

# SLS 190 LINEAR DISPLACEMENT SENSOR

The SLS190 range is designed to provide maximum performance benefits within a compact package in stroke lengths from 25 to 350mm. With a choice of mounting options and accessories, this sensor is ideally suited to a wide range of general purpose industrial applications, for medium stroke linear position sensing.

## PERFORMANCE

		25	50	75	100	125	150	175	200	225	250	275	300	325	350	
Electrical stroke E	mm	25	50	75	100	125	150	175	200	225	250	275	300	325	350	
Resistance $\pm 10\%$	k $\Omega$	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Independent linearity																
guaranteed	$\pm\%$	0.25	0.25	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
typical	$\pm\%$	0.15	0.15	0.15	0.10	0.10	0.07	0.07	0.07	0.07	0.05	0.05	0.05	0.05	0.05	
Power dissipation at 20°C	W	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	
Applied voltage maximum	Vdc	22	44	67	74	74	74	74	74	74	74	74	74	74	74	
Electrical output		Minimum of 0.5% to 99.5% applied volts														
Resolution		Virtually infinite														
Hysteresis (repeatability)		Less than 0.01mm														
Operational temperature	°C	-30 to +100														
Output smoothness		To MIL-R-39023 grade C 0.1%														
Insulation resistance		Greater than 100M $\Omega$ at 500Vdc														
Operating mode		Voltage divider only - see Circuit Recommendation below														
Wiper circuit impedance		Minimum of 100 x track resistance or 0.5M $\Omega$ (whichever is greater)														
Operating force maximum																
sealed	gf	500 in horizontal plane														
unsealed	gf	250 in horizontal plane														
Life at 250mm per second		Typically greater than 100 million operations (50 x 10 <sup>6</sup> cycles) at 25mm stroke length														
Dither life		200 million operations (100 x 10 <sup>6</sup> cycles) at $\pm 0.5$ mm, 60Hz														
Sealing		IP50 standard - IP66 see options														
Shaft seal life		20 million operations (10 x 10 <sup>6</sup> cycles) - replaceable														
Shaft velocity maximum	m/s	10														
Vibration		RTCA 160D 10Hz to 2kHz (random) @ 12.6g (rms) - all axes														
Shock		Less than 0.04% output change @ 2500g - all axes														

## CIRCUIT RECOMMENDATION

Hybrid track potentiometers feature a high wiper contact resistance, therefore operational checks should be carried out only in the voltage divider mode. Hybrid track potentiometers should be used only as voltage dividers, with a minimum wiper circuit impedance of 100 x track resistance or 0.5M $\Omega$  (whichever is greater). Operation with wiper circuits of lower impedance will degrade the output smoothness and affect the linearity.

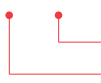
## OPTIONS

Compact shaft	Compact shaft will reduce dimension D by 25mm
Integral shaft seal - IP 66	Designed to accept integral shaft seal to give IP66 rating
Extended cable length	10m output cable can be specified
Mounting	Body clamp or flange mounting kits can be supplied
Protective sleeve	For all stroke lengths - self aligning bearings only. See ordering code

## ACCESSORIES

Mounting kits ————  Body clamp kit - SA59019  
Flange kit - SA59020

Protective sleeve - SA202986/...../.....

 Shaft L = long, C = compact  
Electrical stroke (select to match SLS190 sensor)

## AVAILABILITY

All options can be supplied within five days from the factory.

## ORDERING CODES

SLS190/...../...../...../...../.....

Electrical stroke

Shaft L = long, C = compact

Protective sleeve N=None, P=Fitted

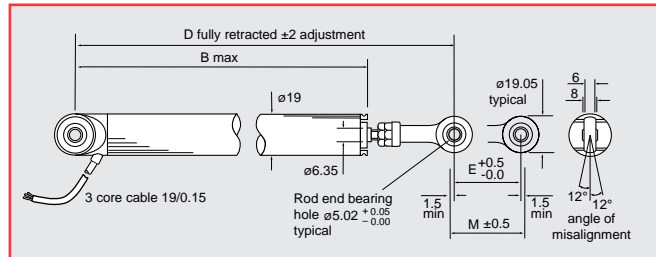
Cable 1 = 1m, 10 = 10m

Sealing 50 = IP50, 66 = IP66

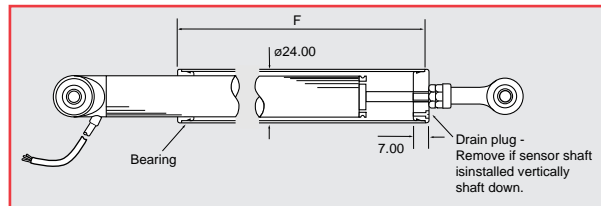
## DIMENSIONS AND MOUNTING OPTIONS

Note: drawings not to scale

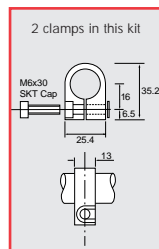
### SELF ALIGNING BEARING MOUNTING



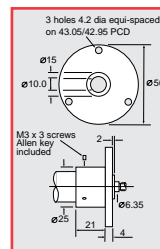
### PROTECTIVE SLEEVE OPTION - P



### MOUNTING OPTIONS



Body clamp  
SA59019

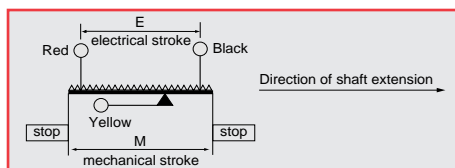


Flange mounting  
SA59020

Electrical stroke E	mm	25	50	75	100	125	150	175	200	225	250	275	300	325	350
Mechanical stroke M	mm	29	54	79	104	129	154	179	204	229	254	279	304	329	354
Body length B	mm	110.5	135.5	160.5	210.5	235.5	260.5	285.5	310.5	333.5	360.5	385.5	435.5	460.5	485.5
Between centres D															
standard sensor (L)	mm	173.6	198.6	223.6	273.6	298.6	323.6	348.6	373.6	398.6	423.6	448.6	498.6	523.6	548.6
compact shaft sensor (C)	mm	148.6	173.6	198.6	248.6	273.6	298.6	323.6	348.6	373.6	398.6	423.6	473.6	498.6	523.6
Sleeve length F															
standard sensor (L)	mm	100	125	150	200	225	250	275	300	325	350	375	425	450	475
compact shaft sensor (C)	mm	75	100	125	175	200	225	250	275	300	325	350	400	425	450
Weight approximate															
standard sensor (L)	g	109	126	144	161	179	196	214	231	249	266	284	301	319	336
compact shaft sensor (C)	g	103	120	138	155	173	190	208	225	246	260	278	295	316	330

## ELECTRICAL CONNECTIONS

3 core cable: PUR sheathed 1m long with ETFE insulated 19/0.15 cores.



## Special SLS190

This specially developed SLS190 variant offers the same mounting dimensions as earlier HLP190 models, but incorporates additional shaft sealing not previously available. M5 steel rod end bearings are fitted, which has become a standard requirement in US NASCAR data acquisition systems. An optional LEMO connector can also be supplied fitted to the cable if required. These potentiometers are ideally suited for retrofit in existing suspension and throttle position applications and will provide high performance and reliability under extreme operating conditions.



### PERFORMANCE

Electrical stroke E	mm	25	50	75	100	125	150	200	250
Resistance $\pm 10\%$	k $\Omega$	1	2	3	4	5	6	8	10
Independent linearity	$\pm\%$	0.25	0.25	0.15	0.15	0.15	0.15	0.15	0.15
Power dissipation at 20°C	W	0.5	1.0	1.5	2.0	2.5	3.0	4.0	5.0
Applied voltage maximum	Vdc	22	44	67	74	74	74	74	74
Electrical output		Minimum of 0.5% to 99.5% applied volts							
Resolution		Virtually infinite							
Hysteresis (repeatability)	mm	Less than 0.01							
Operational temperature	°C	-30 to +100							
Output smoothness		To MIL-R-39023 grade C 0.1%							
Insulation resistance		Greater than 100M $\Omega$ at 500Vdc							
Operating mode		Voltage divider only - see Circuit Recommendation on page 10							
Wiper circuit impedance		Minimum of 100 x track resistance or 0.5M $\Omega$ (whichever is greater)							
Operating force maximumgf		500 in horizontal plane							
Life at 250mm per second		Typically greater than 100 million operations (50 x 10 <sup>6</sup> cycles) at 25mm stroke length							
Dither life		200 million operations (100 x 10 <sup>6</sup> cycles) at $\pm 0.5$ mm, 60Hz							
Shaft seal life		20 million operations (10 x 10 <sup>6</sup> cycles) - replaceable							
Shaft velocity maximum	m/s	10							

### OPTIONS

#### Connector

Can be supplied with LEMO PHGOB304 CYMD42Z connector and sleeve GMAOB035DG

### AVAILABILITY

Please consult our sales office for details

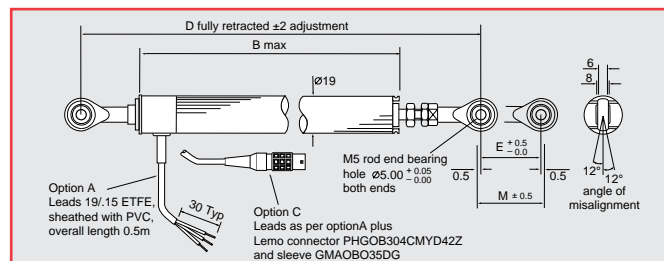
### ORDERING CODES

D45190/...../.....

Electrical stroke   
 A - no connector   
 C - with connector

### DIMENSIONS

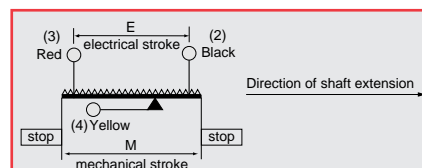
Note: drawings not to scale



Electrical stroke E	mm	25	50	75	100	125	150	200	250
Mechanical stroke M	mm	29	54	79	104	129	154	204	254
Body length B	mm	107.0	132.0	157.0	207.0	232.0	257.0	307.0	357.0
Between centres D	mm	173.6	198.6	223.6	273.6	298.6	323.6	373.6	423.6
Weight approximate	g	105	130	145	175	190	205	230	260

### ELECTRICAL CONNECTIONS

3 core cable: PVC sheathed 0.5m long with ETFE insulated 19/0.15 cores (Pin connections shown in brackets)





[www.pennyandgiles.com](http://www.pennyandgiles.com)

**Penny & Giles**

Position sensors and joysticks for commercial and industrial applications.

15 Airfield Road  
Christchurch  
Dorset BH23 3TG  
United Kingdom  
+44 (0) 1202 409409  
+44 (0) 1202 409475 Fax  
[sales@pennyandgiles.com](mailto:sales@pennyandgiles.com)

36 Nine Mile Point Industrial Estate  
Cwmfelinfach  
Gwent NP11 7HZ  
United Kingdom  
+44 (0) 1495 202000  
+44 (0) 1495 202006 Fax  
[sales@pennyandgiles.com](mailto:sales@pennyandgiles.com)

12701 Schabarum Avenue  
Irwindale CA 91706  
USA  
+1 626 337 0400  
+1 626 337 0469 Fax  
[us.sales@pennyandgiles.com](mailto:us.sales@pennyandgiles.com)

Straussenlettenstr. 7b  
85053 Ingolstadt,  
Germany  
+49 (0) 841 61000  
+49 (0) 841 61300 Fax  
[info@penny-giles.de](mailto:info@penny-giles.de)

The information contained in this brochure on product applications should be used by customers for guidance only. Penny+Giles Controls Ltd makes no warranty or representation in respect of product fitness or suitability for any particular design application, environment, or otherwise, except as may subsequently be agreed in a contract for the sale and purchase of products. Customer's should therefore satisfy themselves of the actual performance requirements and subsequently the products suitability for any particular design application and the environment in which the product is to be used.

Continual research and development may require change to products and specification without prior notification. All trademarks acknowledged.

© Penny+Giles Controls Ltd 2005

Innovation In Motion



[www.cwcontrols.com](http://www.cwcontrols.com)