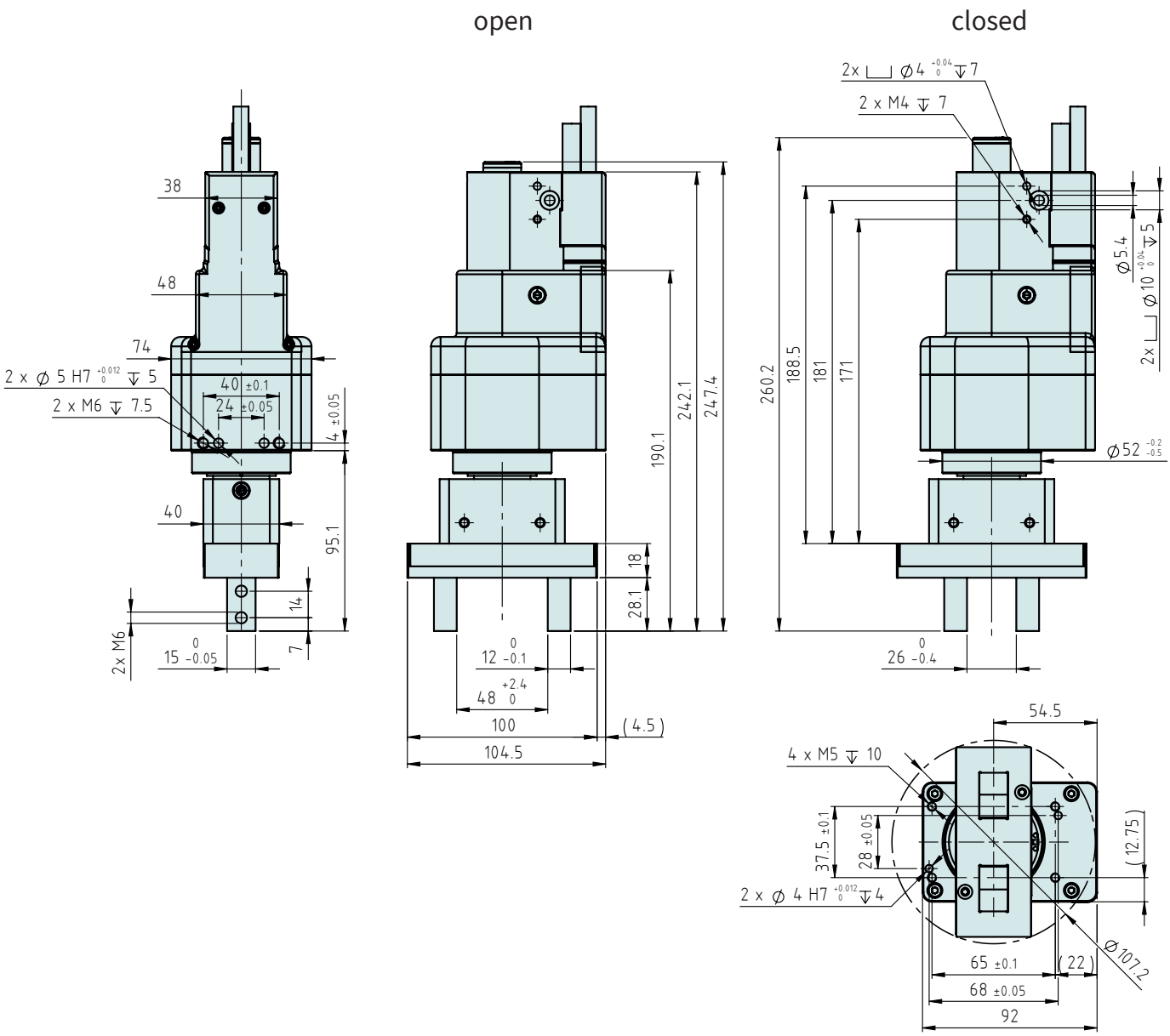
K-connector linear motor (bottom)

Motor connector wiring K-connector		Wire color motor cable
Pin 1	Phase 1+	red
Pin 2	Phase 2+	blue
Pin 3	n.c.	n.c.
Pin 4	Phase 1-	pink
Pin 5	Phase 2-	grey
Pin 6	Sensor Sin	yellow
Pin 7	Sensor Cos	green
Pin 8	GND	brown
Pin 9	+5V	white
Pin 10	Temp sensor	black
	Housing	Shield



Ansicht: Motorstecker, steckseitig
Oben: NG-Stecker Drehmotor
Unten: K-Stecker Linearmotor

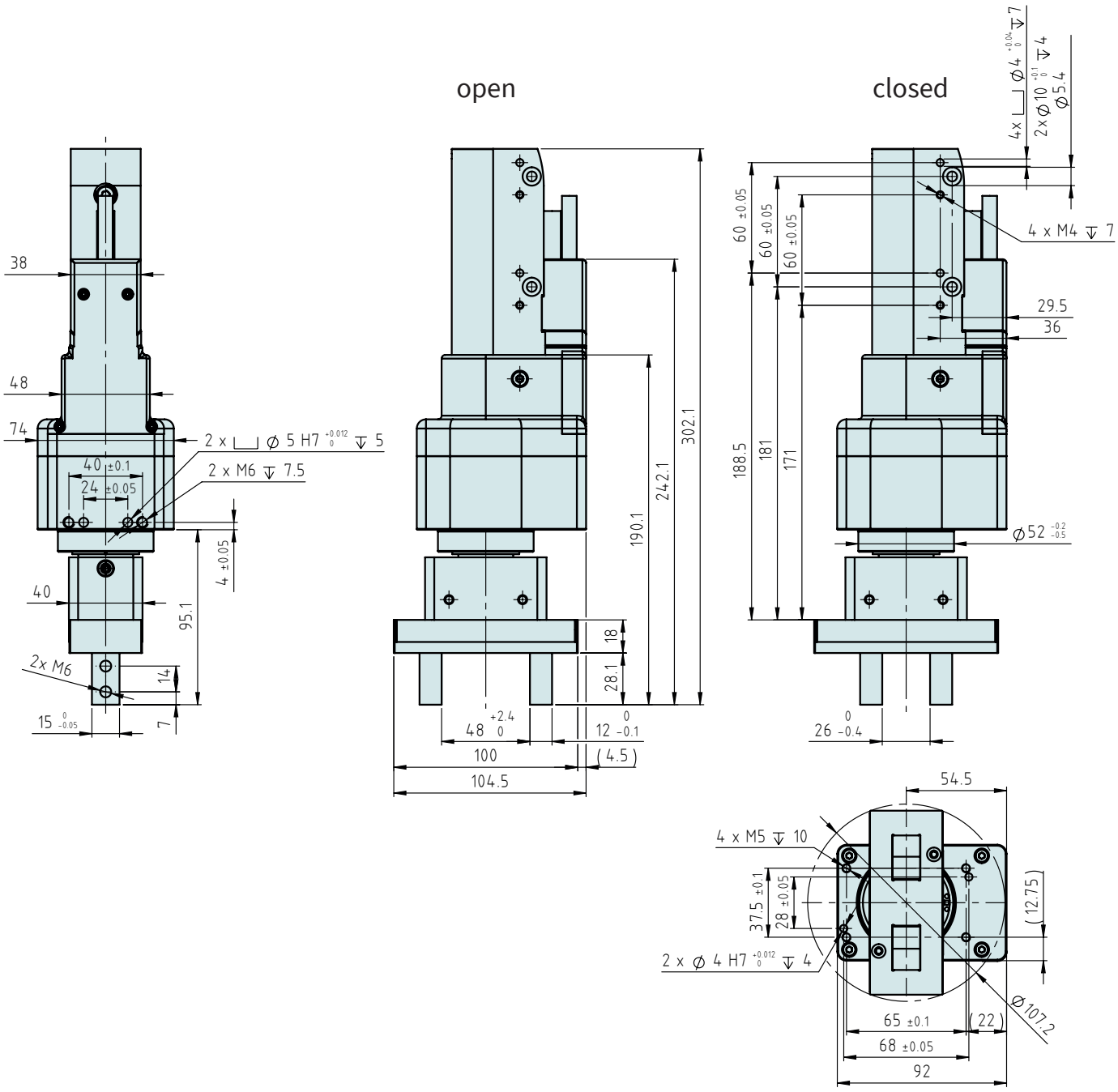
GRIPPER GM51-37SX60-XP-N_48-22_E70X18-NG(_MS03)



Dimensions in mm

Item	Description	Item-No.
GM51-37Sx60-XP-N_48-22_E70x18-NG	Rotary Gripper Module, stroke 22 mm	0150-6609
GM51-37Sx60-XP-N_48-22_E70x18-NG_MS03	Rotary Gripper Module, stroke 22 mm, with holding force	0150-6437

GRIPPER GM51-37SX120F-XP-N_48-22_E70X18-NG(_MS03)



Dimensions in mm

Item	Description	Item-No.
GM51-37Sx120F-XP-N_48-22_E70x18-NG	Rotary Gripper Module, stroke 22 mm	0150-6673
GM51-37Sx120F-XP-N_48-22_E70x18-NG_MS03	Rotary Gripper Module, stroke 22 mm, with holding force	0150-6670

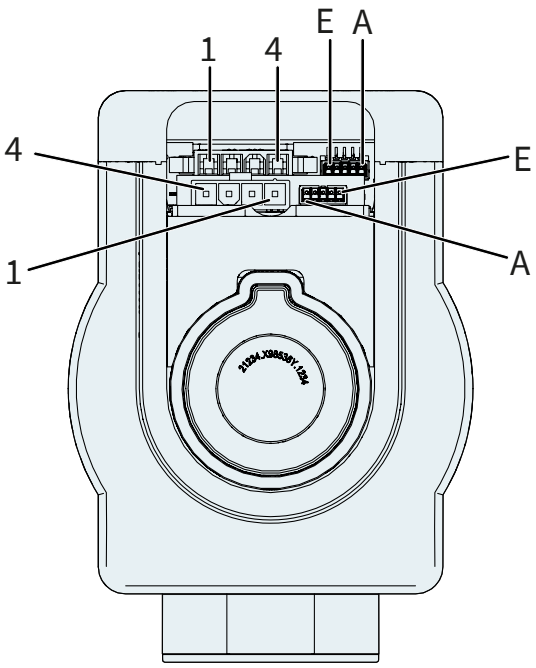
CONNECTOR GM51-37 LINEAR MOTOR / ROTARY MOTOR

NG-connector rotary motor (top)

Motor connector wiring	NG-connector	Wire color motor cable
Phase 2-	Pin 1	grey
Phase 2+	Pin 2	blue
Phase 1-	Pin 3	pink
Phase 1+	Pin 4	red
Temp Sensor	Pin E	black
Sensor Cos	Pin D	green
Sensor Sin	Pin C	yellow
GND	Pin B	Inner Shield
+5V	Pin A	white
Housing		Outer Shield

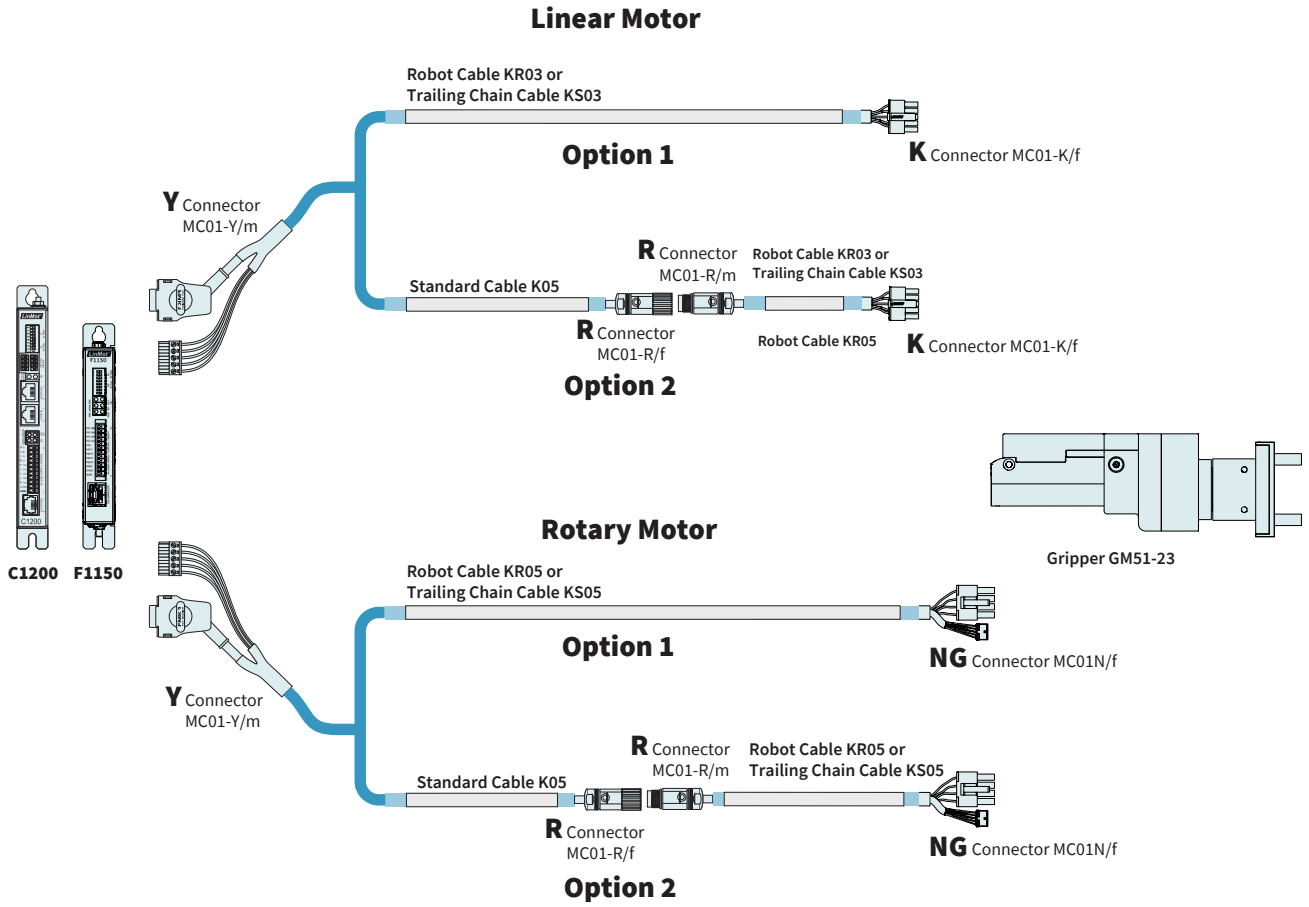
N-connector linear motor (bottom)

Motor connector wiring	N-connector	Wire color motor cable
Phase 1+	Pin 4	red
Phase 1-	Pin 3	pink
Phase 2+	Pin 2	blue
Phase 2-	Pin 1	grey
+5V	Pin A	white
GND	Pin B	Inner Shield
Sensor Sin	Pin C	yellow
Sensor Cos	Pin D	green
Temp Sensor	Pin E	black
Housing		Outer Shield



View: motor connector, plug side
Top: NG-connector rotary motor
Bottom: N-connector linear motor

MOTOR CABLES FOR GM51-23

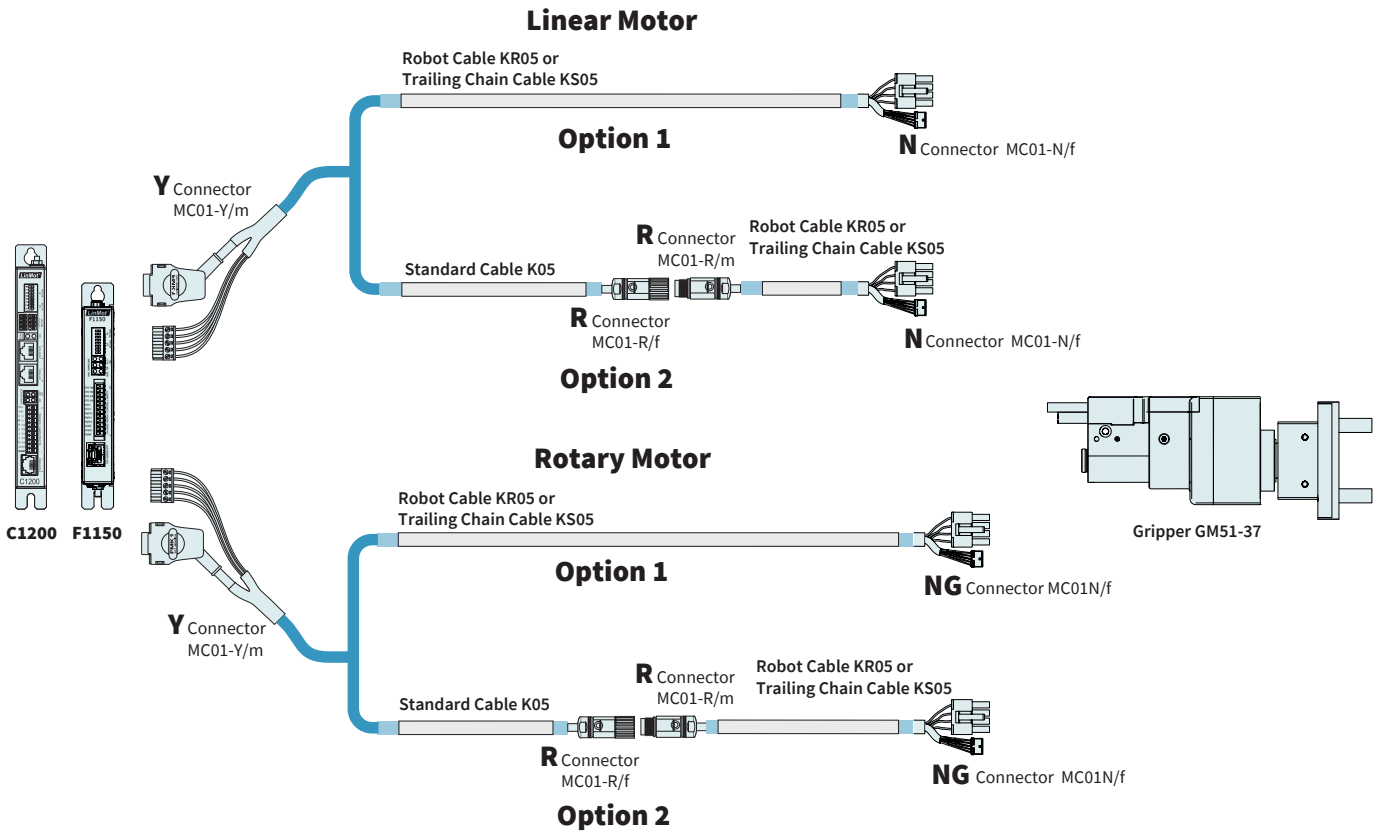


LINEAR MOTOR		
Item	**Description**	**Item-No.**
KS03-Y/K-2	Trailing Chain Cable Y/K, 2 m	0150-2446
KS03-Y/K-4	Trailing Chain Cable Y/K, 4 m	0150-2447
KS03-Y/K-6	Trailing Chain Cable Y/K, 6 m	0150-2448
KS03-Y/K-	Trailing Chain Cable Y/K, Custom length	0150-3516
KS03-R/K-1	Trailing Chain Cable R/K, 1 m	0150-2185
KS03-R/K-2	Trailing Chain Cable R/K, 2 m	0150-2186
KS03-R/K-	Trailing Chain Cable R/K, Custom length	0150-3530
KR03-Y/K-	Robot Cable Y/K, Custom length	0150-3718
KR03-R/K-	Robot Cable R/K, Custom length	0150-3754
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-3	Motor Cable Y/R, 3 m	0150-4854
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y/R-	Motor Cable Y/R, Custom length	0150-3501

MOTOR CABLES FOR GM50-23

ROTARY MOTOR		
Item	**Description**	**Item-No.**
KS05-Y/NG-4	Trailing Chain Cable Y/NG, 4 m	TBD
KS05-Y/NG-5	Trailing Chain Cable Y/NG, 6 m	TBD
KS05-Y/NG-	Trailing Chain Cable Y/NG, Custom length	TBD
KS05-09-R/NG-1.5	Trailing Chain Cable R/NG, 1,5 m	0150-6570
KS05-09-R/NG-2	Trailing Chain Cable R/NG, 2 m	0150-6571
KS05-09-R/NG-3	Trailing Chain Cable R/NG, 3 m	0150-6572
KS05-09-R/NG-4	Trailing Chain Cable R/NG, 4 m	TBD
KS05-09-R/NG-6	Trailing Chain Cable R/NG, 6 m	TBD
KR05-Y/NG-	Robot Cable Y/NG, Custom length	TBD
KR05-R/NG-	Robot Cable R/NG, Custom length	TBD
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-3	Motor Cable Y/R, 3 m	0150-4854
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y/R-	Motor Cable Y/R, Custom length	0150-3501

MOTOR CABLES FOR GM51-37



LINEAR MOTOR		
Item	**Description**	**Item-No.**
KS05-Y/N-2	Trailing Chain Cable Y/N, 2 m	0150-2442
KS05-Y/N-4	Trailing Chain Cable Y/N, 4 m	0150-2443
KS05-Y/N-6	Trailing Chain Cable Y/N, 6 m	0150-2444
KS05-Y/N-8	Trailing Chain Cable Y/N, 8 m	0150-2445
KS05-Y/N-	Trailing Chain Cable Y/N, Custom length	0150-3509
KS05-09-R/N-1.5	Trailing Chain Cable R/N, 1,5 m	0150-3880
KS05-09-R/N-2	Trailing Chain Cable R/N, 2 m	0150-3881
KS05-09-R/N-3	Trailing Chain Cable R/N, 3 m	0150-3881
KS05-09-R/N-	Trailing Chain Cable R/N, Custom length	0150-3889
KR05-Y/N-	Robot Cable Y/N, Custom length	0150-3514
KR05-R/N-	Robot Cable R/N, Custom length	0150-3757
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-3	Motor Cable Y/R, 3 m	0150-4854
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y/R-	Motor Cable Y/R, Custom length	0150-3501

MOTOR CABLES FOR GM50-37

ROTARY MOTOR		
Item	**Description**	**Item-No.**
KS05-Y/NG-4	Trailing Chain Cable Y/NG, 4 m	TBD
KS05-Y/NG-5	Trailing Chain Cable Y/NG, 6 m	TBD
KS05-Y/NG-	Trailing Chain Cable Y/NG, Custom length	TBD
KS05-09-R/NG-1.5	Trailing Chain Cable R/NG, 1,5 m	0150-6570
KS05-09-R/NG-2	Trailing Chain Cable R/NG, 2 m	0150-6571
KS05-09-R/NG-3	Trailing Chain Cable R/NG, 3 m	0150-6572
KS05-09-R/NG-4	Trailing Chain Cable R/NG, 4 m	TBD
KS05-09-R/NG-6	Trailing Chain Cable R/NG, 6 m	TBD
KR05-Y/NG-	Robot Cable Y/NG, Custom length	TBD
KR05-R/NG-	Robot Cable R/NG, Custom length	TBD
K05-Y/R-2	Motor Cable Y/R, 2 m	0150-2421
K05-Y/R-3	Motor Cable Y/R, 3 m	0150-4854
K05-Y/R-4	Motor Cable Y/R, 4 m	0150-2422
K05-Y/R-6	Motor Cable Y/R, 6 m	0150-2423
K05-Y/R-8	Motor Cable Y/R, 8 m	0150-2424
K05-Y/R-	Motor Cable Y/R, Custom length	0150-3501

ALL LINEAR MOTION
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