

MUTOH DIGICOLLAR : LINEAR ENCODER

Model No.	Short Stroke		MUTOH LINEAR ENCODER DIGICOLLAR									
	DS-025	DX-025	D-540 D-5400	DES-01	DEX-01	D-1000Z	DE-04	DL-07	DL-10	DL-20A	DL-30i	
												
Effective wire length	0~250 mm		600 mm	1000 mm (1 metre.)		2400 mm	4000 mm	7000 mm	10 m	20 m	30 m	
Resolution (mm)	0.1	0.01 (Multiplied by 4)	0.1 / 0.01 (both Multiplied by 4)	0.1 (Multiplied by 4)	0.01 (Multiplied by 4)	0.1 (Multiplied by 2)			0.1 (Multiplied by 4)	0.1 (Multiplied by 4)	0.1 (Multiplied by 4)	
Number of output pulses	10 pulses/mm	25 pulses/mm	2.5 pulses/mm 25 pulses/mm	2.5 pulses/mm	25 pulses/mm	5 pulses/mm			2.5 pulses/mm			
Max. detection speed	15m / min		100m / min 40m / min	100m / min	40m / min	100m / min	60m / min	100m / min	60m / min		120m / min	
Max. acceleration	7.8m/s² (0.8G)		9.8m/s² (1G)			14.7m/s² (1.5G)	7.8m/s² (0.8G)					
Wire tension	0.29~0.58N (30~60gf)		approx 1.96N (200gf)	approx 1.96~2.45N (200~250gf)		approx 2.94N (300gf)	approx 1.96~4.9N (200~500gf)	approx 7.4N (750gf)	1.96~5.88N (200~600gf)	approx 13.7N (1.4kgf)		
Wire diamiter	Ø0.45mm		Ø0.6mm	Ø0.6mm		Ø0.6mm	Ø0.45mm	Ø0.7mm		Ø1.0mm		
Wire material	SUS304											
Reciprocating durability	More than 1,000,000 times					More than 50,000 times	500,000 tomes (less than 0~2m) 200,000 times (2~4)	More than 50,000 times	More than 200,000 times	More than 10,000 times		
Output phase	A, B phase										A, B, Z phase	
Output form	Open collector		Complementa-ry Output	Complementary / Open collector		C : Open Collector V : Complementary output E : Line driver				Open collector		
Output capacity	Residual voltage : less than 0.5 V/ Sinking current : less than 20 mA/Pressure-resistance : less than 30V		Residual voltage : less than 0.7 V/ Sinking current : less than 30 mA/Pressure-resistance : less than 30V							Residual voltage : less than 0.4 V/ Sinking current : less than 35 mA/Pressure-resistance : less than 30V		
Power supply	DC4.5~13V		DC4.5~26V			DC4.5~26V (line driver output: 5V±5%)				DC5~24V		
Current Consumption	40 mA or less (Unloaded)		50 mA or less			70 mA or less (line driver output is 150 mA or less)				80 mA or less		
Operating temperature rang	0~50 °C (No humidity)		0~45 °C (No humidity)			-10~45 °C (No humidity)				-10~50 °C (No humidity)		
Storage temperature rang	-20~80 °C (No humidity)											
Weight	60 g		350 g			750 g	880 g	1.65 kg	3.5 g	about 9 kg	10 kg	
Cable specifications	2m Ø3 (Unprocessed tip)		2m Ø5.3	2m Ø3.9 (DIN8P with connector)		2m Ø5.3 (DIN8P with connector. Line driver output type: Cable end open)				2m Ø5 Without connector		
Distance accuracy (20°C)	±0.2/250mm + Quantization error		±0.5% + Quantization error						±0.1% + Quantization error	-		
Stability accuracy (20°C)	±0.5mm + Quantization error		±0.1mm + Quantization error			±0.2mm + Quantization error			±0.3mm + Quantization error	-		
Vibration resistance	55 Hz Double amplitude 1.5mm X,Y,Z direction 2H each		49m/s²(5G), 30 minute	10~500Hz Double amplitude 2mm or 50m / S² X,Y,Z direction 3 times each, Sweep time 10 minute		49m/s²(5G), 30 minute						
Impact resistance	with 490m/s(50G) X,Y,Z direction 3 times each		with 490m/s²(50G), 30 minute									
Protective structure	IP-40		IP-50	IP-63						IP-50 (Encoder inly IP-64)		
Transfer distance	Less than 15 m					Less than 15m (Less than 50m in case of line driver output)					Less than 15 m	
Option	TC-1		-									
RoHS	Compliant											

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D-1000Z-C
D-1000Z-E
D-1000Z-V
D-1000Z-V-H

DES-01-C
DES-01-E
DES-01-V
DES-01--V-H

DEX-01-C
DEX-01-E
DEX-01-V
DEX-01--V-H

D-1000Z-C

Output form
 C : Open collector output (Standard)
 V : Complementary output
 E : Line driver output (Equivalence to 26LS)

Model name

DES/DEX-01-V

Output form
 V : Complementary output (Standard)
 C : Open collector output

Model name

DE-04-C

Output form
 C : Open collector output (Standard)
 V : Complementary output
 E : Line driver output (Equivalence to 26LS)

Model name

DE-04-C
DE-04-E
DE-04-V

DL-10-C

Output form
 C : Open collector output (Standard)
 V : Complementary output
 E : Line driver output (Equivalence to 26LS)

Model name

DL-07-C

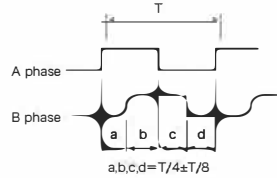
Output form
 C : Open collector output (Standard)
 V : Complementary output
 E : Line driver output (Equivalence to 26LS)

Model name

DL-07-C
DL-07-E
DL-07-V

DL-10-C
DL-10-E
DL-10-V

Output wave-form



Connecting cable

(The DS/DX does not have a connector.)

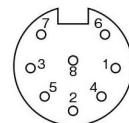


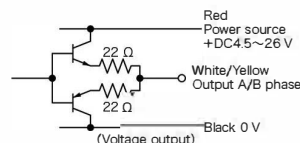
Figure seen from the cable side

Pin No.	Signal name	Line color
1	B phase	Yellow
5	A phase	White
6	Power supply	Red
7	0 V	Black
8	Shield	Shield

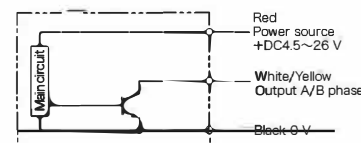
※ Pin No. 2, 3, 4 : Unused

Output multi-phase circuit diagram

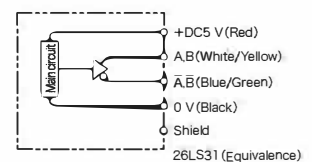
Complementary output type (Voltage output type)



Open collector output type

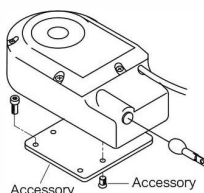


Output multi-phase circuit diagram (Line driver output type)



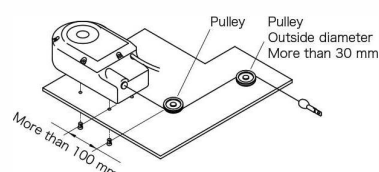
Installation example

[Example 1]



[Example 2]

If the wire direction is changed.



※ When using a pulley, its outside diameter shall be more than 50 mm in case of DL-07 and more than 30 mm in case of D-1000Z, DE-04 and it shall be installed so as to move smoothly.

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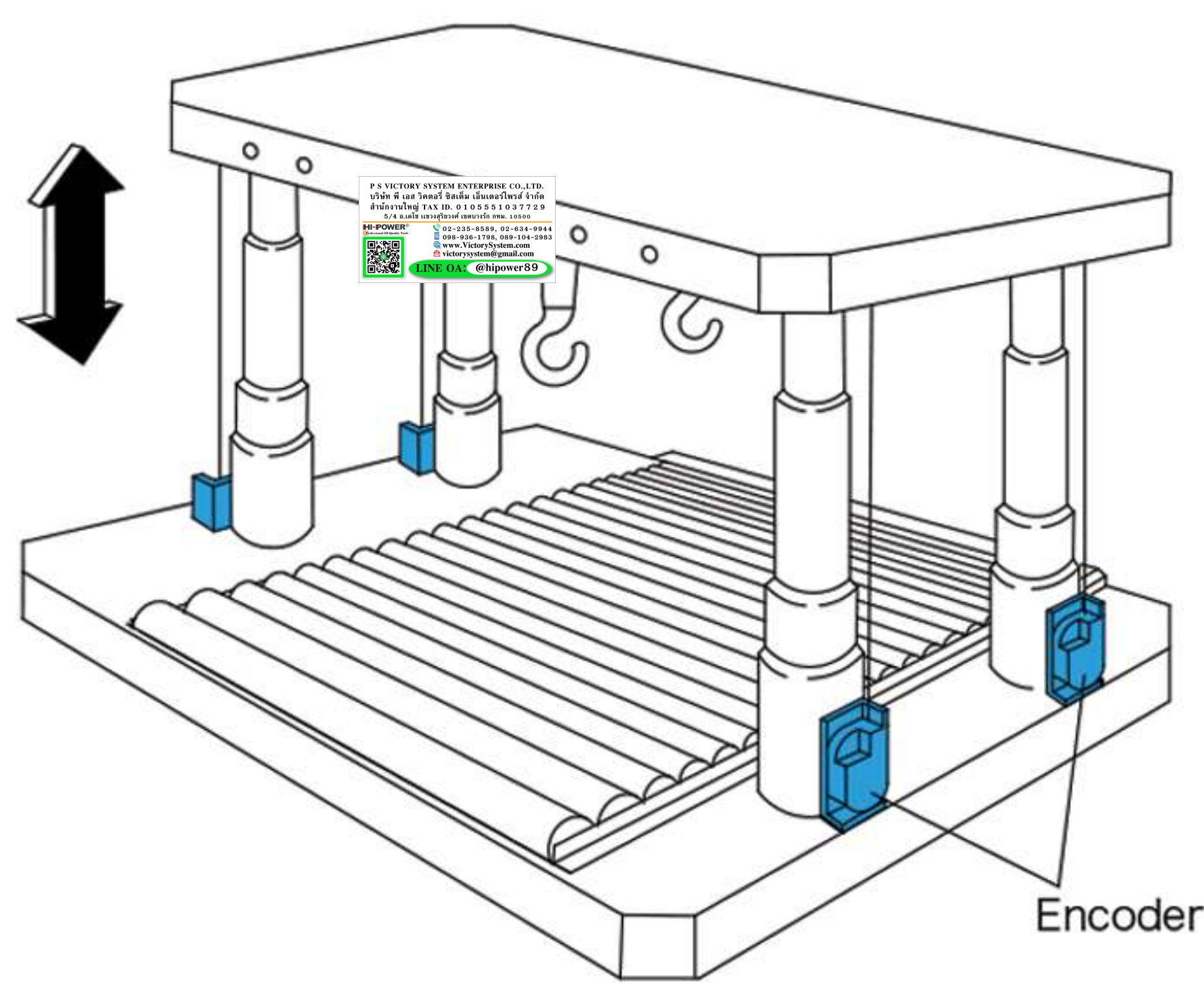
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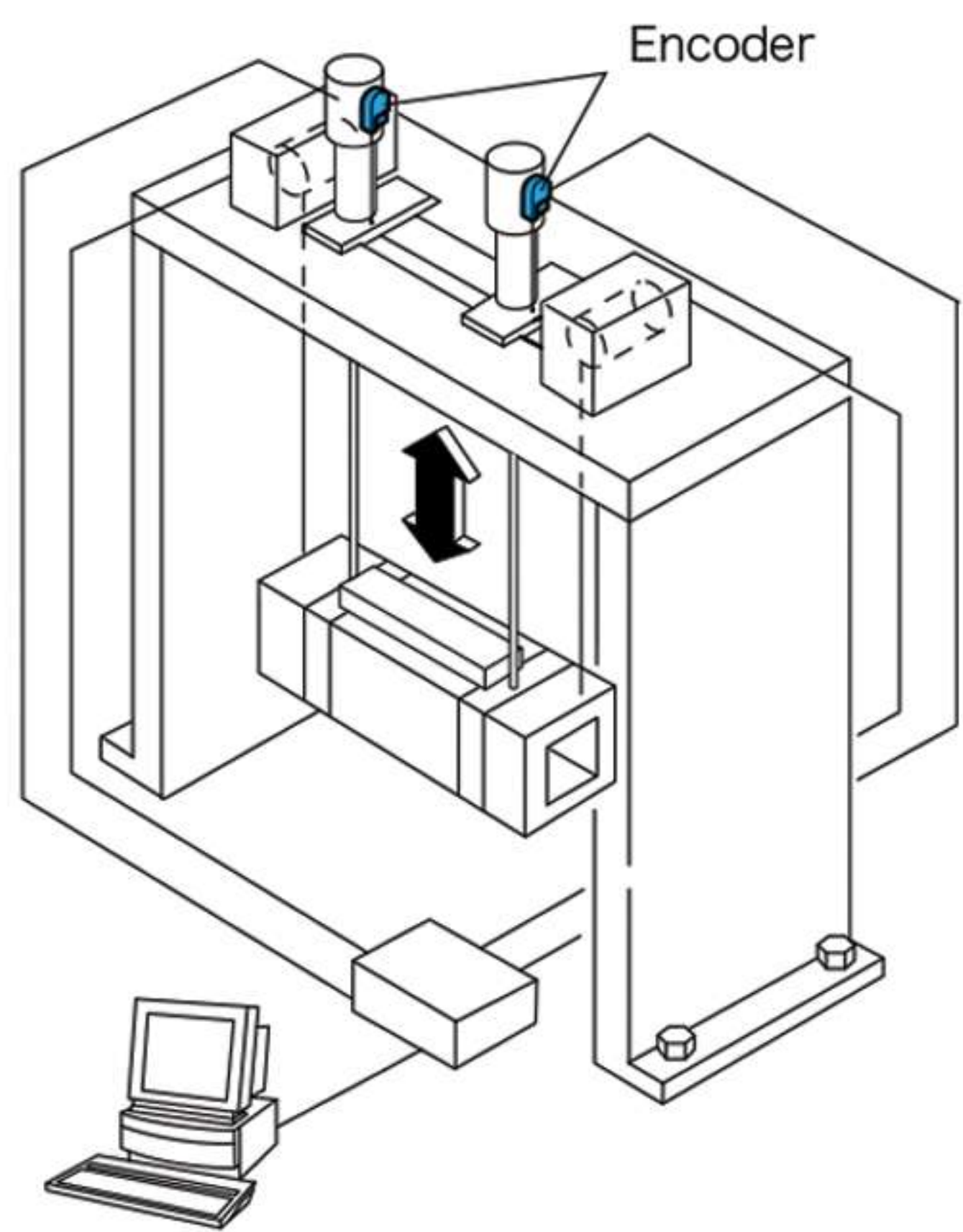
■ Example of use

▶

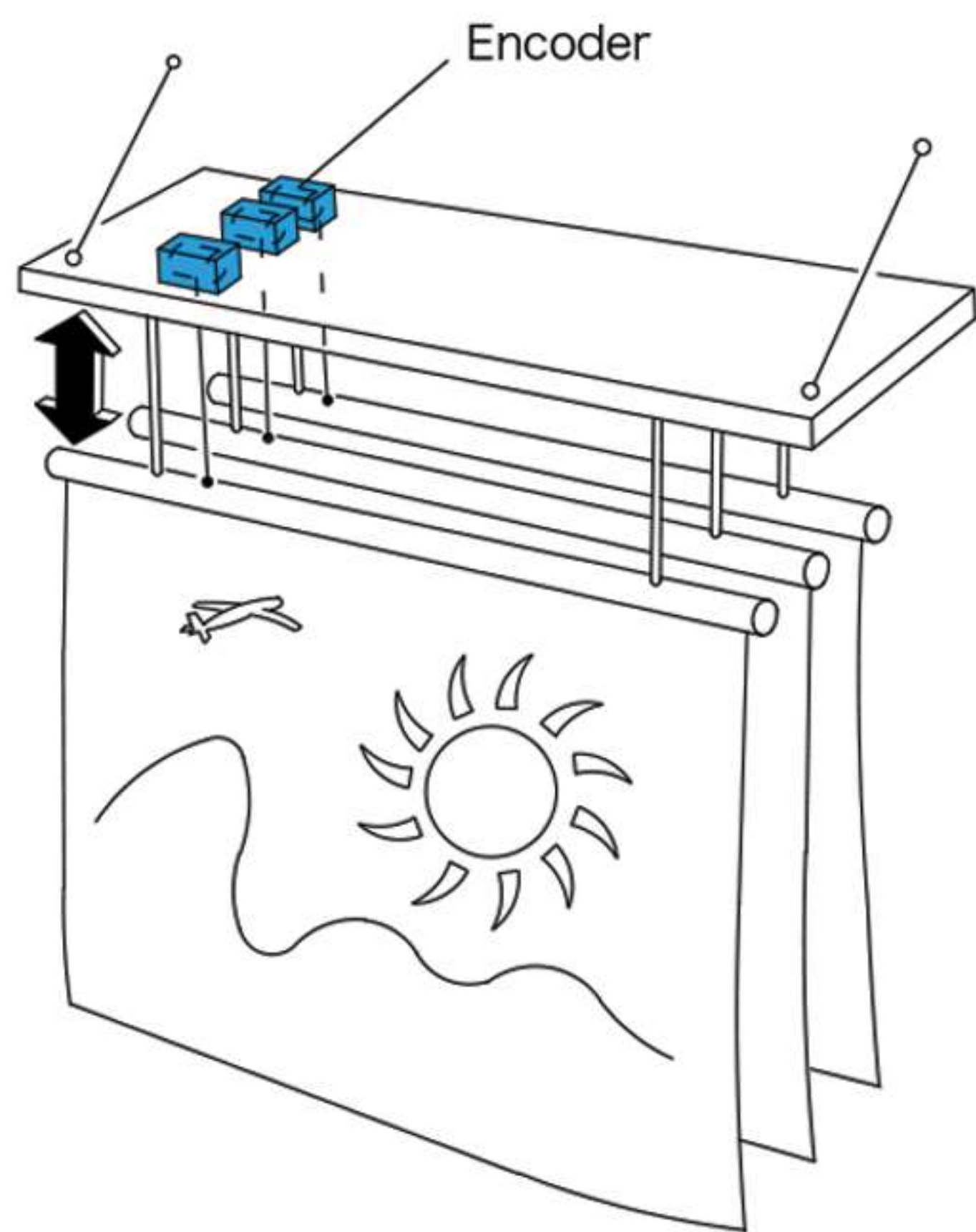
For lifters



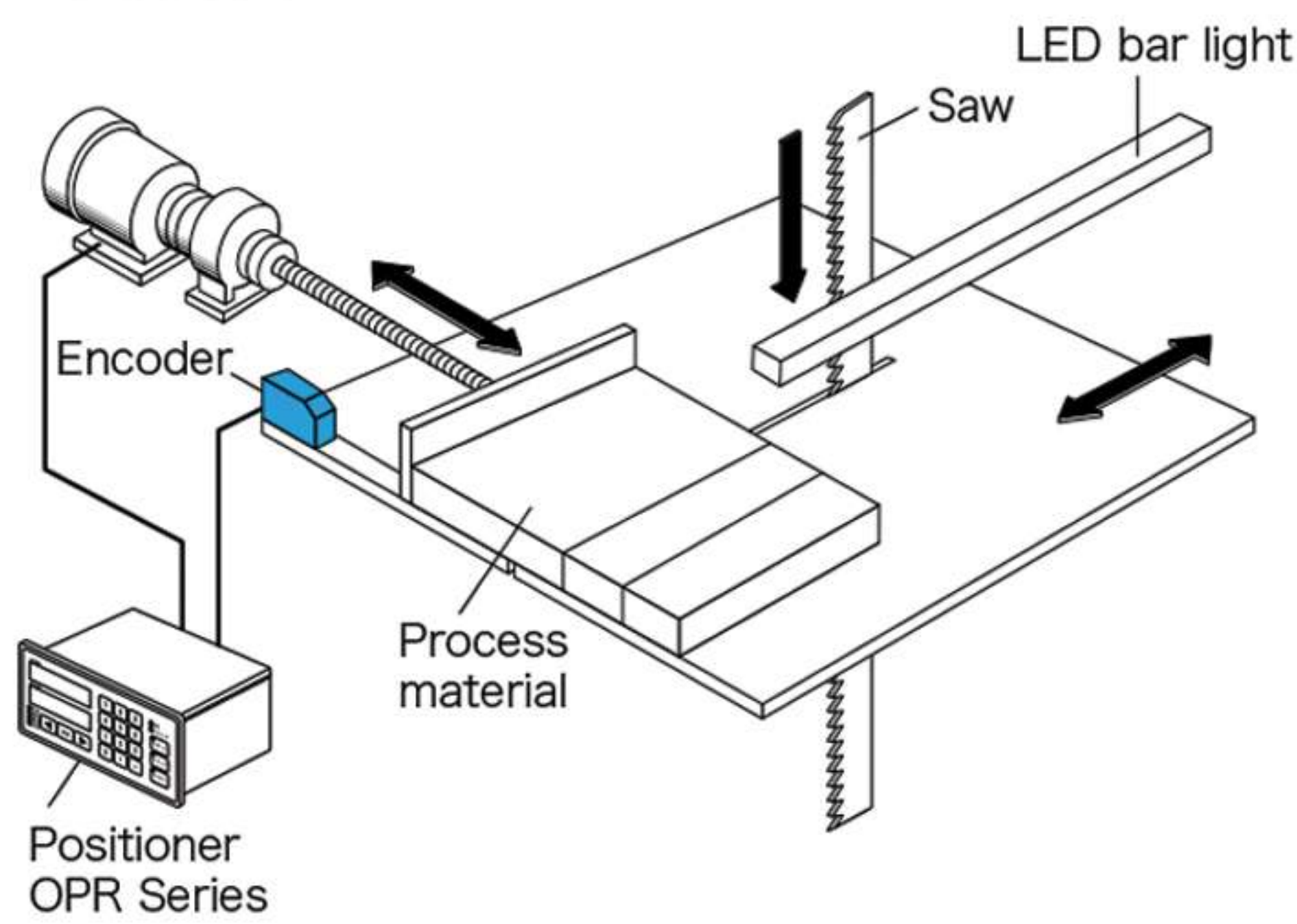
Lift-up method



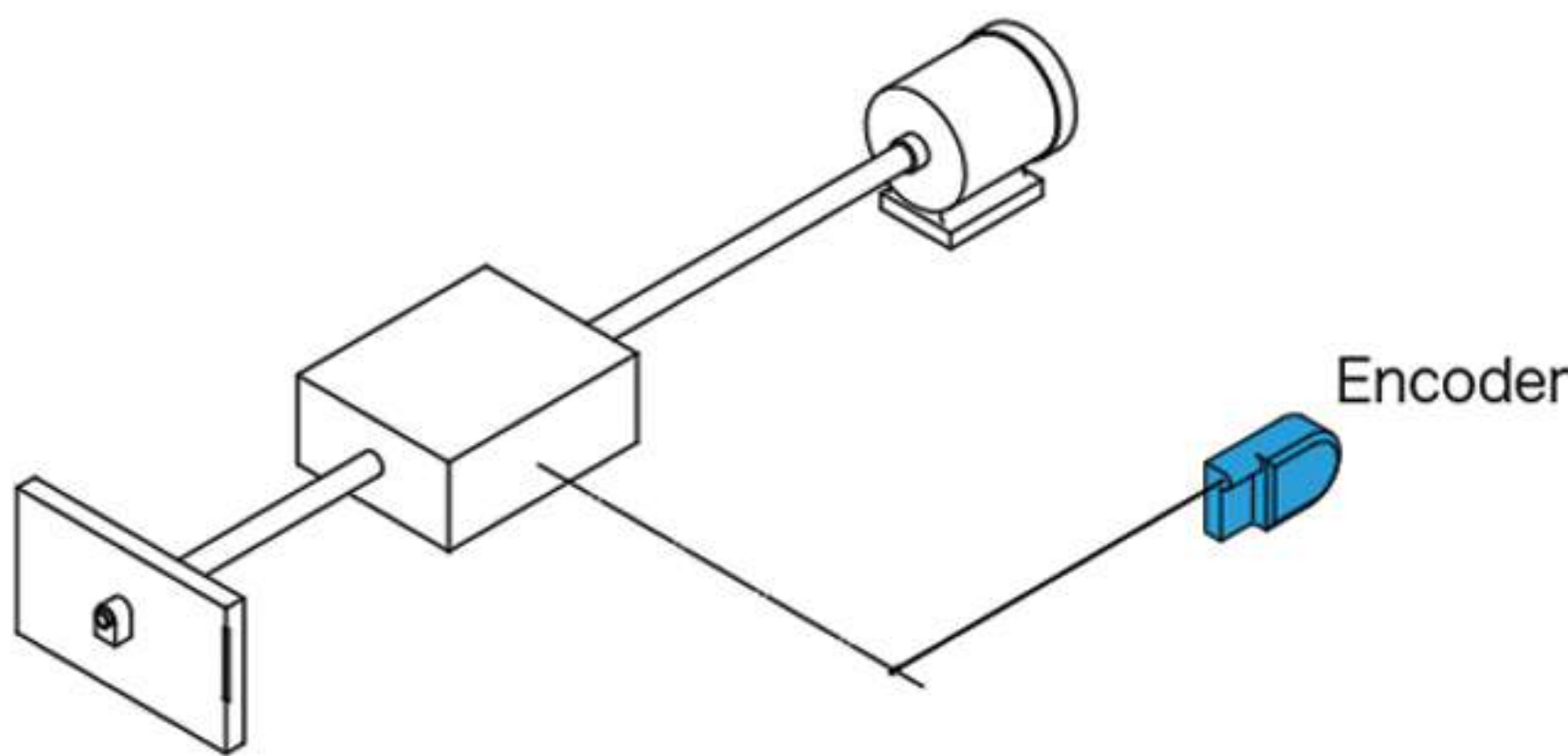
Lifting gear for stage baton



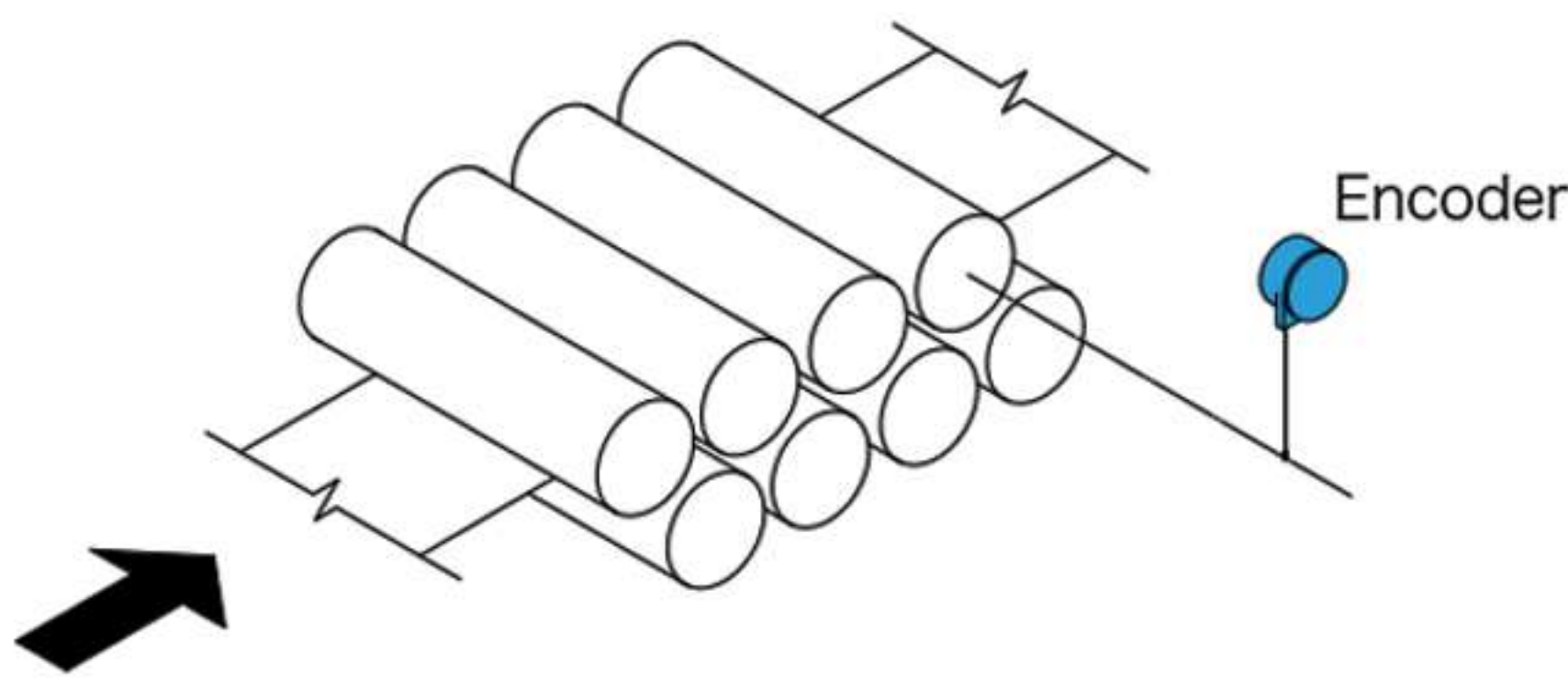
Cutter



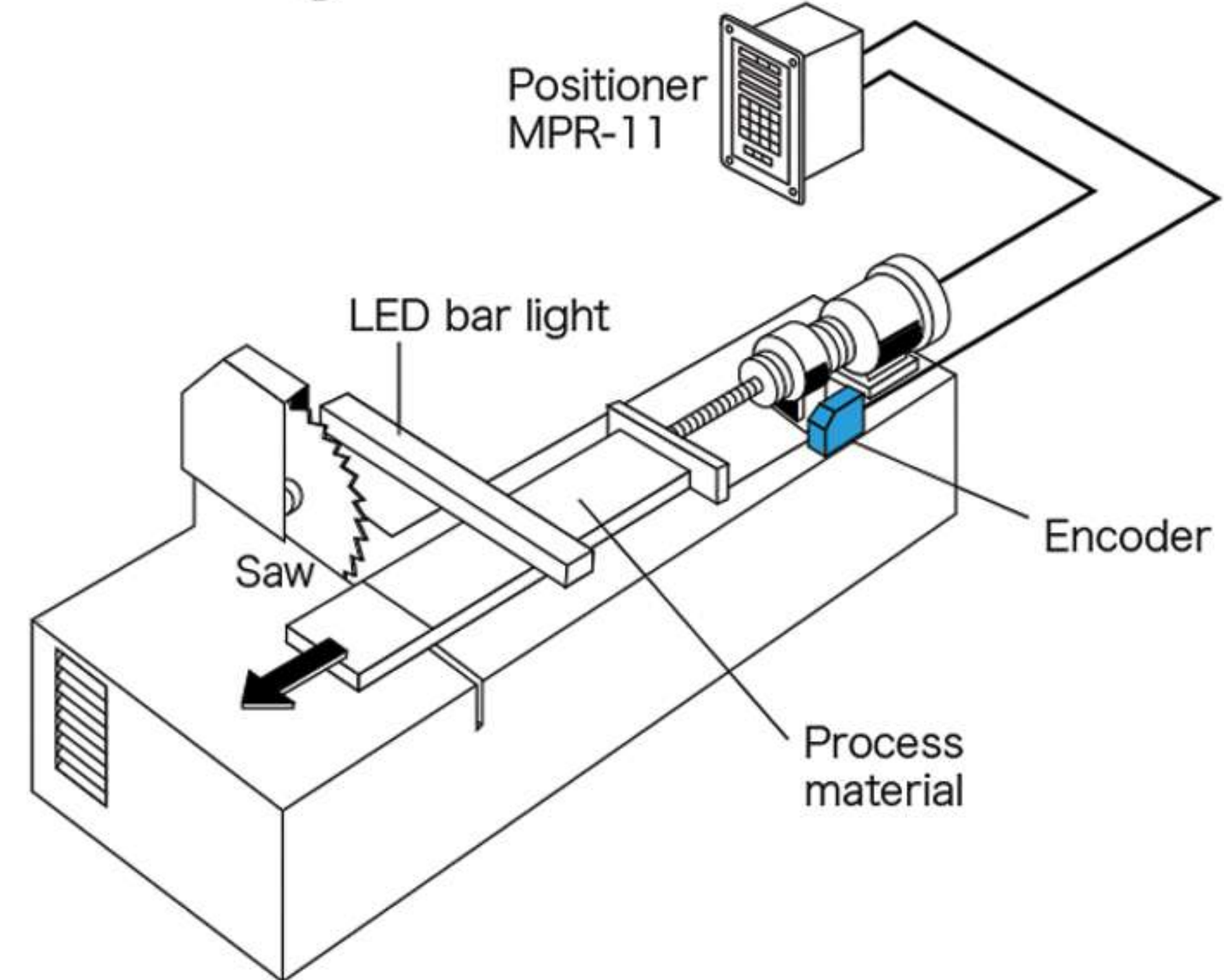
Lead of screw method



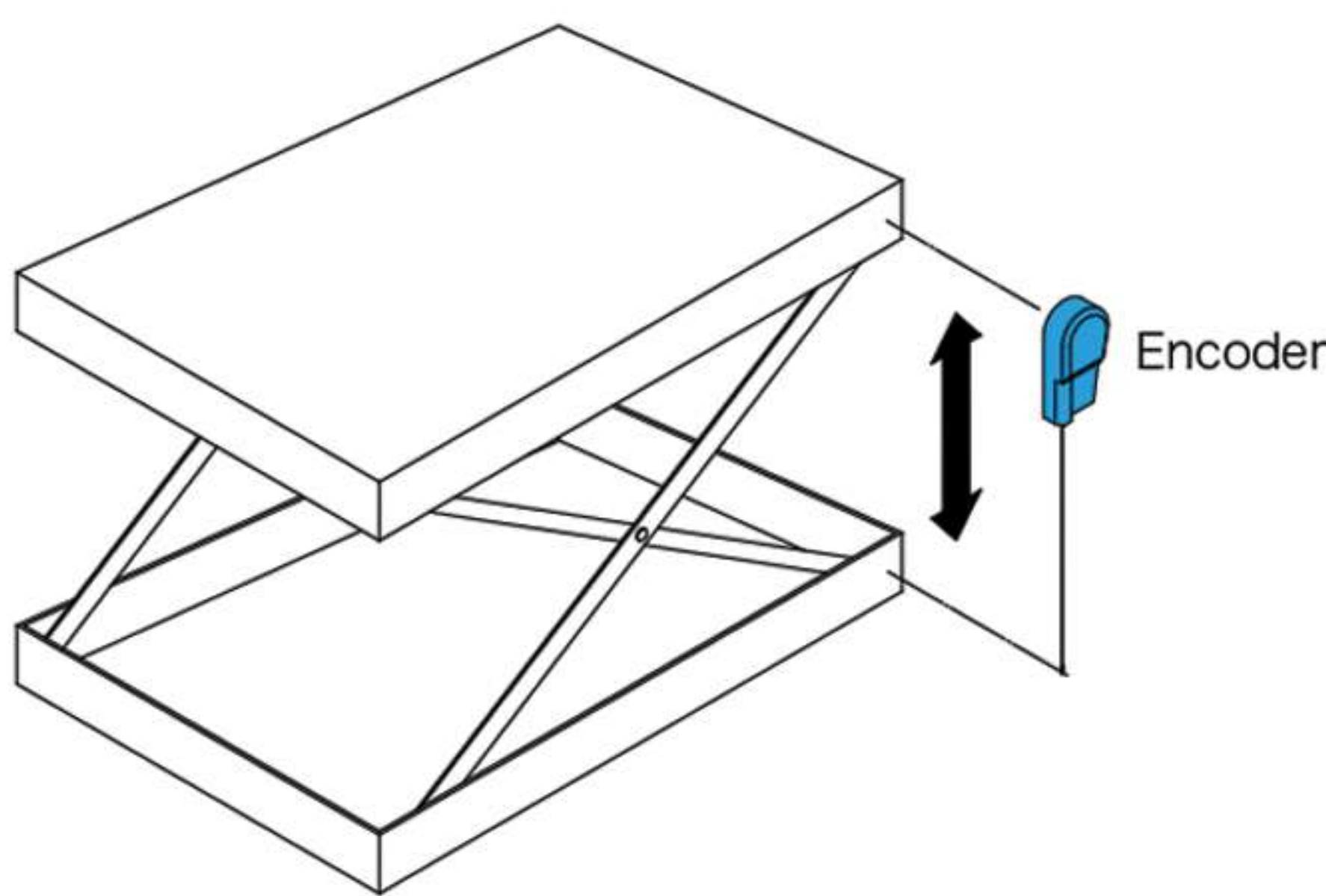
Adjusting leveler gap



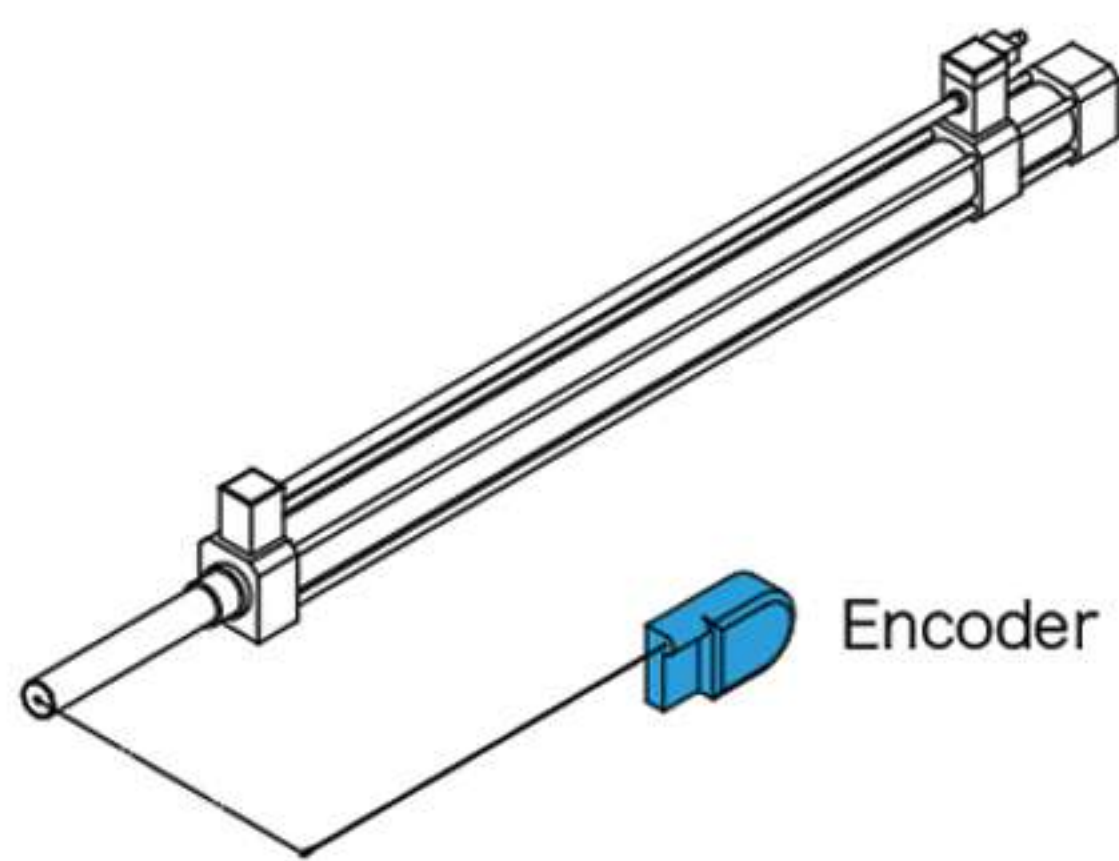
Running saw



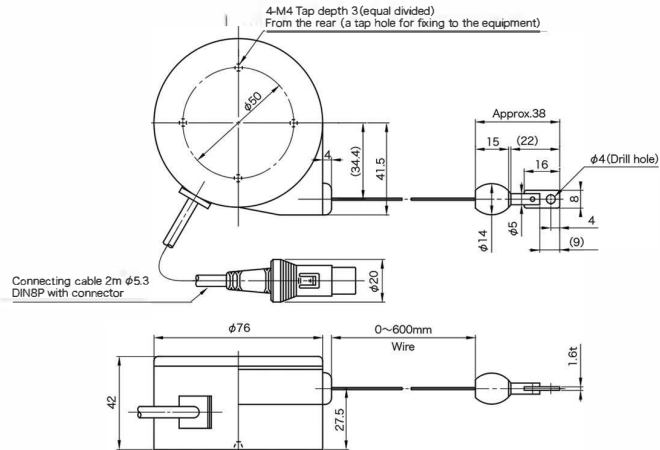
Pantagraphic lift



Oil-hydraulic cylinder

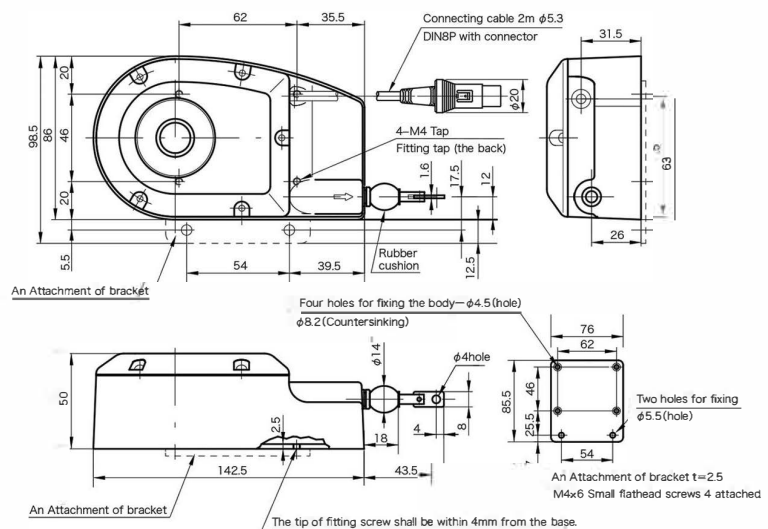


D-540
D-5400



D-1000Z

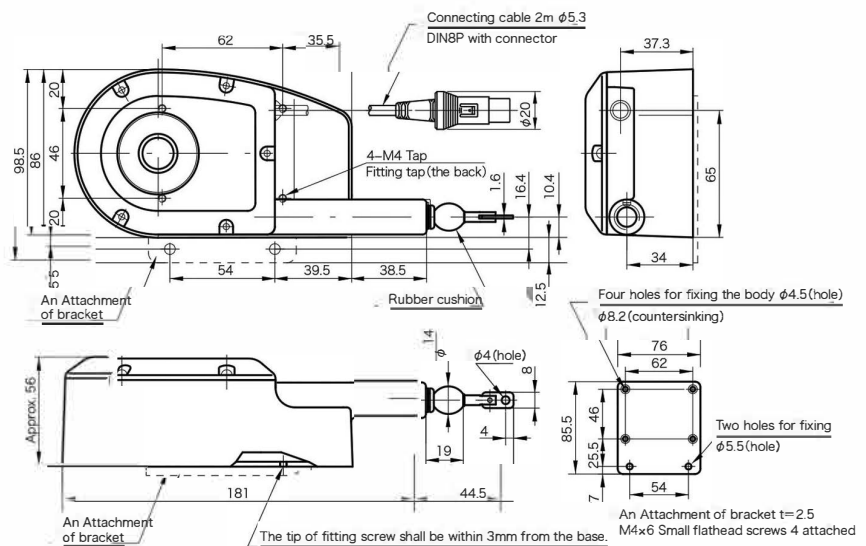
D-1000Z-C
D-1000Z-E
D-1000Z-V
D-1000Z-V-H



※ Connectors are unnecessary when linedriver is outputting

DE-04

DE-04-C
DE-04-E
DE-04-V



※ Connectors are unnecessary when line driver is outputting.

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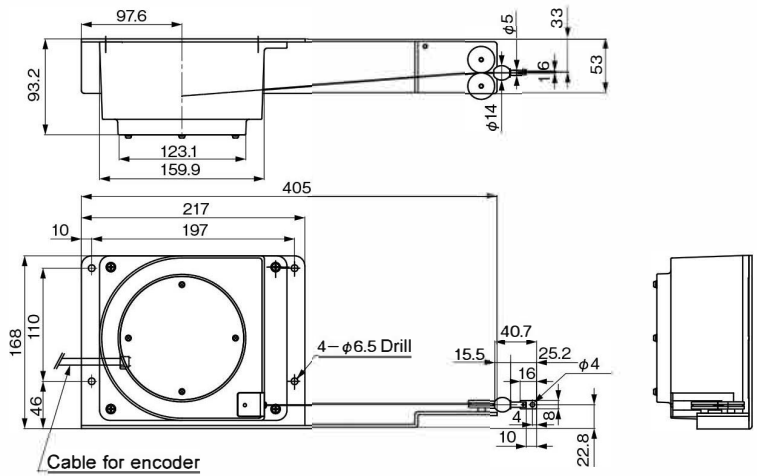
Outline drawing

DL-10

DL-10-C

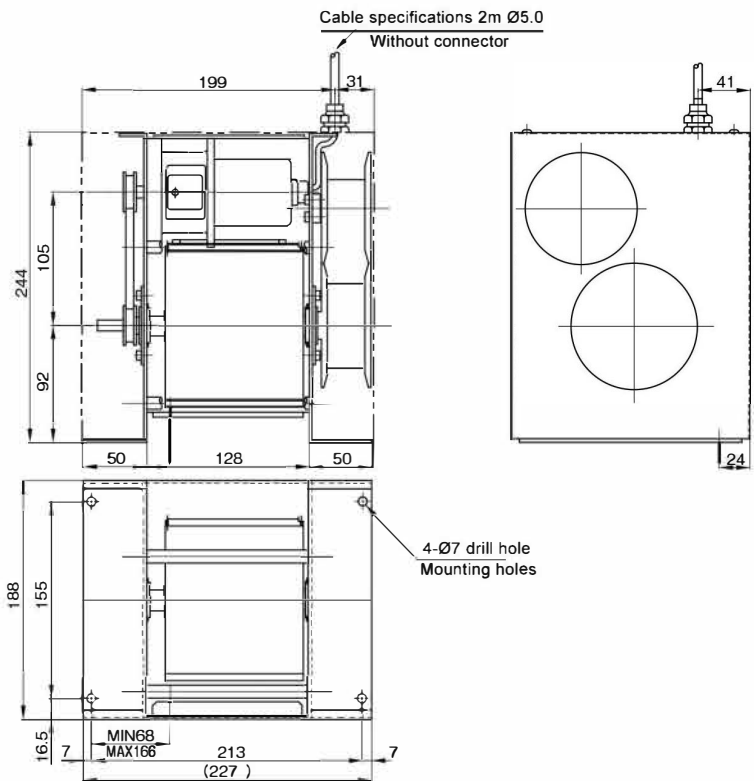
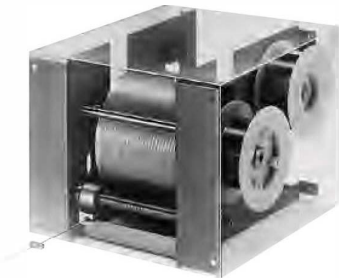
DL-10-E

DL-10-V



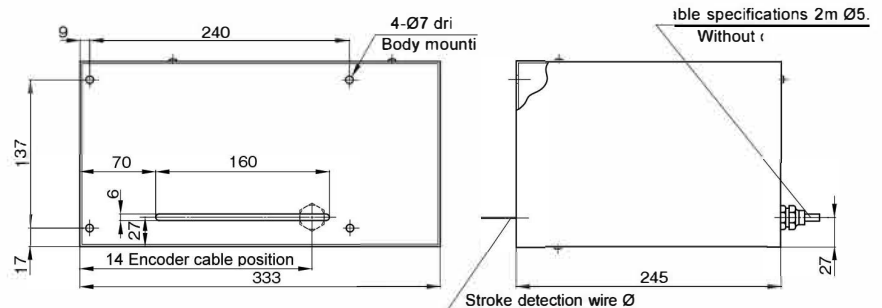
Outline drawing

DL-20A



Outline drawing

DL-30i



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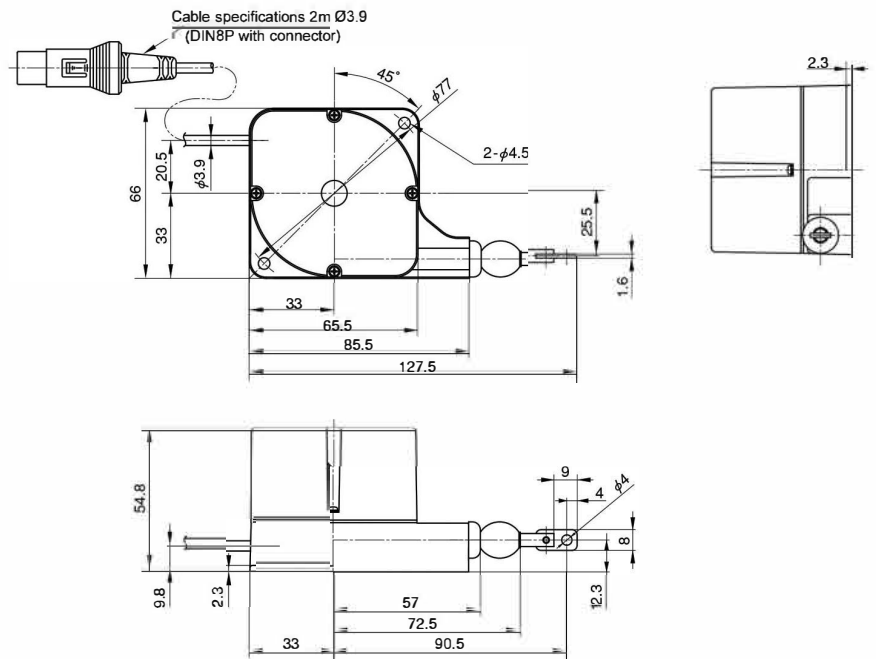
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Outline drawing
DES-01/DEX-01



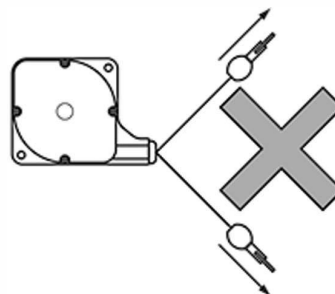
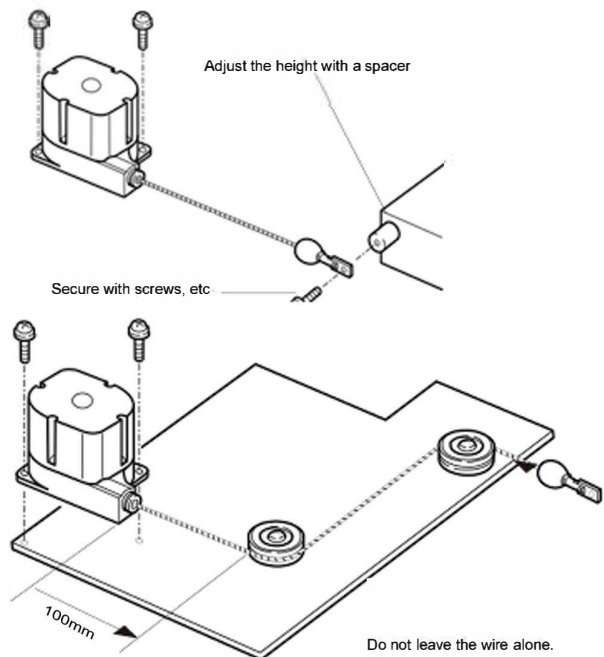
DES-01-C
DES-01-E
DES-01-V
DES-01--V-H

DEX-01-C
DEX-01-E
DEX-01-V
DEX-01--V-H



Important

- ▶ Set so that the main unit and hook attachment position are on a straight line in the moving direction.
- ▶ Set the wire pull-out direction so that it is perpendicular to the wire exit surface.
- ▶ Make sure that the wire is pulled out within the effective length.
- ▶ Do not pull the wire diagonally as shown in the right figure. The wire will be wound around the pulley inside, which will cause poor accuracy and wire trouble.
- ▶ When using a pulley (pulley), set the pulley outer diameter to 30 mm or more so that it will rotate smoothly.



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