

# MS-13 series – Compact Linear Potentiometers



Manufactured in UK

- **Rugged Construction**
- **Compact Design**
- **Sealed to IP67**
- **Long Life**
- **Excellent Linearity**
- **Regulated Output Options**



The MS-13 series of linear potentiometers are designed to withstand the harsh environments of motorsport, testing and industrial applications. Using proven 'Conductive Plastic' technology, the sensors offer high performance and reliability at operational temperatures up to +150°C

The rugged, yet compact 13mm diameter MS-13 is available with stroke lengths up to 200mm, flange mount, a choice of potentiometer and regulated analogue outputs, sealing up to IP67.

## Specifications

### Electrical (Potentiometer Output)

Technology	Conductive plastic
Max. Supply Voltage	40VDC
Resolution	Essentially infinite
Recommended Wiper Current	<10µA
Output Signal	Potentiometer (voltage divider)
Repeatability	≤0.01mm
Independent Linearity	≤0.5%

### Electrical (Regulated Outputs)

Technology	Conductive plastic with 'on board' signal conditioning
Supply Voltage	6-30VDC (4-20mA, 0-5V output) ; 11-30VDC (0-10V output)
Resolution	Essentially infinite
Reverse Polarity Protection	Yes
Output Signal	4-20mA ; 0-5VDC ; 0-10VDC regulated output options
Repeatability	≤0.01mm
Independent Linearity	≤0.5%

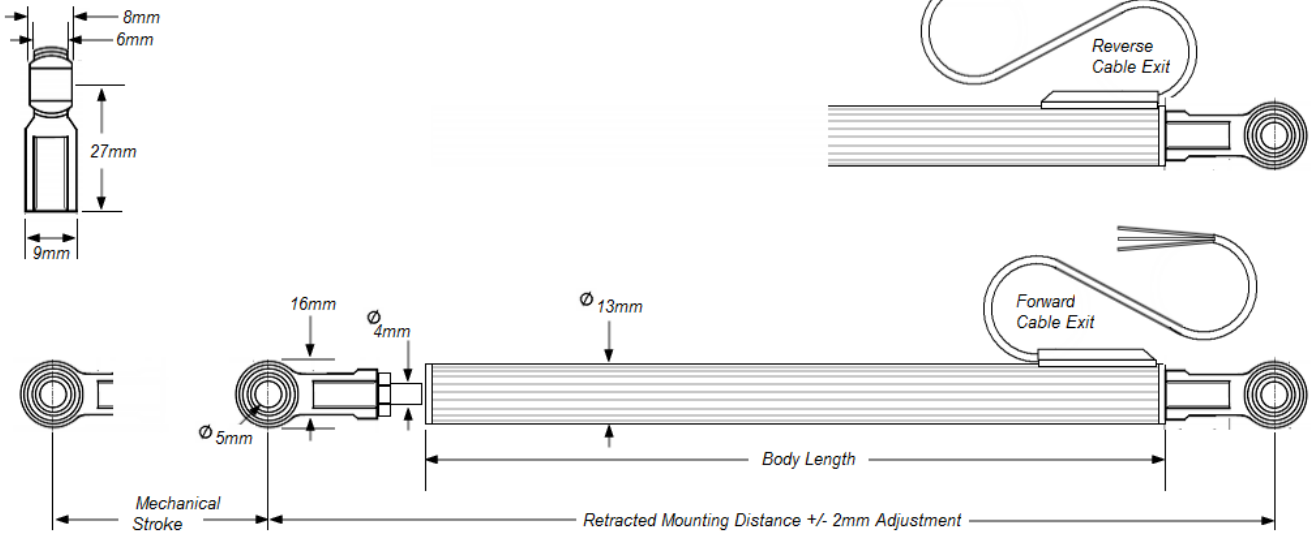
### Mechanical

Operating Temperature	-40°C - +150°C (Potentiometer output) ; -30°C - +125°C (4-20mA, 0-5V, 0-10V output)
Stroke lengths	25mm – 200mm
Operational Speed	10m/s max
Electrical & Mechanical Life	>25 million operations (depending on installation and environmental conditions)
Housing Material	Aluminium
Shaft Material	Stainless steel
Sealing	IP54 (felt) ; IP65 (2 x Viton O ring) ; IP67 (PTFE U spring, Viton O ring)

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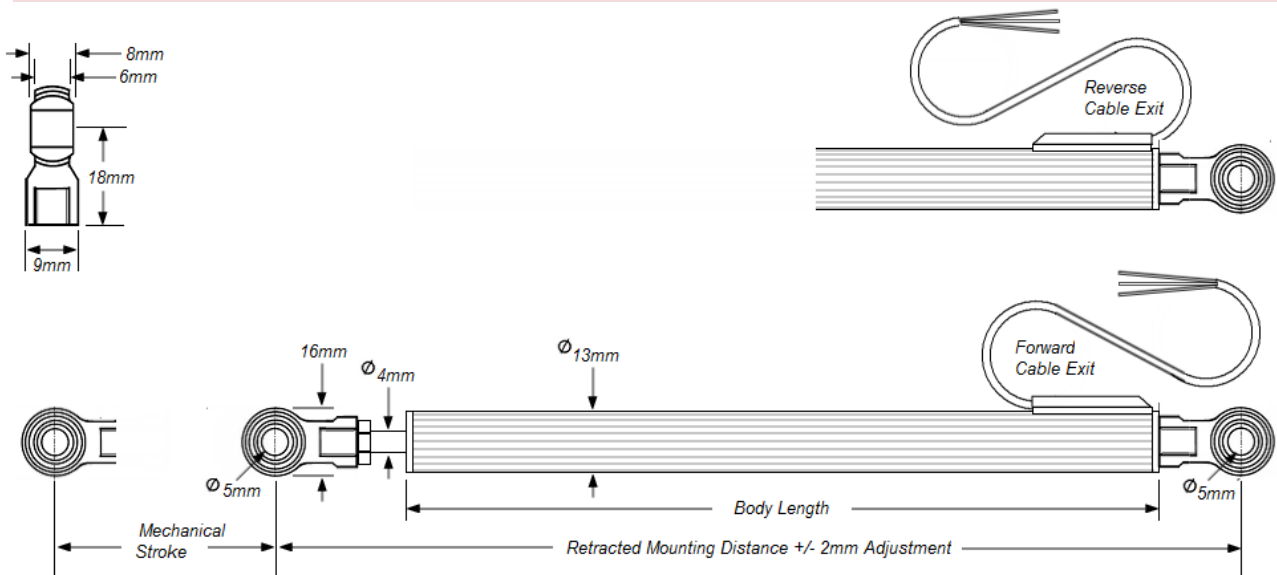
## MS-13M-

Electrical Stroke (mm)	25	50	75	100	125	150	175	200
Retracted Mounting Distance (mm)	173	198	223	248	273	298	323	348
Min. Mechanical Stroke (mm)	27	52	77	102	127	152	177	202
Body Length (mm)	107	132	157	182	207	232	257	282
Approx. Weight Without Cable (g)	53	58	63	68	73	78	83	88
Resistance (K $\Omega$ +/-20%)	1.7	3.4	5	6.7	8.4	10	11.7	13.4
Mechanical Fixing	Standard Rod End Bearings - $\varnothing$ 5mm							



## MS-13C-

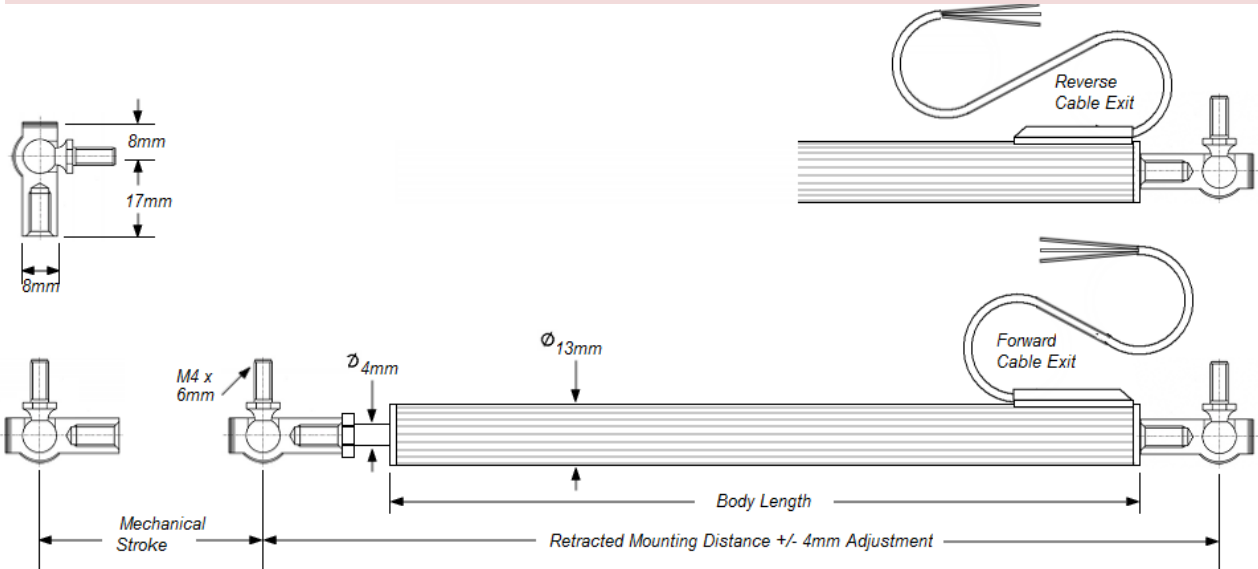
Electrical Stroke (mm)	25	50	75	100	125	150
Retracted Mounting Distance (mm)	142	167	192	217	242	267
Min. Mechanical Stroke (mm)	27	52	77	102	127	152
Body Length (mm)	97	122	147	172	197	222
Approx. Weight Without Cable (g)	43	48	53	58	63	68
Resistance (K $\Omega$ +/-20%)	1.7	3.4	5	6.7	8.4	10
Mechanical Fixing	Compact Rod End Bearings - $\varnothing$ 5mm					



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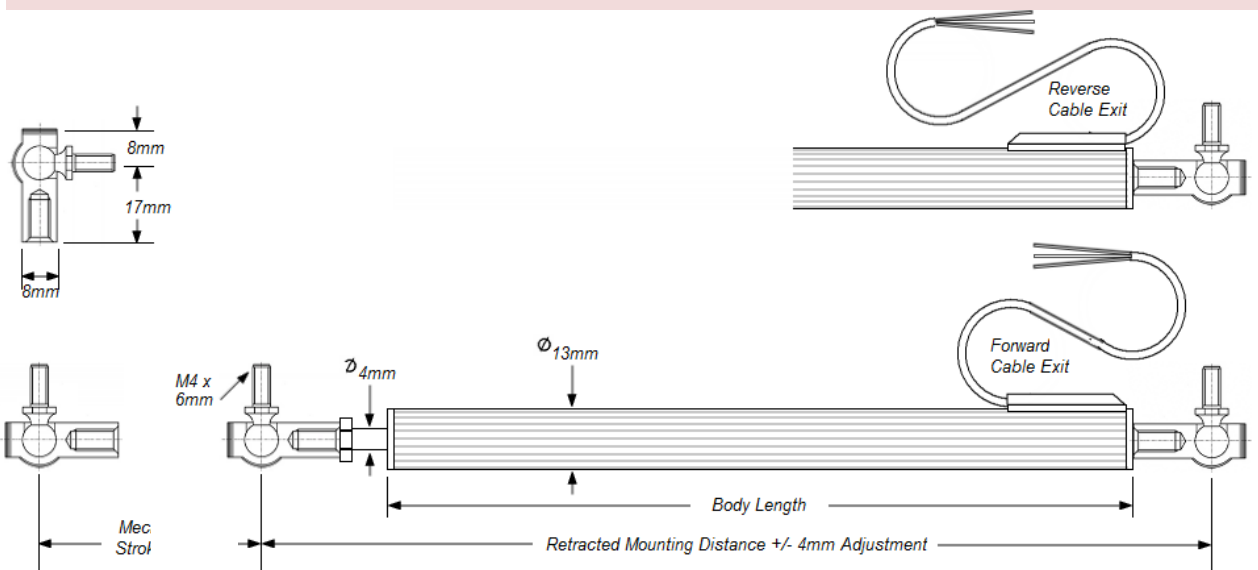
## MS-13MP-

Electrical Stroke (mm)	25	50	75	100	125	150	175	200
Retracted Mounting Distance (mm)	153	178	203	228	253	278	303	328
Min. Mechanical Stroke (mm)	27	52	77	102	127	152	177	202
Body Length (mm)	107	132	157	182	207	232	257	282
Approx. Weight Without Cable (g)	45	50	55	60	65	70	75	80
Resistance (K $\Omega$ +/-20%)	1.7	3.4	5	6.7	8.4	10	11.7	13.4
Mechanical Fixing	Pop Joints M4 x 6mm							



## MS-13CP-

Electrical Stroke (mm)	25	50	75	100	125	150
Retracted Mounting Distance (mm)	140	165	190	215	253	240
Min. Mechanical Stroke (mm)	27	52	77	102	127	152
Body Length (mm)	97	122	147	172	197	222
Approx. Weight Without Cable (g)	40	45	50	55	60	65
Resistance (K $\Omega$ +/-20%)	1.7	3.4	5	6.7	8.4	10
Mechanical Fixing	Pop Joints M4 x 6mm					



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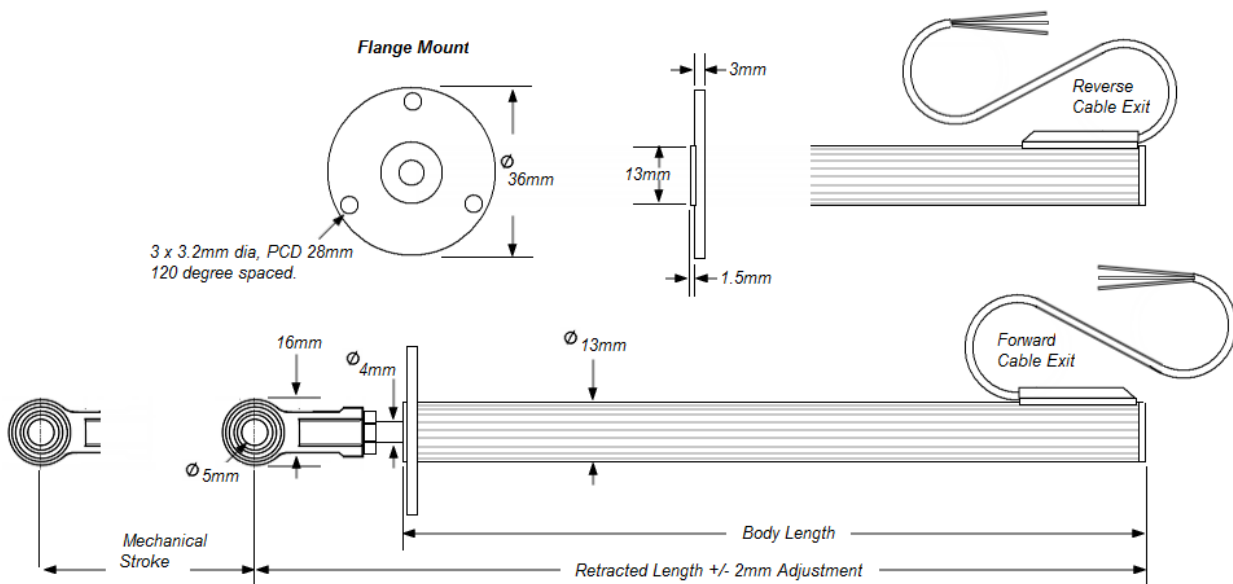
## Flange Mount

Compatible with MS-13M, 13C, 13MP & 13CP – Refer to model for specifications, except below:

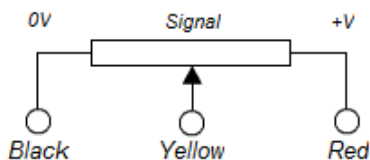
Rod End Bearing (MS-13M, 13C) or Pop Joint (MS-13MP, 13CP) is removed from the rear of the sensor

Retracted Length (mm) = Retracted Mounting Distance -27mm (13M) , -18mm (13C) , -17mm (13MP, 13CP)

Body Length (mm) = +2.5mm to all models



## Electrical Connection (Potentiometer output)



Wiring	+Ve Supply	0V Supply (GND)	Signal
Single Output	RED	BLACK	YELLOW
Dual Output (option)	BROWN	BLUE	WHITE (Green wire = Not Used)

**Output Signal** Output signal may be reversed by swapping connections to the Red & Black and Brown & Blue wires. DO NOT connect +Ve supply to the Yellow or White wires, as this will cause damage to the sensor element.

## Electrical Connection (0-5VDC ; 0-10VDC output)

Wiring	+Ve Supply	0V Supply (GND)	Signal
Single Output	RED	BLACK	YELLOW

## Electrical Connection (4-20mA output) 2 wire

Wiring	+Ve Supply	0V Supply (GND)	
Single Output	RED	BLACK	(Yellow wire = Not Used)

## Electrical Cable

**Cable Type** Raychem 55A, 26AWG, FDR 25 sleeve

**Cable Length** Approximately 500mm

# MS-13 series – Compact Linear Potentiometers

## Ordering Information

Please use the chart below to construct your product code...

Sample Product Code: **MS – 13M – 150 – 67 – F – 000**

<b>Series</b>	<b>MS - 13</b>
<b>Mounting</b>	
<b>M = Standard</b> - Rod End Bearings	
<b>C = Compact</b> - Rod End Bearings	
<b>MP = Standard</b> - Pop Joints	
<b>CP = Compact</b> - Pop Joints	
<b>Stroke Length</b>	
Insert required length in mm	
<b>25 , 50 , 75 , 100 , 125 , 150 , 175* , 200*</b> *13M, 13MP only	
<b>Seal Rating</b>	
<b>54 = IP54</b>	
<b>65 = IP65</b>	
<b>67 = IP67</b>	
<b>Cable Exit Direction</b>	
<b>F = Forward facing cable exit</b>	
<b>R = Reverse facing cable exit</b>	
<b>Options</b> (compatible options may be selected, separated by – between codes)	
<b>000 = No options selected</b>	
<b>FL = Flange Mount</b>	
<b>Dual = Dual output (6 wire)</b>	
<b>SLV = Protective sleeve (refer to accessories below)</b>	
<b>420 = 4-20mA regulated output (single output only)</b>	
<b>V05 = 0-5VDC regulated output (single output only)</b>	
<b>V10 = 0-10VDC regulated output (single output only)</b>	
<b>Lxxxx = Cable length in mm (500mm cable supplied as standard)</b>	

## Accessories



**Protective Sleeve SLV** For use with all models except **Flange Mount**

**Material**

Carbon fibre, Peek Ø16mm

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