

## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)

### Features

- Heavy duty zinc die cast body
- Conform to EN 60947-5-1, IEC 60947-5-1, UL508, NEMA250, CSA22.2 Standards
- Wide range of actuator available
- High repeatability (0.03mm for linear travel)

### Specifications

Operating Speed	0.05mm-2m/sec
Rated Current/Voltage	10A/600V AC (EN60947-5-1) AC15 A600 / DC13 Q300
Service Life	Mechanically 10 millions (operations) Electrically 1 million (operations)
Operating Temperature	-28.9~+85°C (-20~185°F)
Vibration Resistance	25gn (10..150 Hz, 11ms) per IEC60068-2-6
Shock Resistance	60gn (9ms) per IEC 60068-2-27
Dielectric Strength	2200VAC for 1 minute
Short Circuit Protection	10A fuse
Terminal Wire Size	12-22AWG (2.05-0.644mm <sup>2</sup> )
Degree of Protection	IP 67 conforming to IEC 60529, NEMA Types 2, 4, 6, 6P, 12, 13

### Electrical Ratings

IEC 60947-5-1 / EN 90947-5-1								
Designation & Utilization Category	Rated operational current Ie (A) at rated operational voltage Ue					VA rating		
	Make	Break						
AC15 A600	120V	240V	380V	480V	600V	7200	720	
	6A	3A	1.9A	1.5A	1.2A			
DC13 Q300	125VDC	250VDC					69	69
	0.55	0.27						

HES HAZARDOUS LOCATION RATINGS: CLASS I DIV GROUPS B,C,D  
CLASS II DIV GROUPS E,F,G

\* Wider operating temperature models are available. Please contact us.

### Selection Guide:

<b>HES</b>	<b>1</b>	<b>A</b>	<b>04</b>	<b>A</b>	<b>-</b>	<b>F</b>	<b>-</b>
Body Styles	Contact Block	1/2NPT Conduit (Contact us for other types)	Head Style	Applied on to Lever Arms Style		Rubber seal type	Rotary head shaft diameter
	1: SPDT (1NO/1NC) Snap action			B: Standard		Blank: Standard	Blank: 11.0mm
	2: DPDT (2NO/2NC) Snap action			A: High precision		F: Fluorite Rubber	(AB): 8.0mm
	3: DPDT (2NO/2NC) 2 stages			N: Low torque			(CH): 7.0mm
	4: DPDT (2NO/2NC) center neutral operation		2 digit or 2 digit + 1 letter	D: High precision low torque			(HW): 7.3mm
				C: Maintained			
				TB: Neutral Position			
				TA: Neutral Position (High Precision)			

## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)

### Plunger type

01 Styles



11 Styles



12 Styles



13 Styles



05 Styles



### Side Plunger type

11H Styles



12H Styles



13H Styles



### Side Plunger (Maintained) type

10H Styles



### Spring coil type



00



66



69

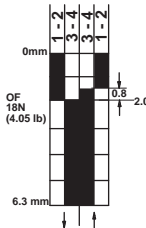
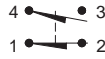
### Cat Whisker type

68 Styles



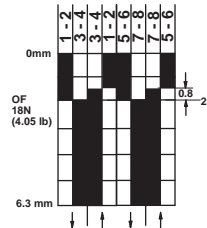
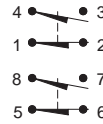
### HES-1A

1NO/1NC



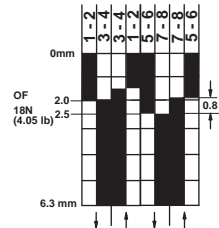
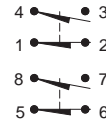
### HES-2A

2NO/2NC

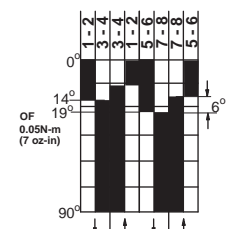
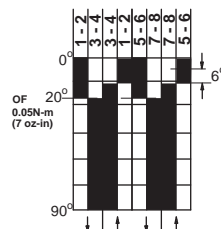
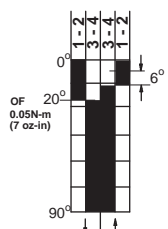
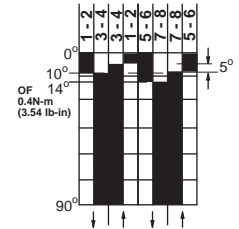
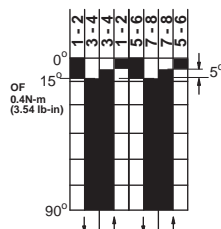
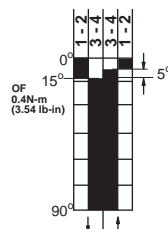
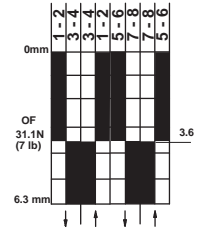
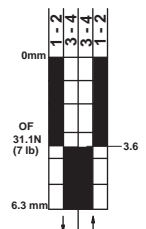
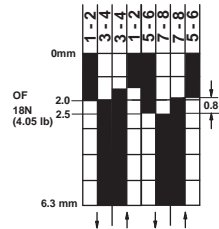
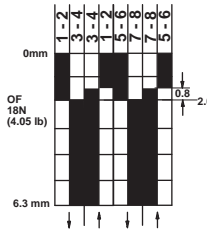
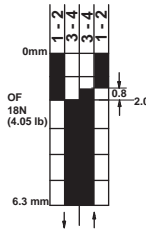


### HES-3A

2NO/2NC(2-stages)

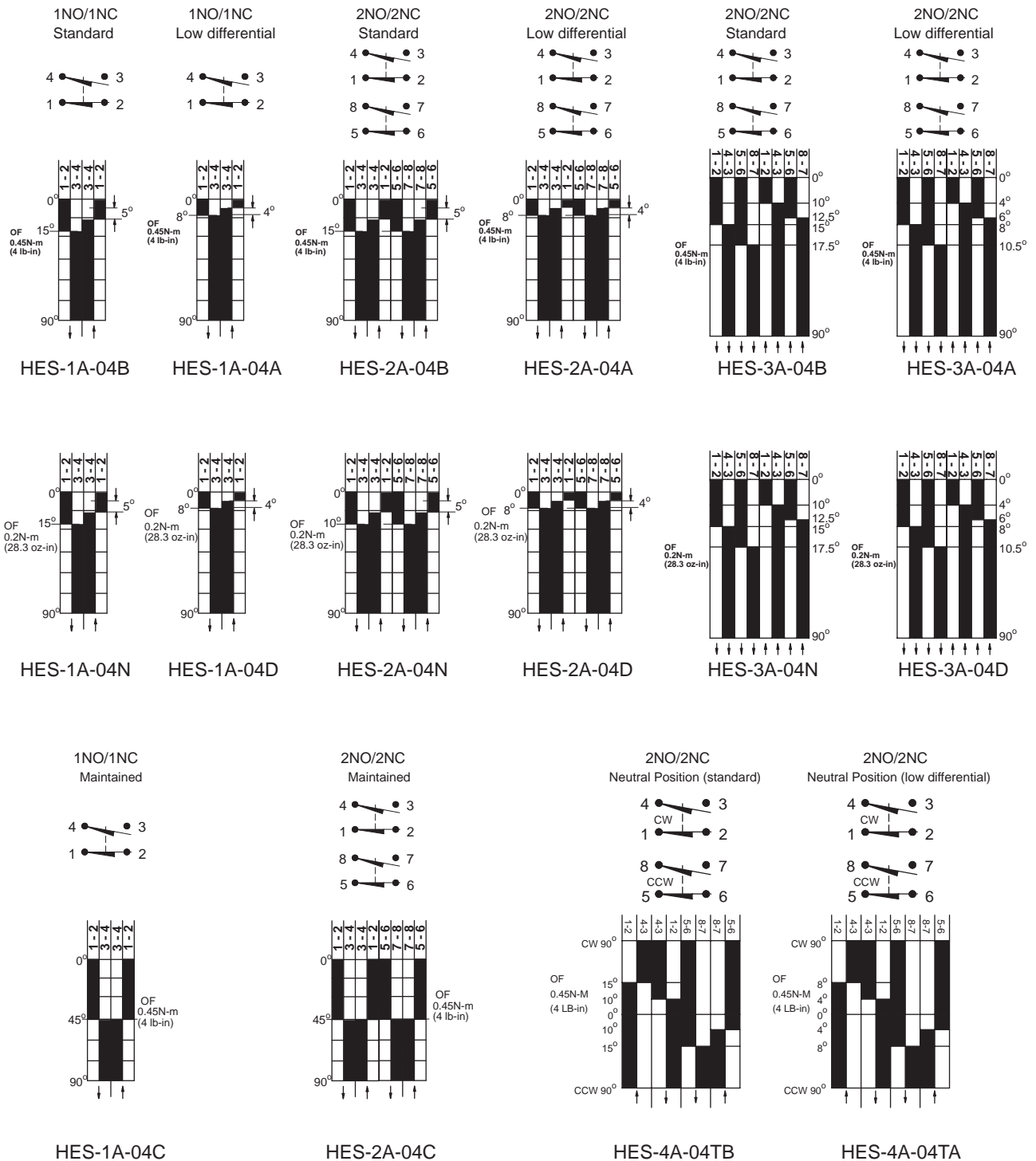


\* Note: Operating Force (OF) is 31.1N(7 lb) for Plunger type 01 style.

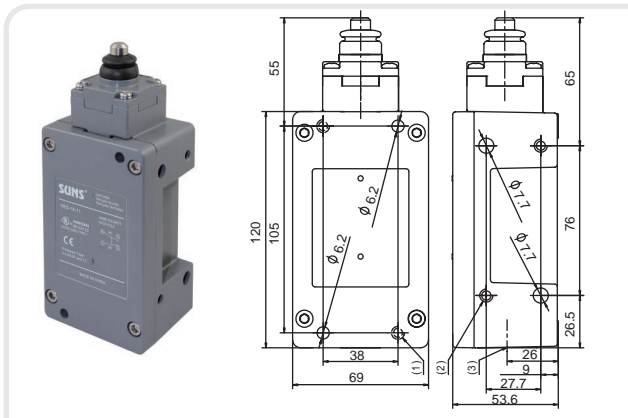


## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)

### Travel Diagram for Rotary Lever Styles

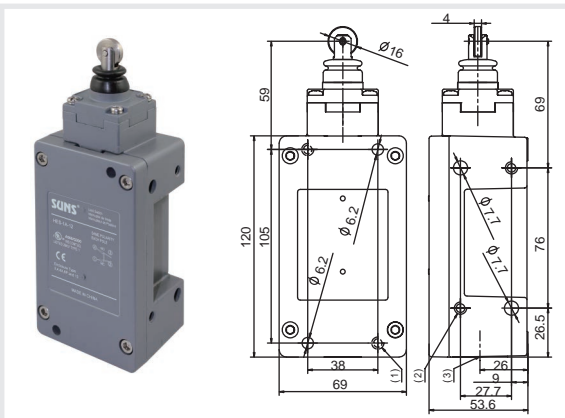


## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)



**Order Code**

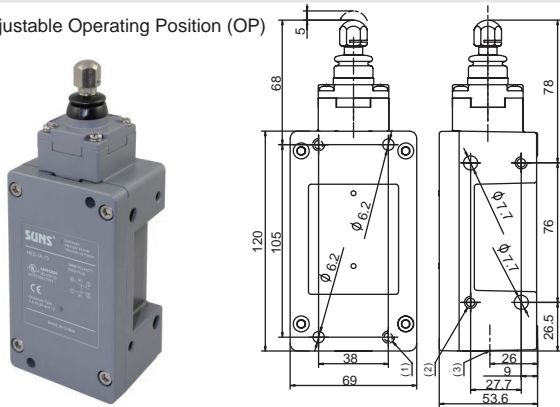
- HES-1A-11: 1NO/1NC
- HES-2A-11: 2NO/2NC
- HES-3A-11: 2NO/2NC (2-stage)



**Order Code**

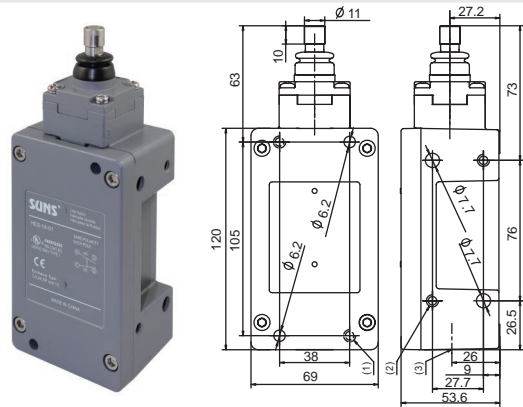
- HES-1A-12: 1NO/1NC
- HES-2A-12: 2NO/2NC
- HES-3A-12: 2NO/2NC (2-stage)

Adjustable Operating Position (OP)



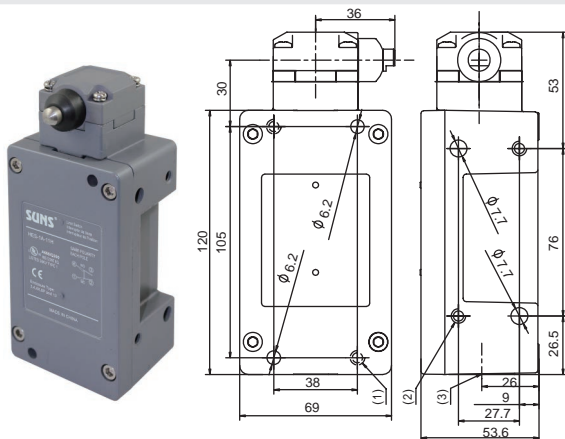
**Order Code**

- HES-1A-13: 1NO/1NC
- HES-2A-13: 2NO/2NC
- HES-3A-13: 2NO/2NC (2-stage)



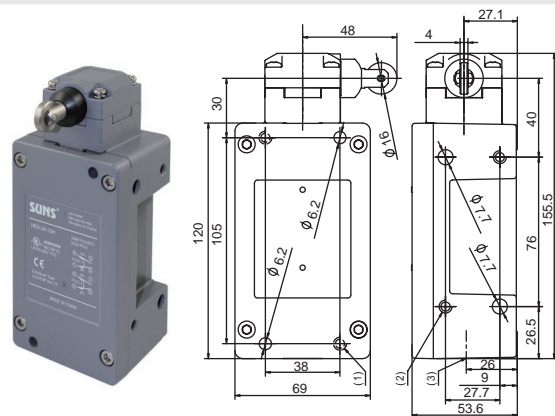
**Order Code**

- HES-1A-01: 1NO/1NC
- HES-2A-01: 2NO/2NC
- HES-3A-01: 2NO/2NC (2-stage)



**Order Code**

- HES-1A-11H: 1NO/1NC
- HES-2A-11H: 2NO/2NC
- HES-3A-11H: 2NO/2NC (2-stage)



\* Note: roller can be adjust to cross orientation

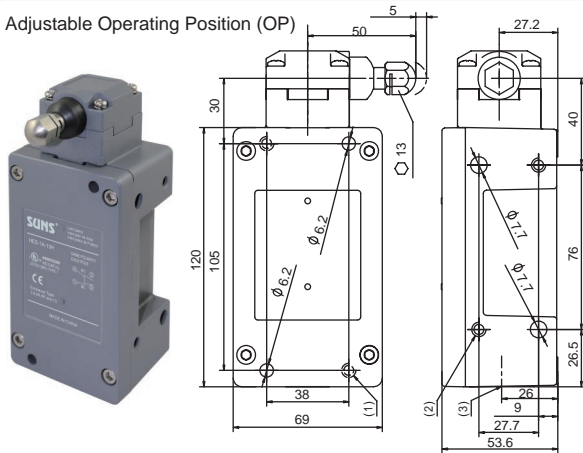
**Order Code**

- HES-1A-12H: 1NO/1NC
- HES-2A-12H: 2NO/2NC
- HES-3A-12H: 2NO/2NC (2-stage)

\* Note: 1) 2 x 1/4-20UNT (depth 0.63") for back side mounting  
 2) 2 x 1/4-20UNT (depth 0.32") on the side for side mounting  
 3) Conduit opening: 1/2NPT (standard), 3/4NPT on special request.

## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)

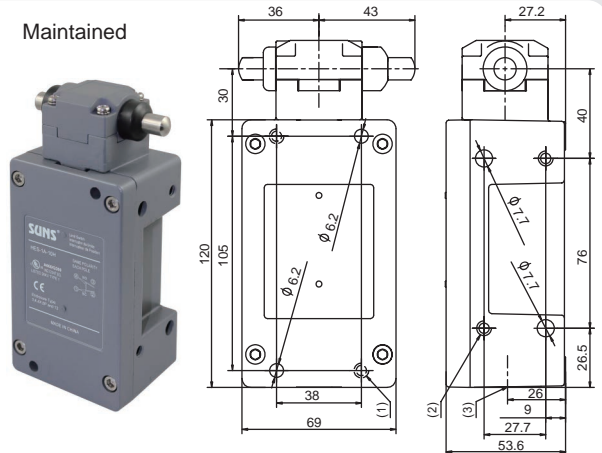
Adjustable Operating Position (OP)



Order Code

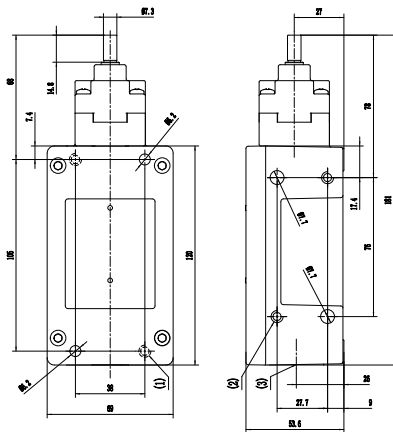
- HES-1A-13H: 1NO/1NC
- HES-2A-13H: 2NO/2NC
- HES-3A-13H: 2NO/2NC (2-stage)

Maintained



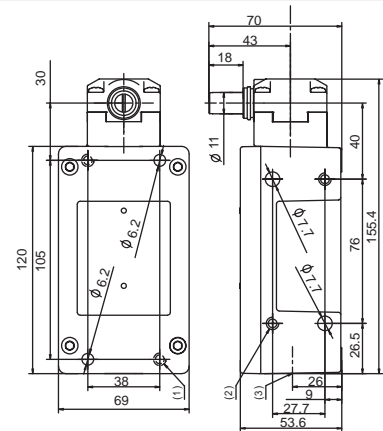
Order Code

- HES-1A-10H: 1NO/1NC
- HES-2A-10H: 2NO/2NC



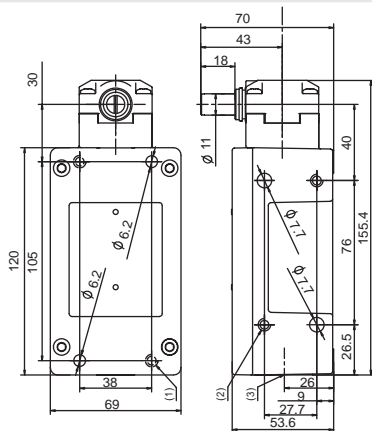
Order Code

- HES-1A-05B(HW): 1NO/1NC
- HES-2A-05B(HW): 2NO/2NC



Order Code

- HES-1A-04B: 1NO/1NC Standard Pretravel
- HES-1A-04A: 1NO/1NC Low Pretravel
- HES-1A-04N: 1NO/1NC Low Torque
- HES-1A-04D: 1NO/1NC Low Torque, Low Pretravel
- HES-2A-04B: 2NO/2NC Standard Pretravel
- HES-2A-04A: 2NO/2NC Low Differential Travel
- HES-2A-04N: 2NO/2NC Low Torque
- HES-2A-04D: 2NO/2NC Low Torque, Low Pretravel
- HES-3A-04B: 2NO/2NC (2-stage) Standard Pretravel
- HES-3A-04A: 2NO/2NC (2-stage) Low Pretravel
- HES-3A-04N: 2NO/2NC (2-stage) Low Torque
- HES-3A-04D: 2NO/2NC (2-stage) Low Torque, Low Differential Travel



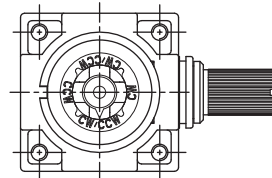
Neutral Position

- HES-4A-04TA: 2NO/2NC (Low Pretravel)
- HES-4A-04TB: 2NO/2NC

Maintained

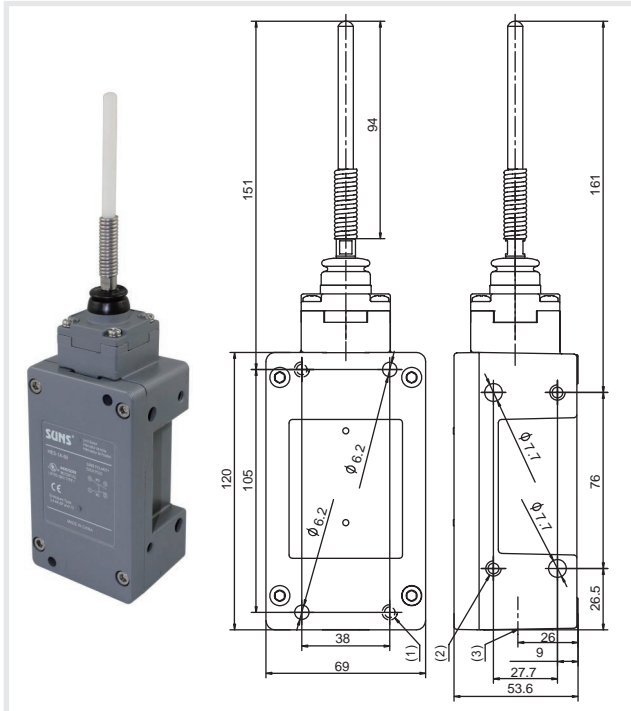
- HES-1A-04C: 1NO/1NC
- HES-2A-04C: 2NO/2NC

Head is factory set to operate the contacts in both the CW and CCW directions. To make change, simply pull out and rotate the arrow to the letters representing the desired direction: CW, CCW, or CW/CCW.



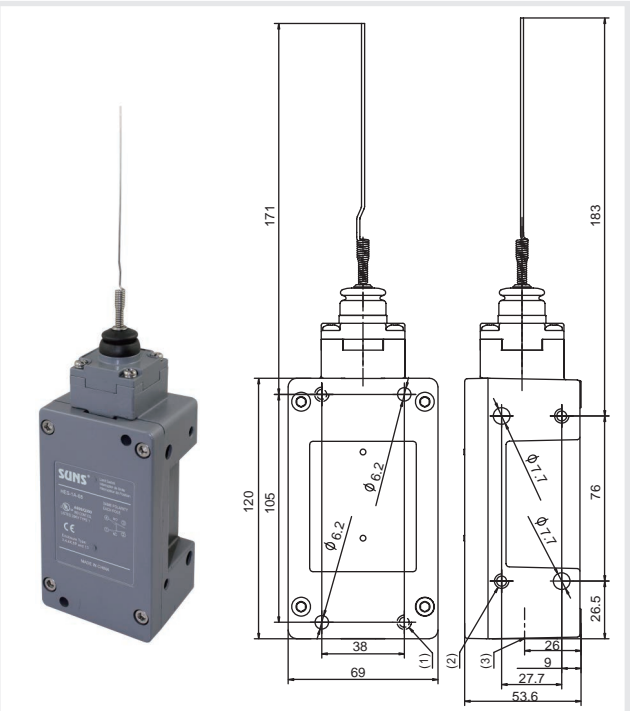
\* Note: 1) 2 x 1/4-20UNT (depth 0.63") for back side mounting  
 2) 2 x 1/4-20UNT (depth 0.32") on the side for side mounting  
 3) Conduit opening: 1/2NPT (standard), 3/4NPT on special request.

## HES Series Heavy Duty Limit Switches for Hazardous Location (EEX)



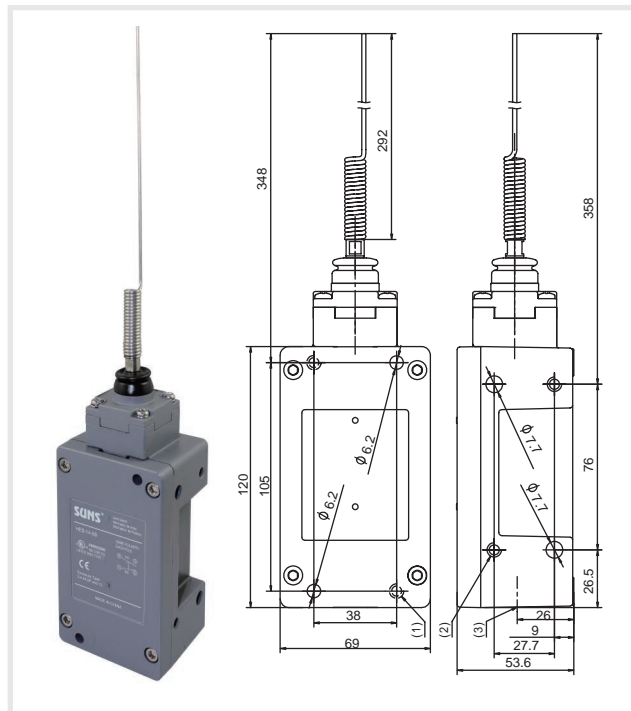
**Order Code**

- HES-1A-66: 1NO/1NC
- HES-2A-66: 2NO/2NC
- HES-3A-66: 2NO/2NC (2-stage)



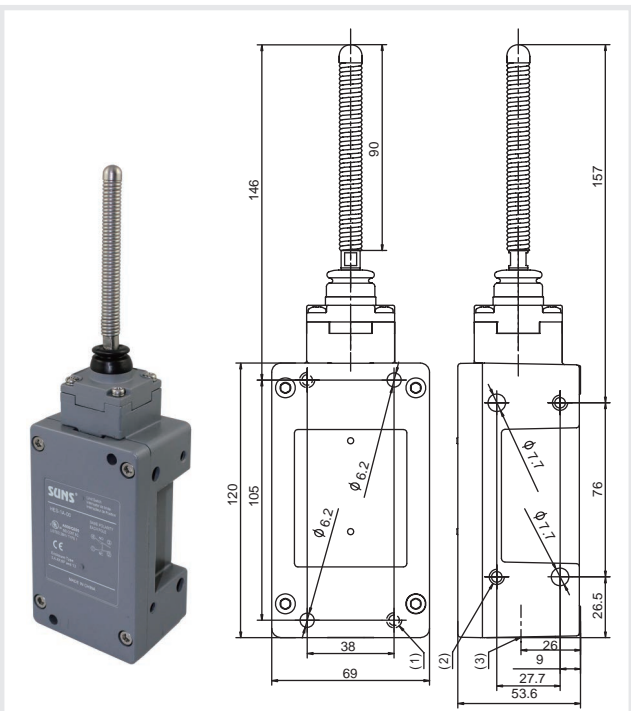
**Order Code**

- HES-1A-68: 1NO/1NC
- HES-2A-68: 2NO/2NC
- HES-3A-68: 2NO/2NC (2-stage)



**Order Code**

- HES-1A-69: 1NO/1NC
- HES-2A-69: 2NO/2NC
- HES-3A-69: 2NO/2NC (2-stage)



**Order Code**

- HES-1A-00: 1NO/1NC
- HES-2A-00: 2NO/2NC
- HES-3A-00: 2NO/2NC (2-stage)

\* Note: 1) 2 x 1/4-20UNT (depth 0.63") for back side mounting  
 2) 2 x 1/4-20UNT (depth 0.32") on the side for side mounting  
 3) Conduit opening: 1/2NPT (standard), 3/4NPT on special request.

## Levers for Rotary Heads (HMS/HLS/HNS/HES Heavy Duty Limit Switches)



### Cast Aluminum Lever Arms with Roller

Add '-P' suffix for nylon roller (following part numbers are with steel roller)

Arm Length in. (mm)	Roller Diameter in. (mm)	Roller Width in. (mm)	Part Number
1.38 (35)	0.75 (19)	0.25 (6.3)	H-04B1
		0.63 (16)	H-04B2
	0.63 (16)	0.25 (6.3)	H-04B3
		0.63 (16)	H-04B4
		1 (25.4)	H-04B5
1.5 (38)	0.75 (19)	0.25 (6.3)	H-04C1
		0.63 (16)	H-04C2
		1.25(31.7)	H-04C6
	0.63 (16)	0.25 (6.3)	H-04C3
		0.63 (16)	H-04C4
		1(25.4)	H-04C5
2 (51)	0.75 (19)	0.25 (6.3)	H-04D1
		0.63 (16)	H-04D2
	0.63 (16)	0.25 (6.3)	H-04D3
		0.63 (16)	H-04D4
2.5 (63.5)	0.75 (19)	0.25 (6.3)	H-04E1
		0.63 (16)	H-04E2
	0.63 (16)	0.25 (6.3)	H-04E3
3 (76)	0.75 (19)	0.25 (6.3)	H-04F1
		0.63 (16)	H-04F2
	0.63 16	0.25 (6.3)	H-04F3
		0.63 (16)	H-04F4

\* Mounting hole center to roller center distance

### Cast Aluminum Lever Arms with Rubber Roller

Arm Length in. (mm)	Roller Diameter in. (mm)	Roller Width in. (mm)	Part Number
2.5(63.5)	1.25 (31.8)	1.25 (31.8)	H-04E5-P2



### 90° Forked Cast Aluminum Lever Arms with Roller

Add '-P' suffix for nylon roller (following part numbers are with steel roller)

Arm Length in. (mm)	Roller			Part Number
	Roller Position	Diameter in. (mm)	Width in. (mm)	
1.5 (38)	Rollers on same side	0.75 (19)	0.25 (6.3)	H-05-1
		0.63 (16)	0.25 (6.3)	H-05-3
	R.H. Rollers on opposite side	0.75 (19)	0.25 (6.3)	H-05-1RH
		0.63 (16)	0.25 (6.3)	H-05-3RH
	L.H. Rollers on opposite side	0.75 (19)	0.25 (6.3)	H-05-1LH
		0.63 (16)	0.25 (6.3)	H-05-3LH

\* Mounting hole center to roller center distance



### Adjustable Length Lever Arm with Steel Roller

Lever Length in. (mm)	Roller Dia. in. (mm)	Roller Width in. (mm)	Part Number
Non-bendable, adjustable from 22-101mm	0.63 (16)	0.25 (6.3)	H-08-3
	0.63 (16)	0.63 (16)	H-08-4
	0.75(19)	0.25(6.3)	H-08-5
Bendable, adjustable from 22-101mm	0.63 (16)	0.25 (6.3)	H-08B-3
	0.63 (16)	0.63 (16)	H-08B-4
	0.75(19)	0.25(6.3)	H-08B-5

### Adjustable Length Lever Arm with Nylon Roller

Lever Length in. (mm)	Roller Dia. in. (mm)	Roller Width in. (mm)	Part Number
Non-bendable, adjustable from 22-101mm	0.63 (16)	0.25 (6.3)	H-08-3P
	1 (25.4)	0.63 (16)	H-08-5P
	0.75(19)	0.25(6.3)	H-08-7P
Bendable, adjustable from 22-101mm	0.63 (16)	0.25 (6.3)	H-08B-3P
	1.0 (25.4)	0.63 (16)	H-08B-5P

### Adjustable Length Lever Arm with Rubber Roller

Lever Length in. (mm)	Roller Dia. in. (mm)	Roller Width in. (mm)	Part Number
Non-bendable, adjustable from 22-101mm	2 (51)	0.63 (16)	H-08-6P

\* Original PN for use with 11mm shaft; for 7.0mm and 7.3mm shaft, add suffix (HW); for 8.0mm shaft, add suffix (AB)

## Levers for Rotary Heads (HMS/HLS/HES Heavy Duty Limit Switches)

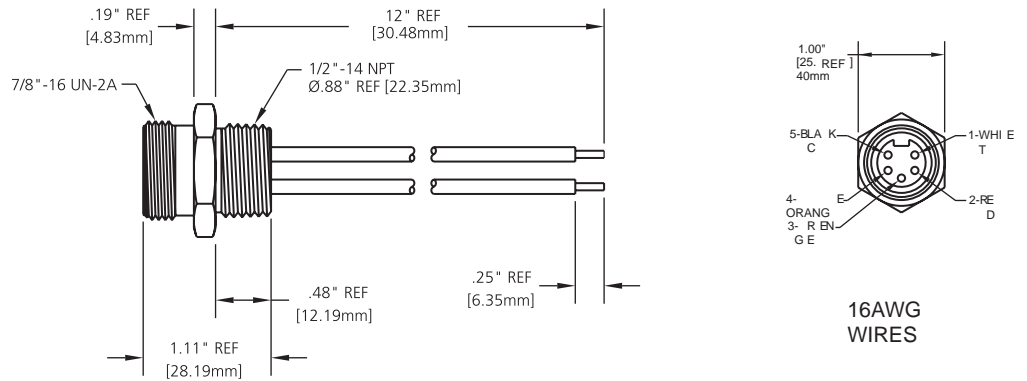


### Rod Type Lever Arms

Description	Length in. (mm)	Part Number
Stainless Steel Rod	10 (254)	H-07-10
Spring Rod, Steel	12 (304)	H-07S-12
Spring Rod, Delrin	12 (304)	H-07P-12
Looped Delrin Rod Arm	160MM(6.31N.)	H-06
Looped Delrin Rod Arm	228MM(9IN.)	H-09

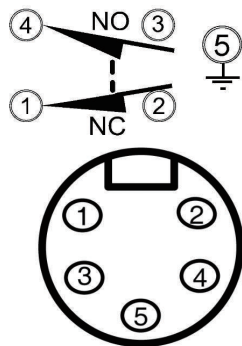
\* For used with 11mm shaft (suffix blank); 7.0mm shaft (suffix -CH); 7.3mm shaft (suffix -HW) and 8.0mm shaft (suffix -AB)

### NPT12-16-5P MALE STRAIGHT WITH 1/2" - 14NPT THREADS (5-PIN)



For prewired limit switches with NPT-12-16-5P connector, add -Q1 or -Q9 suffix

#### -Q1: wiring diagram



#### -Q9: wiring diagram

