

# 小型安全門開關 D4NS

## 多接點、省工時、對應微小負載的新一代安全門開關

- 接點構成除了傳統的1NC/1NO·2NC外，還提供2NC/1NO·3NC等3接點型。
- 實現了節約工時的目標，簡化了更換作業，並同時發售M12連接器型。
- 對接觸可信用度較高的鍍金接點進行標準化。既可用於標準負載，也可用於微小負載。



請閱讀第2頁"安全門開關 通用注意事項"。

### 型式構成

#### ■ 型式標準

#### ● 本體

D4NS-□□□型

① ② ③

#### ● 操作鑰匙

D4DS-K□型

①

#### ① 導管尺寸/連接器尺寸

- 1 : Pg13.5 (單導管型)
- 2 : G1/2 (單導管型)
- 3 : 1/2-14NPT (單導管型)
- 4 : M20 (單導管型)
- 5 : Pg13.5 (雙導管型)
- 6 : G1/2 (雙導管型)
- 7 : 1/2-14NPT對應 (M20 雙導管型與M20→1/2-14NPT轉換適配器同捆包裝)
- 8 : M20 (雙導管型)
- 9 : M12連接器 (單導管型)

#### ① 鑰匙開關

- 1 : 水平安裝
- 2 : 垂直安裝
- 3 : 可調安裝 (水平)
- 5 : 可調安裝 (水平/垂直)

#### ② 內置開關

- A : 1NC/1NO Slow Action  
 B : 2NC Slow Action  
 C : 2NC/1NO Slow Action  
 D : 3NC Slow Action  
 E : 1NC/1NO (MMB接點)  
 F : 2NC/1NO (MMB接點)

#### ③ 頭部安裝方向和材料

- F : 可以有四個安裝方向 (交貨時在前側安裝) / 塑膠

註. 頭部和開關部的單體恕不單獨出售。  
(操作鑰匙另售)

**種類** 標有◎的機型為標準庫存機型。關於沒有標記（訂購生產機型）的交貨期，請諮詢供應商。

■ **本體型號**（請注意操作鑰匙另售）

經認證直接開路的型號：

安全門開關

種類	接點構成	導管開口/連接器	型號	
單導管型	Slow Action	1NC/1NO	Pg13.5	◎D4NS-1AF型
			G1/2	◎D4NS-2AF型
			1/2-14NPT	D4NS-3AF型
			M20	D4NS-4AF型
		2NC	Pg13.5	◎D4NS-1BF型
			G1/2	◎D4NS-2BF型
			1/2-14NPT	D4NS-3BF型
			M20	D4NS-4BF型
		2NC/1NO	Pg13.5	◎D4NS-1CF型
			G1/2	◎D4NS-2CF型
			1/2-14NPT	D4NS-3CF型
			M20	D4NS-4CF型
	3NC	Pg13.5	D4NS-1DF型	
		G1/2	D4NS-2DF型	
		1/2-14NPT	D4NS-3DF型	
		M20	D4NS-4DF型	
	慢動MBB接點	1NC/1NO	Pg13.5	D4NS-1EF型
			G1/2	D4NS-2EF型
			1/2-14NPT	D4NS-3EF型
			M20	D4NS-4EF型
2NC/1NO		Pg13.5	D4NS-1FF型	
		G1/2	D4NS-2FF型	
		1/2-14NPT	D4NS-3FF型	
		M20	D4NS-4FF型	
雙導管型	Slow Action	1NC/1NO	Pg13.5	D4NS-5AF型
			G1/2	D4NS-6AF型
			M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7AF型
			M20	D4NS-8AF型
		2NC	Pg13.5	D4NS-5BF型
			G1/2	D4NS-6BF型
			M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7BF型
			M20	D4NS-8BF型
		2NC/1NO	Pg13.5	D4NS-5CF型
			G1/2	D4NS-6CF型
			M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7CF型
			M20	D4NS-8CF型
	3NC	Pg13.5	D4NS-5DF型	
		G1/2	D4NS-6DF型	
		M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7DF型	
		M20	D4NS-8DF型	
	MBB Slow Action	1NC/1NO	Pg13.5	D4NS-5EF型
			G1/2	D4NS-6EF型
			M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7EF型
			M20	D4NS-8EF型
2NC/1NO		Pg13.5	D4NS-5FF型	
		G1/2	D4NS-6FF型	
		M20與M20→1/2-14轉換適配器同捆包裝	D4NS-7FF型	
		M20	D4NS-8FF型	
單導管接頭型	慢動	1NC/1NO	D4NS-9AF型	
		2NC	M12連接器	
	慢動MBB接點	1NC/1NO	D4NS-9EF型	

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

※ 設備機械等出口歐洲時推薦使用M20或Pg13.5，出口北美時，推薦使用1/2-14NPT。

註. D4NS型的保護殼和頭部使用樹脂材料。

當用於要求機械強度的用途時，請選擇使用金屬的D4BS型（安全門開關）。

安全門開關

■操作鑰匙型號

類型	型號
水平安裝	◎D4DS-K1型
垂直安裝	◎D4DS-K2型
可調安裝(水平)	◎D4DS-K3型
可調安裝(水平/垂直方向)	◎D4DS-K5型

額定規格/性能

■規格/EC指令

●適用的EC指令和標準

- 機器指令
- 低電壓指令
- EN50047
- EN1088
- GS-ET-15

●經認證的標準

管理機構	標準	文件號
TÜV產品服務	EN60947-5-1 (經認證的直接開路動作)	請諮詢
UL *	UL508、CSA C22.2 No.14	E76675

\* : 對CSA C22.2 No.14 的認證經過UL標誌的授權。

●CCC規格

管理機構	標準	文件號
CQC	GB14048.5	20030103050773 30

■經認證的標準額定值

●TÜV(EN60947-5-1)、CCC(GB14048.5)

專案	使用類型	AC-15	DC-13
額定動作電流(Ie)		3A	0.27A
額定動作電壓(Ue)		240V	250V

註. 使用符合IEC60269的10A保險絲型gl或gG作為短路保護裝置。這保險絲不內置於開關內。

●UL/CSA(UL508、CSA C22.2 No.14)

A300

額定電壓	負載電流	電流(A)		伏安數(VA)	
		接通	斷開	接通	斷開
AC120V	10A	60	6	7,200	720
AC240V		30	3		

Q300

額定電壓	負載電流	電流(A)		伏安數(VA)	
		接通	斷開	接通	斷開
DC125V	2.5A	0.55	0.55	69	69
DC250V		0.27	0.27		

■性能

保護等級 * 1	IP67(EN60947-5-1) (只適用於開關。鑰匙插孔的保護等級是IP00)	
耐久性 * 2	機械	100萬次以上
	電氣	50萬次以上(AC250V, 3A電阻負載) * 3 30萬次以上(AC250V, 10A電阻負載)
允許操作速度	0.05~0.5m/s	
允許操作頻率	最大30次操作/分鐘	
直接開路動作力 * 4	最小60 N	
直接開路動作行程 * 4	最小10 mm	
接點阻抗	25mΩ以下(初始值)	
最小適用負載 * 5	DC5V、1mA的電阻負載(N水平參考值)	
額定絕緣電壓(Ui)	300V	
電擊保護級	II級(雙絕緣)	
污染程度(操作環境)	污染度3(EN60947-5-1)	
脈衝耐壓 (EN60947-5-1)	同極性端子之間	2.5kV
	不同極性端子間	4kV
	其他端子和不帶電的金屬零件之間	6kV
絕緣電阻	100 MΩ以上	
接點間隙	最小2×2 mm	
振動	故障	10~55Hz, 單幅值為0.75mm
	耐久	1,000m/s <sup>2</sup>
抗衝擊	故障	300m/s <sup>2</sup>
	有條件的短路電流	100A(EN60947-5-1)
額定開路熱電流(Ith)	10A(EN60947-5-1)	
環境溫度	-30°C~70°C, 無結冰	
環境濕度	95%RH以下	
重量	約96g(D4NS-1CF型)	

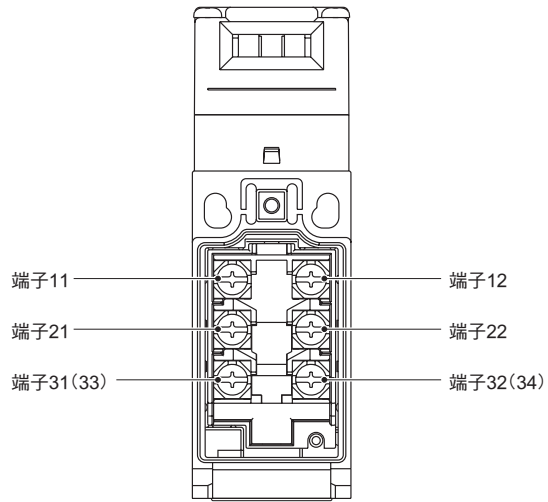
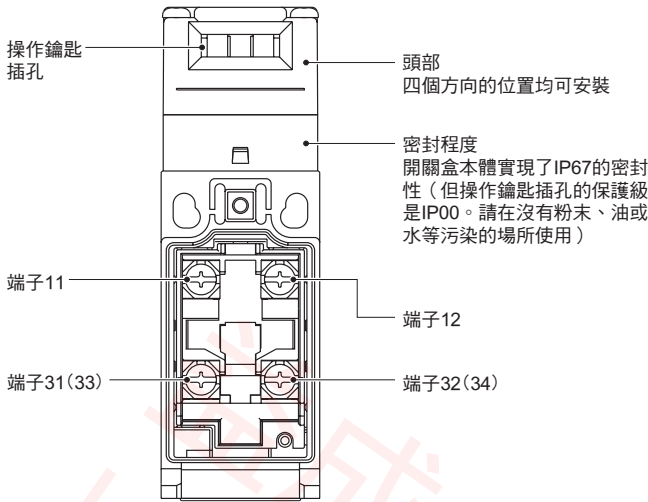
註1. 上述值是初始值。

註2. 開關的接點為標準和微小負載共用, 但對某一負載進行操作的接點, 不可再連接容量更小的負載進行使用。否則可能導致接點表面破損以及接點可靠性下降。

- \* 1. 保護等級用標準(EN60947-5-1)規定的方法測試。測試前確認密封程度滿足操作條件和環境。  
儘管開關盒可以防塵或防止水流入, 仍請勿將D4NL用在粉末、水或藥品等異物可能進入頭部的鑰匙孔的地方, 否則可能發生開關的磨損、損壞或故障。
- \* 2. 耐久性的條件為5°C~35°C的環境溫度和40%~70%的環境濕度。詳情請詢各歐姆龍代表處。
- \* 3. 如果環境溫度高於35°C, 不要使AC 250V、3A的負載通過多於2個的回路。
- \* 4. 這些數值是安全操作的最低要求。
- \* 5. 這些值將隨著開關頻率、環境和可靠性而改變。使用前確認實際負載正確動作的可能性。

## 構造及各部分名稱

- 構造
- D4NS-□A□型、D4NS-□B□型、D4NS-□E□型的場合
  - D4NS-□C□型、D4NS-□D□型、D4NS-□F□型的場合



※各雙導管型均為相同的端子配置。

## 接觸形式

表示鑰匙插入時的狀態。

型號	接點	接點圖	動作形式	說明
D4NS-□A□型	1NC/1NO			只有NC接點(11-12)有直接開路動作功能(⊖)。接點(11-12)和(33-34)能用作異極。
D4NS-□B□型	2NC			只有NC接點(11-12、31-32)有直接開路動作功能(⊖)。接點(11-12)和(31-32)能用作異極。
D4NS-□C□型	2NC/1NO			只有NC接點(11-12、21-22)有直接開路動作功能(⊖)。接點(11-12)和(21-22)、(33-34)能用作異極。
D4NS-□D□型	3NC			只有NC接點(11-12、21-22、31-32)有直接開路動作功能(⊖)。接點(11-12)和(21-22)、(31-32)能用作異極。
D4NS-□E□型	1NC/1NO MBB			只有NC接點(11-12)有直接開路動作功能(⊖)。接點(11-12)和(33-34)能用作異極。
D4NS-□F□型	2NC/1NO MBB			只有NC接點(11-12、21-22)有直接開路動作功能(⊖)。接點(11-12)和(21-22)、(33-34)能用作異極。

※ MBB接點：先合後斷（Make Before Break）接點的簡稱，此類接點擁有重疊結構，常閉接點（NC）斷開前，常開接點（NO）已閉合。

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

外觀尺寸

CAD檔 標有此標記的產品備有二維CAD圖面和三維CAD模型的資料。  
CAD檔可從OMRON Industrial Web網站 (<http://www.fa.omron.co.jp>) 下載。

(單位:mm)

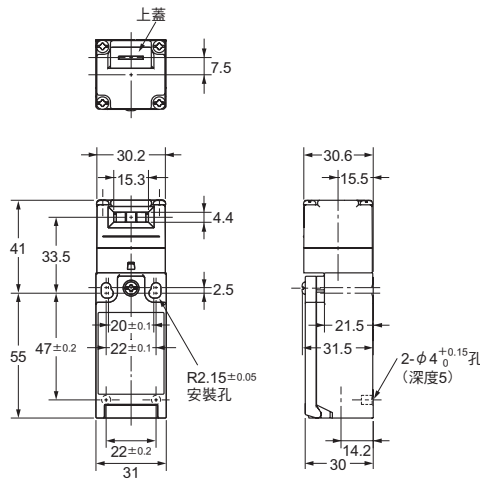
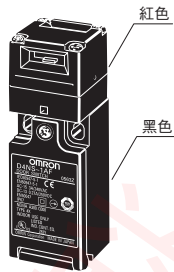
安全門開關

■外觀尺寸/動作特性

●單導管型

- D4NS-1□F型
- D4NS-2□F型
- D4NS-3□F型
- D4NS-4□F型

CAD檔



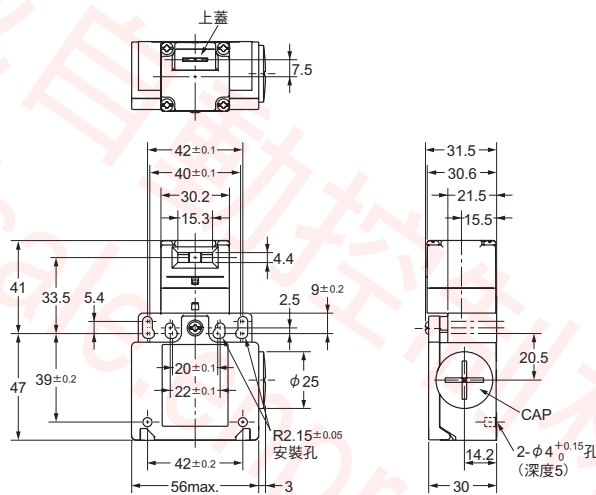
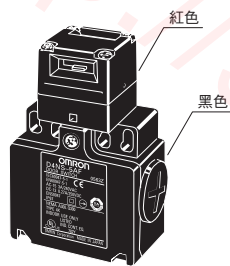
動作特性		型號	D4NS-1□F型 D4NS-2□F型 D4NS-3□F型 D4NS-4□F型
操作鑰匙插入力量	最大		15N
操作鑰匙插入力量	最大		30N
動作行程			6±3mm
整體行程			(28mm)
直接開路動作力 *	最小		60N
直接開路行程 *	最小		10mm

\* 上述數值為確保安全使用的必要條件。

●雙導管型

- D4NS-5□F型
- D4NS-6□F型
- D4NS-7□F型
- D4NS-8□F型

CAD檔



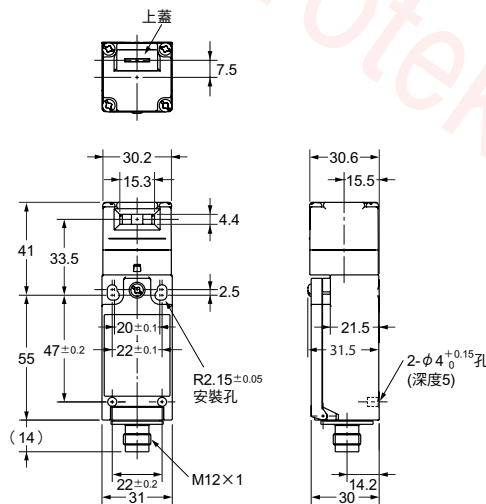
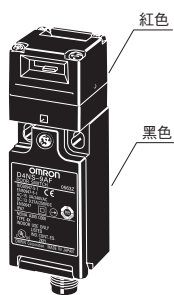
動作特性		型號	D4NS-5□F型 D4NS-6□F型 D4NS-7□F型 D4NS-8□F型
操作鑰匙插入力量	最大		15N
操作鑰匙插入力量	最大		30N
動作行程			6±3mm
整體行程			(28mm)
直接開路動作力 *	最小		60N
直接開路行程 *	最小		10mm

\* 上述數值為確保安全使用的必要條件。

●單導管型

- D4NS-9□F型

CAD檔



動作特性		型號	D4NS-9□F型
操作鑰匙插入力量	最大		15N
操作鑰匙插入力量	最大		30N
動作行程			6±3mm
整體行程			(28mm)
直接開路動作力 *	最小		60N
直接開路行程 *	最小		10mm

\* 上述數值為確保安全使用的必要條件。

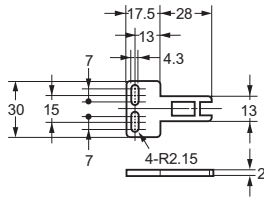
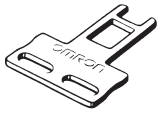
註1. 上述各機型的外觀尺寸圖中, 未指定部分的尺寸公差為±0.4mm。

註2. 2極以上 (2NC、2NC/1NO、3NC) 接點的開/關動作的同時性可能存在差別, 使用時請確認。

●操作鑰匙

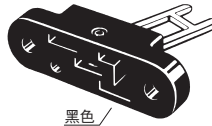
D4DS-K1型

CAD檔

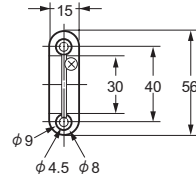
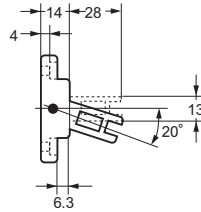


D4DS-K3型

CAD檔

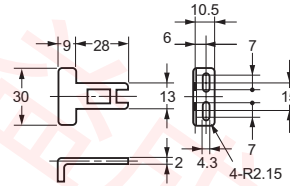
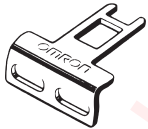


黑色



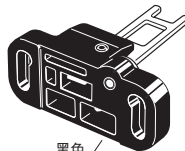
D4DS-K2型

CAD檔

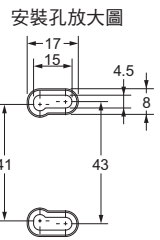
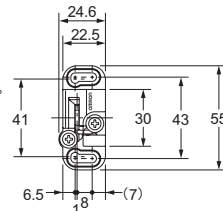
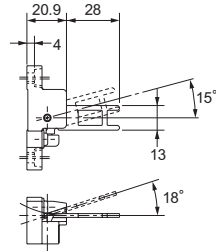


D4DS-K5型

CAD檔



黑色

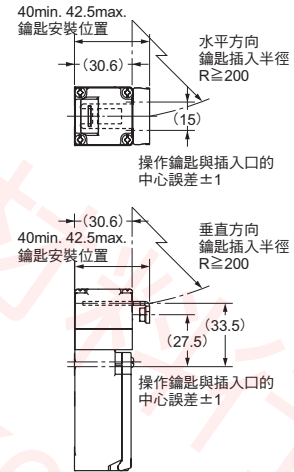
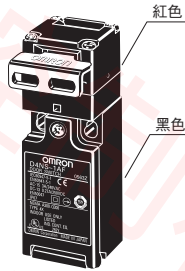
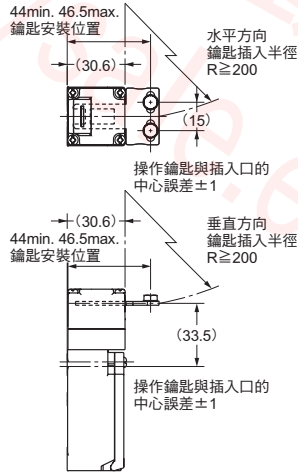
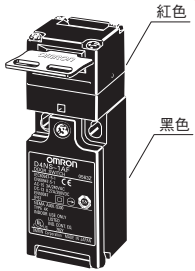


註：上述各機型的外觀尺寸圖中，未指定部分的尺寸公差為±0.4mm。

●操作鑰匙安裝時（其他型號的插入半徑、鑰匙和插入口之間的相互關係相同。）

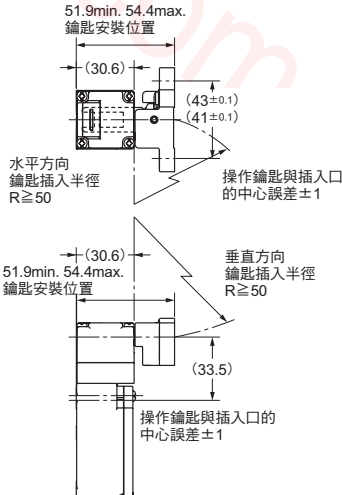
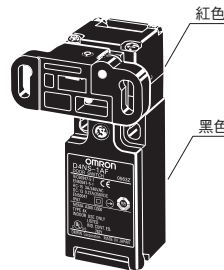
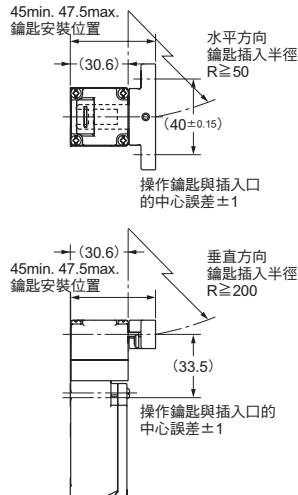
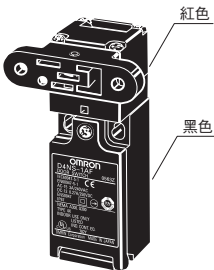
D4NS-1□F型+D4DS-K1型

D4NS-1□F型+D4DS-K2型



D4NS-1□F型+D4DS-K3型

D4NS-1□F型+D4DS-K5型



註：上述各機型的外觀尺寸圖中，未指定部分的尺寸公差為±0.4mm。

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

請正確使用

安全門開關

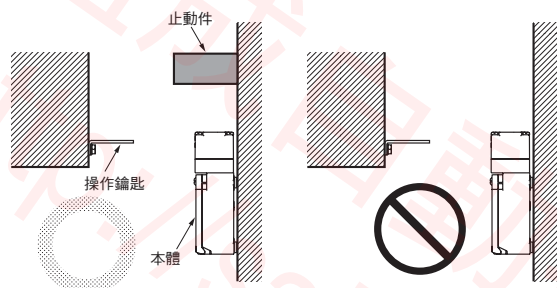
●詳細內容請參閱2~3頁的"安全門開關通用注意事項"。

安全要點

- 請勿在含有爆炸性氣體、易燃性氣體的環境中使用。
- 請勿在油中、水中或經常沾有水和油的環境中使用。否則可能導致水或油侵入開關內部。(本開關的保護構造IP67是指在水中放置一定時間後,測定水的浸入情況)
- 開關本體可防止塵埃或水侵入,但頭部不能對異物或水起到防護作用,請杜絕異物進入內部。否則可能導致提早磨損或破損。
- 接線作業後請務必安裝好保護蓋,以防觸電。
- 標準負載(AC250V、3A)的開閉,請勿在2個以上回路同時進行,否則可能導致絕緣功能下降。

●關於止動件的設置

不可將本體當作止動件使用。如下圖所示,務必設置止動件,以免操作鑰匙的邊緣碰撞到頭部。



使用注意事項

開關的接點為標準和微小負載共用,但對某一負載進行開閉操作的接點,不可再連接容量更小的負載進行使用。否則可能導致接點表面破損以及接點可靠性下降。

●關於使用環境

- 此類開關採用室內規格。在室外使用時,將導致開關故障。
- 惡性氣體(H<sub>2</sub>S、SO<sub>2</sub>、NH<sub>3</sub>、HNO<sub>3</sub>、Cl<sub>2</sub>等)、塵埃以及高溫高濕將導致接點出現接觸不良或腐蝕等現象,從而造成開關破損,因此請勿在上述條件下使用。
- 下列環境中請勿使用
  - 溫度變化激烈的場所
  - 濕度高,可能發生結露的場所
  - 振動激烈的場所
  - 防護門內側沾有粉末、加工碎屑、油或藥品的場所
  - 有稀釋液、洗滌劑等溶劑的場所

■安裝方法

●最佳旋轉扭力

螺絲鬆弛將造成提前故障,安裝時請按照下表所示最佳旋轉扭力擰緊螺絲。

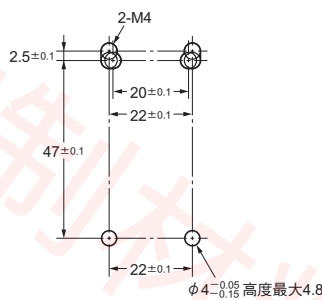
端子螺絲	0.6~0.8N·m
保護蓋安裝螺絲	0.5~0.7N·m
頭部安裝螺絲	0.5~0.6N·m
操作鑰匙安裝螺絲	2.4~2.8N·m
本體安裝螺絲	0.5~0.7N·m
連接器·M12轉換適配器	1.8~2.2N·m(1/2-14NPT以外)
	1.4~1.8N·m(1/2-14NPT)
外蓋螺絲釘	1.3~1.7N·m

●安裝孔加工

- 安裝本體和操作鑰匙時,使用M4螺絲和墊片,用最佳旋轉扭力固定。安全起見,請選用不易脫落的螺絲或與此同等的手段進行安裝。
- 如下圖 $\phi 4_{-0.15}^{-0.05}$ 在高度(最大4.8)的突起處,設置2個點,插入開關下部的孔中,用4點固定,則可以安裝得更為牢固。

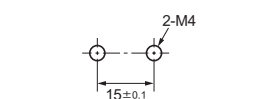
<安裝孔/突起加工尺寸>

·單導管型

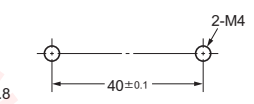


<操作鑰匙安裝孔加工尺寸>

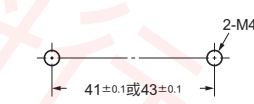
·水平/垂直安裝型 (D4DS-K1/-K2型通用)



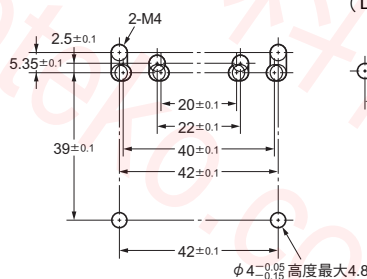
·可調安裝型(水平方向) (D4DS-K3型)



·可調安裝型(水平/垂直方向) (D4DS-K5型)



·雙導管型



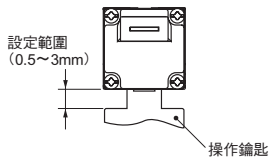
- 操作鑰匙請對準插入口中心,在±1mm的範圍內插入。如存在位置偏移或傾斜,可能導致提早磨損或破損。
- 使用操作鑰匙時,請按指定的插入半徑,對準鑰匙插孔垂直插入。

●關於頭部方向的變更

- 拆下頭部四個角的螺絲,即可將頭部任意變更為4個方向。注意防止異物夾於其間。
- 欲變更頭部方向時,請將操作鑰匙插入頭部。

●關於門的固定

門關閉時（操作鑰匙插入狀態），由於門本身的重量、機械的振動、緩衝用橡皮等原因，可能導致門（操作鑰匙）超過設置範圍而開啟。請用鉤子等予以固定，以保持其在設置範圍內。

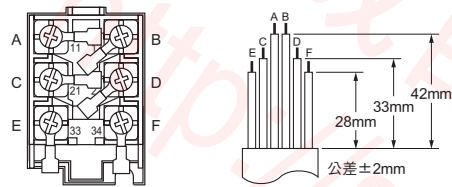


■配線

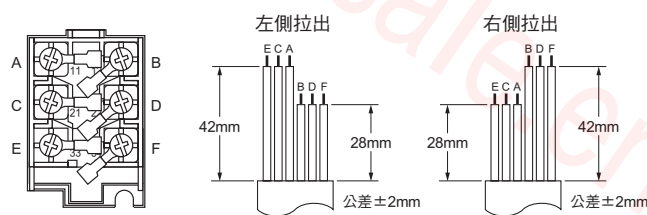
●關於配線

- 通過絕緣管、M3.5 用壓著端子與端子連接時，如圖所示配置壓著端子，配線時注意不要超過外殼和保護蓋。
- 適用導線規格為AWG20~18（0.5~0.75mm<sup>2</sup>）。
- 請將導線加工成圖中的長度。
- 多餘導線接觸到保護蓋可能導致保護蓋浮起。

<單導管型（3極規格）の場合>



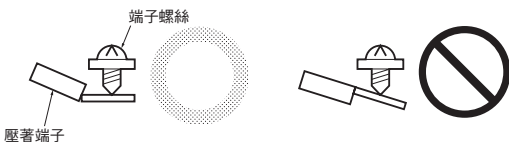
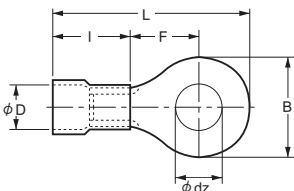
<雙導管型（3極規格）の場合>



- 請勿將壓著端子等塞入外殼內的縫隙中，否則可能導致外殼破損或變形。
- 請使用厚度在 0.5mm 以下的壓著端子，以防對外殼內部造成干擾。以下壓著端子的厚度在0.5mm以下：

生產商	型號	適用導線規格
日本壓著端子	FV0.5-3.7 (F型)	AWG20 (0.5mm <sup>2</sup> )
	V0.5-3.7 (直型)	

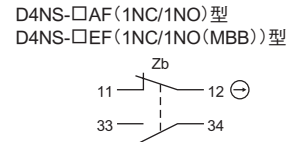
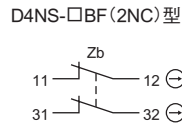
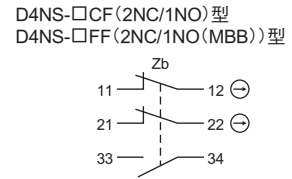
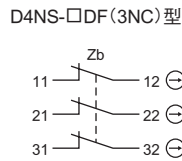
t : 0.5mm  
 φ dz : 3.7mm  
 φ D : 2.9mm  
 B : 6.6mm  
 L : 19mm  
 F : 7.7mm  
 l : 8.0mm



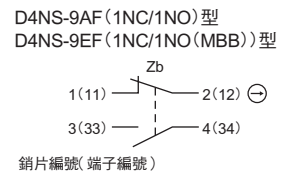
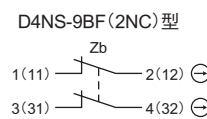
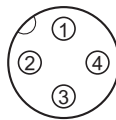
●回路構成

· 回路構成如下所示：

<螺絲端子型>



<連接器型>



銷片編號(端子編號)

- 適用的插座為XS2F（歐姆龍產）型。
- 插座的銷片編號和導線顏色請參照連接器的產品目錄。

●連接器插座的固定（接頭型）

- 用手轉動插座的緊固螺絲，將其擰至與插頭之間幾乎無間隙為止。
- 緊固不到位可能造成保護構造（IP67）無效或因振動產生鬆動。

●出線孔的處理

- 為確保IP67製品，請在使用1/2-14NPT時，在連接器的出線孔處貼上密封膠帶。
- 請使用符合該連接器要求外徑的纜線。
- 實施配線作業時，請用螺絲固定尚未用到的出線孔處。（雙出線孔型）

■推薦連接器

為防止對內置開關產生干擾，請使用螺絲長度為9mm以下的接頭。以下接頭的螺絲長度為9mm。

為確保IP67，請使用以下推薦接頭。

規格	生產商	型號	適用電纜外徑
G1/2	LAPP	ST-PF1/2 5380-1002	6.0~12.0mm
Pg13.5	LAPP	ST-13.5 5301-5030	6.0~12.0mm
M20	LAPP	ST-M20 × 1.5 5311-1020	7.0~13.0mm
1/2-14NPT	LAPP	ST-NPT1/2 5301-6030	6.0~12.0mm

使用LAPP產品時，請同時使用另售的密封墊圈（型號為JPK-16或GP-13.5，或GPM20。M12為GPM12），並用適當的旋轉扭力進行緊固。

- 對於雙導管的1/2-14NPT，請將同捆包裝的轉換適配器安裝到開關上，並使用上述連接器。

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK



## 計劃停產產品介紹

安全門開關

在推出D4NS後，D4DS將停止生產，敬請諒解。

### ●生產終止日期

D4DS系列的生產將於2006年3月末停止。

### ●推薦替代產品

D4NS系列 於2003年7月開始發售。

### ●使用推薦替代產品時的注意事項

#### ①關於外觀

D4DS與D4NS的安裝方法、操作鑰匙、安裝孔和操作鑰匙插入位置均未改變。但隨著多接點設計的加入，外形加長了4mm。

#### ②端子編號改變

在2接點型中，D4DS的端子編號No.21、22和No.23、24分別改為：No.31、32和33、34。

#### ③關於推薦端子

非推薦端子可能無法安裝，使用前請予以確認。

### ●與計劃停產的產品之間的比較

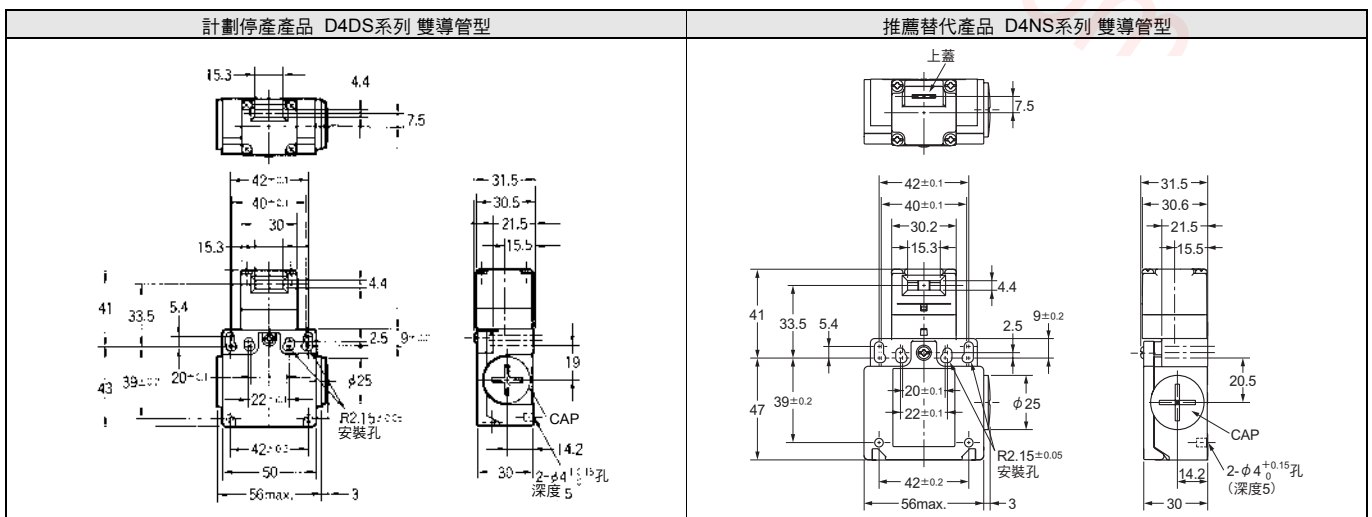
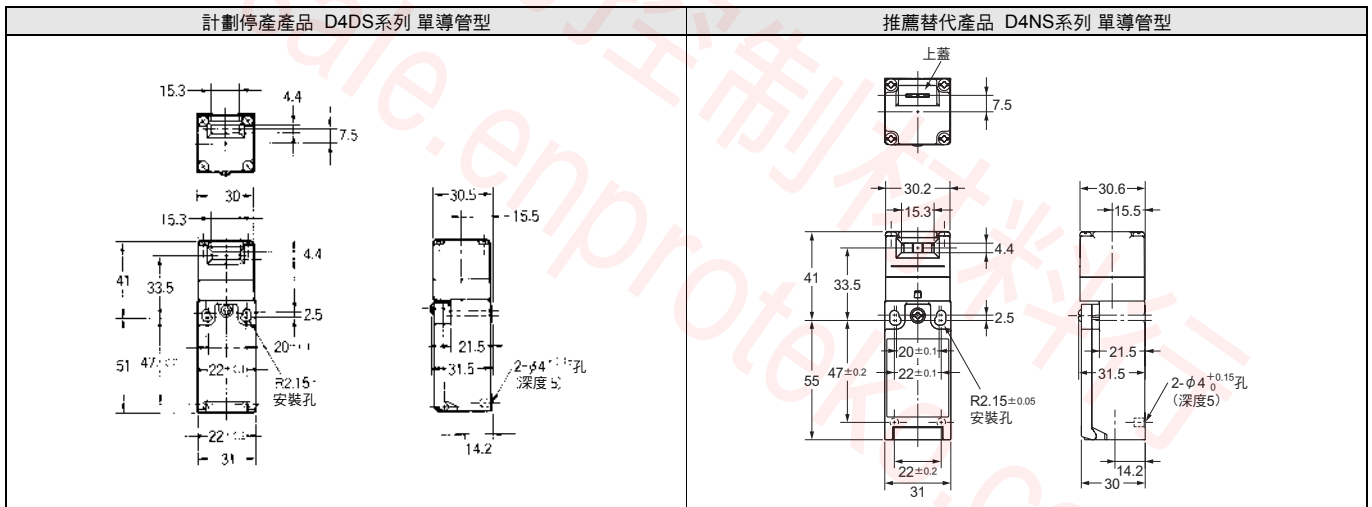
專案 型號	本體的 顏色	外形 尺寸	配線 連接	安裝 方法	額定 性能	動作 特性	操作 方法
D4NS-□型	○	○	×	◎	○	○	◎

◎：完全互換

○：基本無變更/相似度較高的變更

×：變更大

### ●外觀尺寸(單位:mm)



### ●計劃停產產品與推薦替代產品

#### 開關本體

計劃停產產品	推薦替代產品
D4DS-15FS型	D4NS-1AF型
D4DS-25FS型	D4NS-2AF型
D4DS-35FS型	D4NS-3AF型
D4DS-55FS型	D4NS-5AF型
D4DS-65FS型	D4NS-6AF型
D4DS-1AFS型	D4NS-1BF型
D4DS-2AFS型	D4NS-2BF型
D4DS-3AFS型	D4NS-3BF型
D4DS-5AFS型	D4NS-5BF型
D4DS-6AFS型	D4NS-6BF型

### ●操作鑰匙

D4DS-K1、D4DS-K2、D4DS-K3、D4DS-K5四種型號的操作鑰匙均可用於D4NS型。

# 薄型安全門開關 D4GS-N

安全門開關

## 對應IP67的薄型安全門開關

- 寬度僅17mm的薄型產品 (3接點)
- 採用可逆構造, 正反兩面均可使用。
- 內置開關包括2接點和3接點等豐富類型。
- 操作鑰匙在安裝孔部位使用橡膠, 吸收振動和衝擊的構造。



請閱讀第2頁“安全門開關 通用注意事項”。



通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

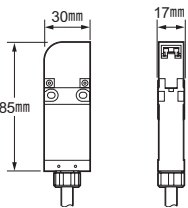
D40B

D4NS-SK  
D4JL-SK

## 特點

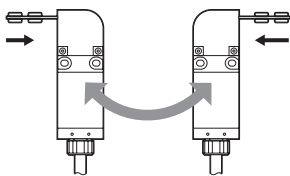
### ● 寬度17mm的薄型 (3接點)

體積比原來減小 (本公司比較) 1/2的超輕薄型設計。



### ● 可逆構造

正反兩面均可使用

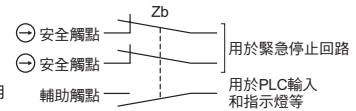


### ● 內置開關

2接點和3接點型

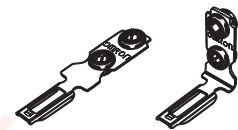
品種齊全。

※安全接點是指EN規格的直開接點, 用 ⊖ 表示。



### ● 操作鑰匙

鑰匙安裝孔部位使用橡膠, 吸收振動和衝擊。



### ● 保護構造IP67 (限本體操作鍵插入孔為IP00)

使用防銹材料, 並設計有排水孔, 強化了防水對策。

※IP67依照EN60947-5-1的測定方法, 請事先確認由實際使用環境和使用條件決定的密封性。

### ● 安全規格

取得CE標誌對應的EN (TÜV) 規格認證。

所有NC接點均取得強制隔離動作認定 (⊖)。

取得UL、CSA等各種國際規格認證。

## 形式構成

### ■ 型式標準

#### ● 本體

D4GS-N □ □ - □ 型

① ② ③

#### ① 內置開關

- 1: 1NC/1NO (慢動接點)
- 2: 2NC (慢動接點)
- 3: 2NC/1NO (慢動接點)
- 4: 3NC (慢動接點)

#### ② 操作鑰匙插入方向

- R: 水平方向
- T: 垂直方向

#### ③ 電纜長

- 空格: 1m
- 3 : 3m
- 5 : 5m

#### ● 操作鑰匙

D4GS-NK □ 型

①

#### ① 按鍵開關

- 1: 水平安裝型
- 2: 垂直安裝型
- 4: 可調安裝型 (垂直方向)

**種類** (標有◎的機型為標準庫存機型。關於沒有標記(訂購生產機型)的交貨期,請諮詢供應商。)

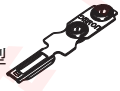
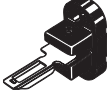

安全門開關

●本體型號 (請注意操作鑰匙另售)

強制開離認證型號:

形狀	操作鑰匙插入方向	電纜長	1NC/1NO接點 (慢速動作)	2NC接點 (慢速動作)	2NC/1NO接點 (慢速動作)	3NC接點 (慢速動作)
			型號	型號	型號	型號
	水平	1m	◎D4GS-N1R型	◎D4GS-N2R型	◎D4GS-N3R型	◎D4GS-N4R型
		3m	D4GS-N1R-3型	D4GS-N2R-3型	D4GS-N3R-3型	D4GS-N4R-3型
		5m	D4GS-N1R-5型	D4GS-N2R-5型	D4GS-N3R-5型	D4GS-N4R-5型
	垂直	1m	◎D4GS-N1T型	◎D4GS-N2T型	◎D4GS-N3T型	◎D4GS-N4T型
		3m	D4GS-N1T-3型	D4GS-N2T-3型	D4GS-N3T-3型	D4GS-N4T-3型
		5m	D4GS-N1T-5型	D4GS-N2T-5型	D4GS-N3T-5型	D4GS-N4T-5型

●操作鑰匙型號

類型	型號	類型	型號
水平安裝型 	◎D4GS-NK1型	可調安裝型 (垂直方向) 	◎D4GS-NK4型
垂直安裝型 	◎D4GS-NK2型		

額定規格/性能

■規格/EC指令

●適用的EC指令和標準

- 機器指令
- 低電壓指令
- EN1088
- EN60204-1
- GS-ET-15

●經認證的標準

管理機構	標準	文件號
TÜV Lineland	EN60947-5-1 (強制開離認證)	J2051125
UL *	UL508、CSA C22.2 No.14	E76675
CQC(CCC)	GB14048.5	2003010305064262

\* 對CSA C22.2 No.14 的認證經過UL標誌的授權。

■安全規格認證額定值

●TÜV(EN60947-5-1)、CCC(GB14048.5)

專案	使用類型	AC-15	DC-13
額定動作電流(Ie)		0.75A	0.27A
額定動作電壓(Ue)		240V	250V

· 使用符合IEC60269的10A保險絲型gI或gG作為短路保護裝置。這根保險絲不內置於開關內。

●UL(UL508/CSA C22.2 No.14)

C300

額定電壓	通電電流	電流(A)		伏安數(VA)	
		接通	斷開	接通	斷開
AC120V AC240V	2.5A	15 7.5	1.5 0.75	1,800	180

Q300

額定電壓	通電電流	電流(A)		伏安數(VA)	
		接通	斷開	接通	斷開
AC125V AC250V	2.5A	0.55 0.27	0.55 0.27	69	69

■性能

保護等級 * 1	IP67 (EN60947-5-1) (只適用於開關。鑰匙插孔的保護等級是IP00)	
耐久性 * 2	機械	100萬次以上
	電氣	10萬次以上 (AC125V, 1A電阻負載) * 3
允許操作速度	0.1m/s~0.5m/s	
接點間隙	最小2×2mm	
允許操作頻率	最大30次/min	
額定頻率	50/60Hz	
直接開路動作力 * 4	最小60N	
直接開路動作行程 * 4	最小10mm	
絕緣電阻	同極、異極端子之間、各端子與非充電金屬之間的 100MΩ以上 (DC500V時)	
最小適用負載 * 5	DC24V 4mA 的電阻負載 (N水平參考值)	
接點電阻	300mΩ以下 (初始值、附1m纜線)	
耐壓	同極端子間	Uimp 2.5kV (EN60947-5-1)
	異極端子間	Uimp 4kV (EN60947-5-1)
	各端子與非充電金屬之間	Uimp 6kV (EN60947-5-1)
額定絕緣電壓 (Ui)	250V	
有條件的短路電流	100A (EN60947-5-1)	
污染程度 (操作環境)	污染度3 (EN60947-5-1)	
額定開放熱電流 (Ith)	2.5A (EN60947-5-1)	
電擊保護級	Class II (雙重絕緣) (IEC60536)	
振動	誤動作	10~55Hz 單幅值為0.35mm
衝擊	持久	1,000m/s <sup>2</sup> 以上
	誤動作	300m/s <sup>2</sup> 以上
環境溫度	-30~+70°C, 無結冰	
環境濕度	95%RH以下	
纜線	UL2464 No.22AWG 包裝外徑φ7.2mm	
重量	約120g (D4GS-N1R型 附1m纜線)	

- 註1. 左邊所述數值均為初始值。  
 註2. 開關的接點為標準和微小負載共用，但對某一負載進行操作的接點，不可再連接容量更小的負載進行使用。否則可能導致接點表面破損以及接點可靠性下降。
- \* 1. 保護等級用標準 (EN60947-5-1) 規定的方法測試。測試前確認密封程度滿足操作條件和環境。儘管開關盒可以防塵或防止水流入，請勿將其用在粉末、水或藥品等異物可能進入頭部的鑰匙孔的地方。否則可能發生開關的磨損、損壞或故障。
  - \* 2. 耐久性的條件為5°C ~35°C 的環境溫度和40~70%RH的環境濕度。詳情諮詢各歐姆龍代表處。
  - \* 3. 如果環境溫度高於35°C，不要使AC 125V、1A的負載通過多於2個的回路。
  - \* 4. 這些數值是安全操作的最低要求。
  - \* 5. 此值是微小負載的參考值。此值將隨著環境條件和可靠性水平而改變。使用前確認實際負載正確動作的可能性。

接觸形式 (表示鑰匙插入的狀態。)

型號	接點	接點圖	動作形式	說明
D4GS-N1□-□型	1NC/1NO			只有NC接點 (11-12) 有直接開路動作功能 (⊖)。接點 (11-12) 和 (33-34) 能用作異極。
D4GS-N2□-□型	2NC			只有 NC 接點 (11-12、31-32) 有直接開路動作功能 (⊖)。接點 (11-12) 和 (31-32) 能用作異極。
D4GS-N3□-□型	2NC/1NO			只有 NC 接點 (11-12、21-22) 有直接開路動作功能 (⊖)。接點 (11-12) 和 (21-22)、(33-34) 能用作異極。
D4GS-N4□-□型	3NC			只有 NC 接點 (11-12、21-22、31-32) 有直接開路動作功能 (⊖)。接點 (11-12) 和 (21-22)、(31-32) 能用作異極。

註. 端子編號依據EN50013、接點編號依據IEC60947-5-1。

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

外觀尺寸/動作特性

CAD檔 標有此標記的產品備有二維CAD圖面和三維CAD模型的資料。CAD檔可從歐姆龍Industrial Web網站 (<http://www.fa.omron.co.jp>) 下載。

(單位: mm)

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

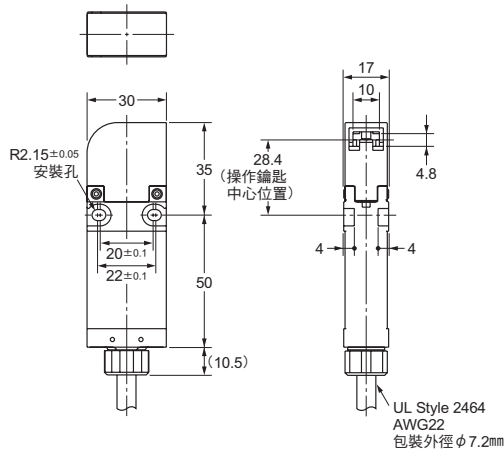
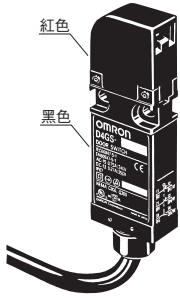
D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

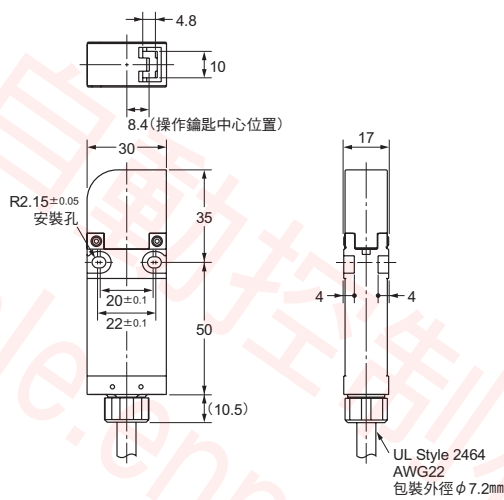
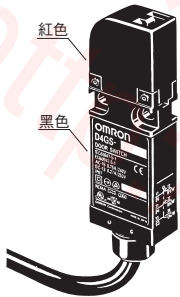
● 本體

D4GS-N□R-□型



CAD檔

D4GS-N□T-□型



動作特性

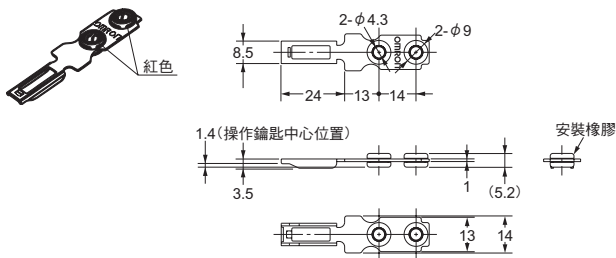
操作鑰匙插入力	最大	15N
操作鑰匙插入力	最大	30N
動作行程		6.8±3mm
整體行程		(22mm)
直開動作力	最小	60N
直開行程	最小	10mm

註1. 上述各機型的外觀尺寸圖中, 未指定部分的尺寸公差為±0.4mm。加括弧的尺寸為參考值。  
註2. 2極以上 (2NC、2NC/1NO、3NC) 接點的開/關動作的同時性可能存在差別, 使用時請確認。

● 操作鑰匙

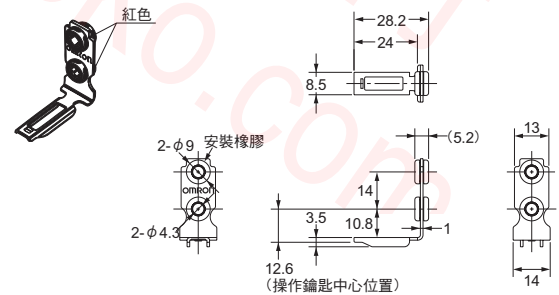
D4GS-NK1型

CAD檔



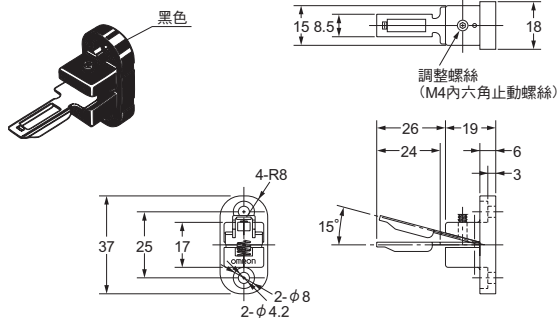
D4GS-NK2型

CAD檔



D4GS-NK4型

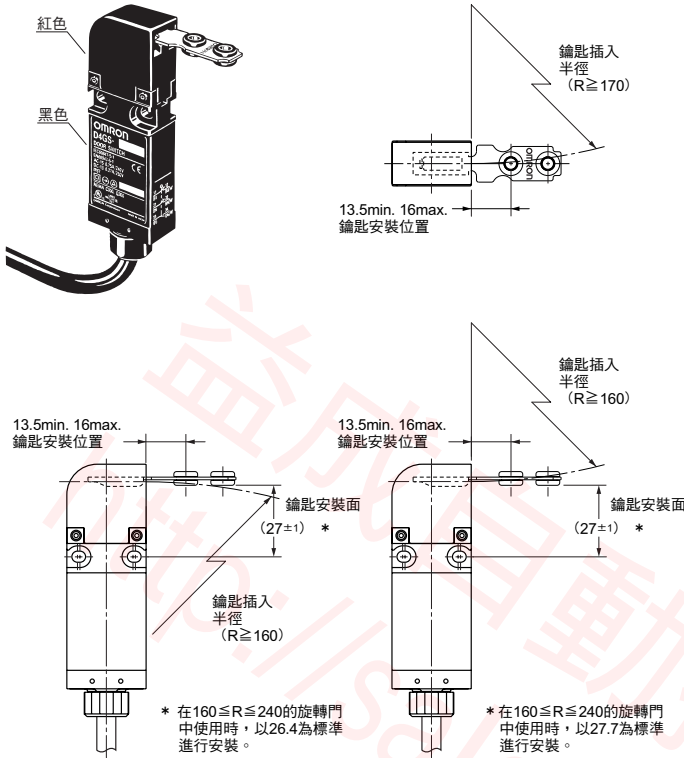
CAD檔



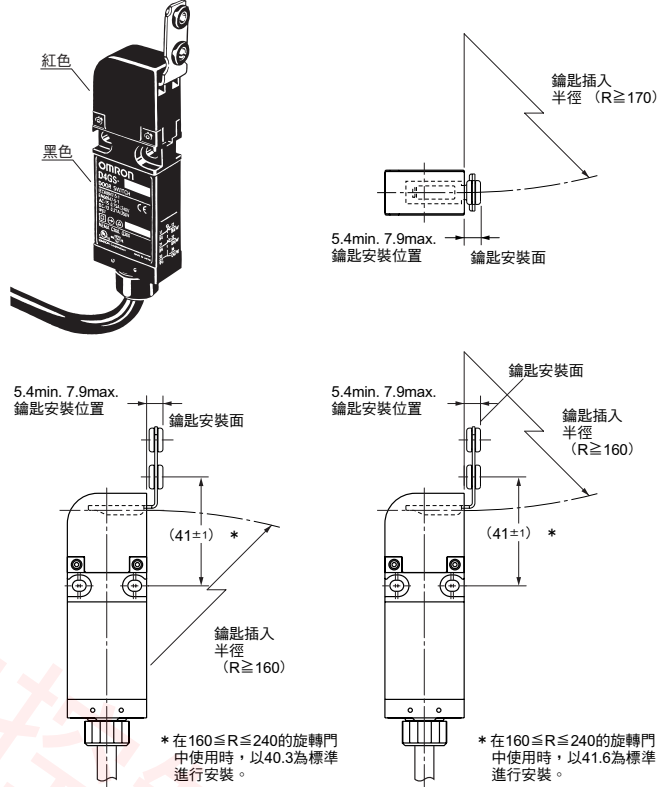
註. 上述各機型的外觀尺寸圖中, 未指定部分的尺寸公差為±0.4mm。加括弧的尺寸為參考值。

●操作鑰匙安裝時

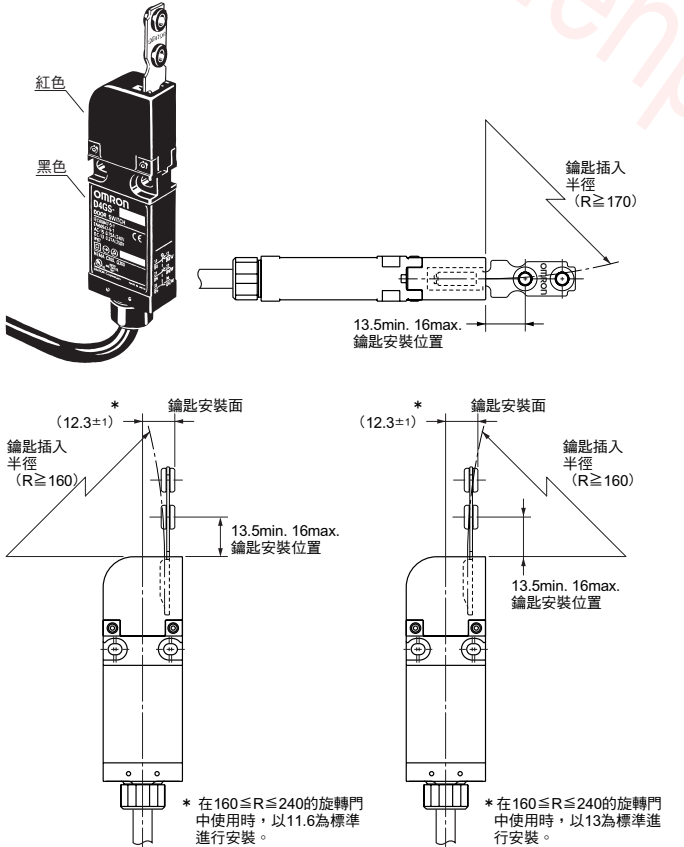
D4GS-N□R-□型+ D4GS-NK1型



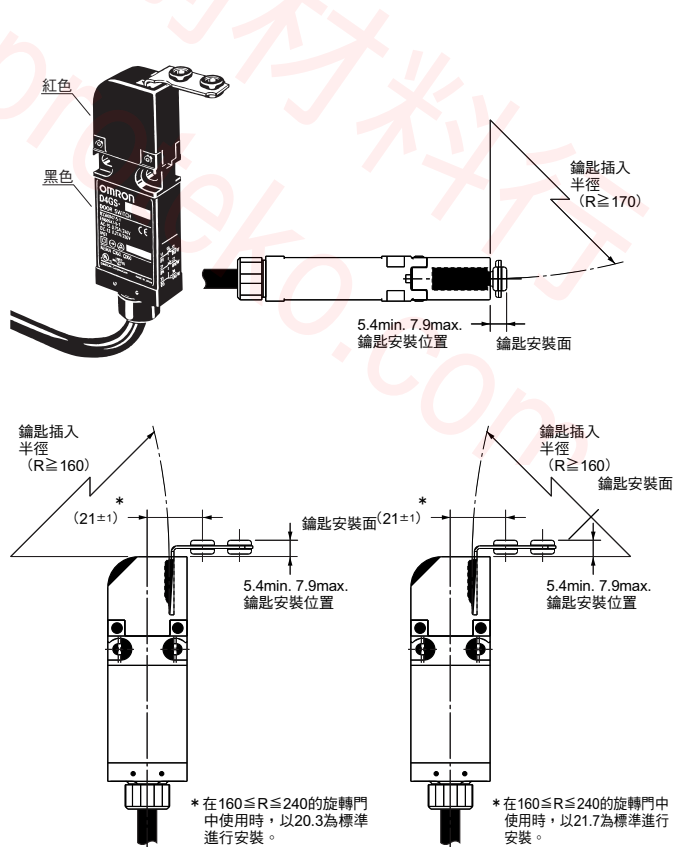
D4GS-N□R-□型+ D4GS-NK2型



D4GS-N□T-□型+ D4GS-NK1型



D4GS-N□T-□型+ D4GS-NK2型



註. 上述各機型的外觀尺寸圖中，未指定部分的尺寸公差為 ±0.4mm。加括弧的尺寸為參考值。

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

安全門開關

通用注意事項

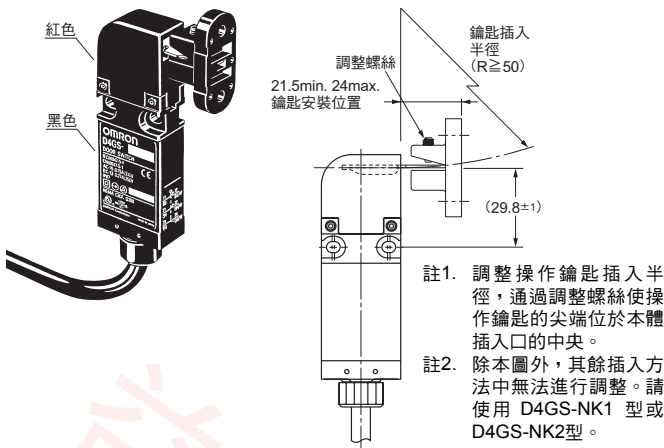
D4NS

D4GS-N

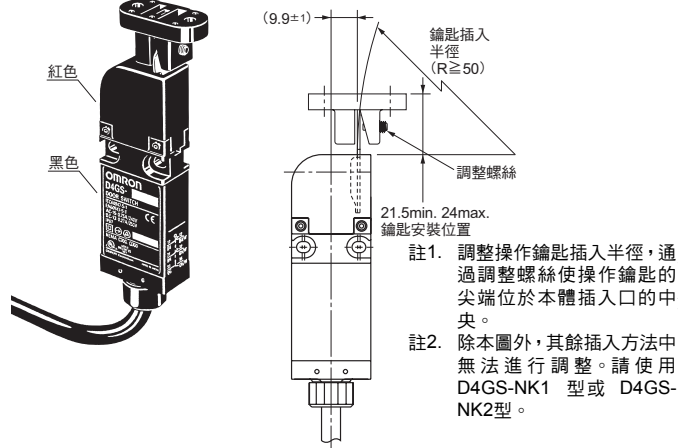
D4BS

D4GL

D4GS-N□R-□型 + D4GS-NK4型



D4GS-N□T-□型 + D4GS-NK4型



註. 上述各機型的外觀尺寸圖中，未指定部分的尺寸公差為±0.4mm。加括弧的尺寸為參考值。

請正確使用

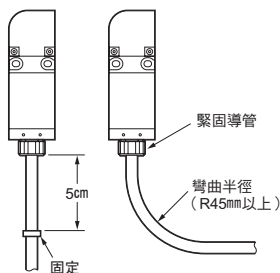
●詳細內容請參閱2~3頁的"安全門開關通用注意事項"。

安全要點

- 請勿在油中、水中或經常沾有水和油的環境中使用。否則可能導致水或油侵入開關內部。(本開關的保護構造IP67是指在水中放置一定時間後，測定水的浸入情況)
- 開關本體可防止塵埃或水侵入，但頭部不能對異物或水起到防護作用，請杜絕異物進入內部。否則可能導致提早磨損或破損。
- 標準負載 (AC125V、1A) 的開閉，請勿在2個以上回路同時進行，否則可能導致絕緣功能下降。
- D4GS-N□型本體以及D4GS-NK□操作鑰匙 (橡膠顏色: 紅色) 請勿與D4GS-□、D4GS-K□ (橡膠顏色: 黑色) 組合使用。

■關於纜線的處理

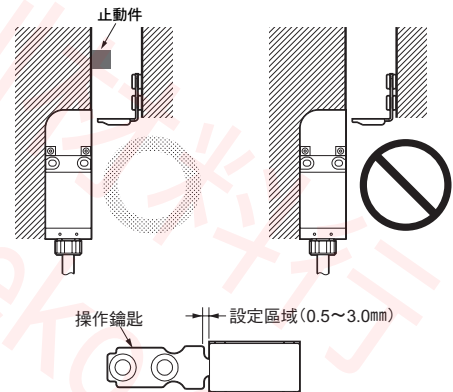
- 纜線請勿反復彎曲使用。
- 纜線與開關的根部通過密封材料擰緊固定，因此，請在距開關5cm處固定纜線，以避免對纜線施加壓力。
- 彎曲纜線進行配線時，纜線的彎曲半徑取R45mm以上，且不要損傷纜線的絕緣體和護套。否則可能引起火災或者漏電。



- 請勿擰緊或鬆開纜線與開關根部的緊固導管。
- 配線時請避免讓纜線末端浸入水或油中。

■關於止動件的設置

不可將本體當作止動元件使用。  
如下圖所示，務必設置止動元件，並調整至操作鑰匙的設定範圍內，以免操作鑰匙的邊緣碰撞到頭部。



使用注意事項

開關的接點為標準和微小負載共用，但對某一負載進行開閉操作的接點，不可再連接容量更小的負載進行使用。否則可能導致接點表面破損以及接點可靠性下降。

■安裝方法

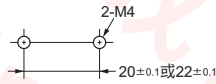
●最佳旋轉扭力

- 螺絲鬆弛將造成提前故障，安裝時請按照下表所示最佳旋轉扭力擰緊螺絲。

種類	最佳擰緊扭矩	規格
本體安裝螺絲	0.75~1.15N·m	M4端子
操作鑰匙安裝螺絲	0.75~1.15N·m	M4端子

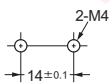
- 採用指定大小的安裝螺絲，使用平墊片或彈簧墊片等，以最佳的擰緊扭矩進行固定。
- 安全起見，請選用不易脫落的螺絲或與此同等的手段進行安裝。

●本體安裝孔加工尺寸

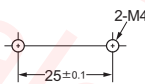


●操作鑰匙安裝孔加工尺寸

D4GS-NK1/NK2型

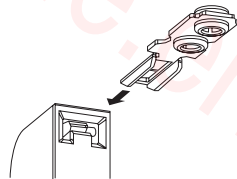


D4GS-NK4型



●操作鑰匙的安裝

- 操作鑰匙如右圖所示，對準操作鑰匙的凹部和鑰匙插入的凸部之間的位置關係，按正確的方向進行安裝。

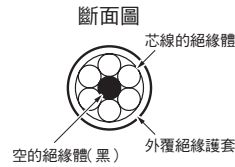


- 操作鑰匙的橡膠會因使用環境和使用條件而產生劣化現象。若產生變形或裂紋，請儘早更換。

■配線

●芯線的識別

根據絕緣體的顏色或白線進行芯線的識別。



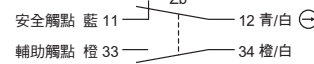
芯線的絕緣體顏色  
藍色/白色、茶色/白色、橙色/白色、  
橙色、茶色、藍色

(例) 橙色/白色：橙色絕緣體上白線。

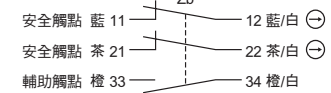
●關於端子的識別編號

- 請根據芯線絕緣體的顏色進行各接點構成的端子編號的識。
- 接點以及 2 接點構成中的安全接點 (⊖) 與輔助接點如下圖所示。
- 輔助接點 (橙色) 的NC接點可作為安全接點 (⊖) 使用。
- 安全接點是指EN規格的直接開路動作認定接點，用⊖表示。

〈1NC/1NO〉



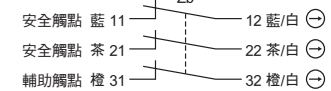
〈2NC/1NO〉



〈2NC〉



〈3NC〉



- 對空的絕緣體 (黑色) 和不使用的芯線實施相應的配線處理，例如在外覆絕緣護套的端子剪斷。

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK



# 安全門開關 D4BS

當打開工作機械等的防護門時，可經由專用操作鑰匙強制接點開路，確保控制電路的斷路。

關於安全規格認證，請諮詢歐姆龍代表處。



- 符合對應CE mark標準的EN (TÜV) 規格。
- 取得UL、CSA、BIA、SUVA認證。
- 採用強制隔離結構 (取NC接點部位)。
- 在防護門打開時開離開關接點。
- EN規格的強制隔離認證在開關上用符號⊖表示。
- 專用操作鑰匙可防止操作錯誤及操作失誤。
- 較寬的工作溫度範圍(-40°C~+80°C)
- 開關部為經IP67認證(EN60947-5-1)的高保護結構。
- 對鍍金型進行系列化，應對微小負載領域。

請閱讀第2頁“安全門開關通用注意事項”。

## 型式構成

### ■ 型式標準

#### ● 本體

D4BS-□□□S型  
① ② ③

① 導管尺寸/連接器尺寸

- 1 : Pg13.5 (單導管型)
- 2 : G1/2 (單導管型)
- 3 : 1/2-14NPT (單導管型)
- 5 : Pg13.5 (三導管型)
- 6 : G1/2 (三導管型)
- 7 : 1/2-14NPT (三導管型)

② 內置開關

- 5 : 1NC/1NO (Slow action)
- 6 : 1NC/1NO (Slow action) 鍍金型
- A : 2NC (Slow action)
- B : 2NC (Slow action) 鍍金型

③ 頭部安裝方向

- F : 可以有四個安裝方向 (交貨時在前側安裝)

#### ● 操作鑰匙

D4BS-K□型  
①

① 鑰匙開關

- 1 : 水平安裝
- 2 : 垂直安裝
- 3 : 可調安裝 (水平)

註：頭部、開關單體恕不單獨訂購，請諒解。(操作鑰匙另售。)

## 種類

標有⊙的機型為標準庫存機型。關於沒有標記(訂購生產機型)的交貨期，請諮詢供應商。

### ● 本體型號 (請注意操作鑰匙另售)

直接開路動作型號：□

種類	安裝方向	導管插口	1NC/1NO接點 (慢速動作)	2NC接點 (慢速動作)
單導管型	正面	Pg13.5	⊙D4BS-15FS型	⊙D4BS-1AFS型
		G1/2	⊙D4BS-25FS型	⊙D4BS-2AFS型
		1/2-14NPT	D4BS-35FS型	D4BS-3AFS型
3導管型	正面	Pg13.5	D4BS-55FS型	D4BS-5AFS型
		G1/2	D4BS-65FS型	D4BS-6AFS型
		1/2-14NPT	D4BS-75FS型	D4BS-7AFS型

### ● 操作鑰匙型號

類型	型號
水平安裝	⊙D4BS-K1型
垂直安裝	⊙D4BS-K2型

類型	型號
可調安裝 (水平)	⊙D4BS-K3型

額定規格/性能

■規格/EC指令

●適用的EC指令和標準

- 機器指令
- 低電壓指令
- EN50041
- EN1088

●經認證的標準

管理機構	標準	文件號
TÜV產品服務	EN60947-5-1 (強制隔離認證)	R9351022
BIA (德國)	GS-ET-15	9303323
SUV (瑞士)	SUVA	E6187.d
UL	UL508	E76675
CSA	CSA C22.2 No.14	LR45746
CQC (CCC)	GB14048.5	2003010305073833

■經認證的安全標準額定值

●TÜV(EN60947-5-1)、CCC(GB14048.5)

使用類型	AC-15
額定動作電流 (Ie)	2A
額定動作電壓 (Ue)	400V

· 使用符合IEC60269的10A保險絲型gI或gG作為短路保護裝置。

●UL508、CSA C22.2 No.14 (A600)

額定電壓	通電電流	電流		伏安數 (VA)	
		接通	斷開	接通	斷開
120VAC	10A	60	6	7,200	720
240VAC		30	3		
480VAC		15	1.5		
600VAC		12	1.2		

■性能

保護等級 *1	IP67 (EN60947-5-1) (只適用於開關。鑰匙插孔的保護等級是IP00)	
耐久性 *2	機械	100萬次以上
	電氣	50萬次以上 (AC250V, 10A電阻負載)
允許操作速度	0.1m/s~0.5m/s	
允許操作頻率	最大30次操作/分鐘	
額定頻率	50/60Hz	
接點間隙	最小2×2mm	
直接開路動作力 *3	最小19.61N(EN60947-5-1)	
直接開路動作行程 *3	最小20mm(EN60947-5-1)	
整體行程	最小23mm	
絕緣電阻	同極和異極端子之間,各端子與大地之間、各端子與非充電金屬部位之間均為100 MΩ以上 (DC500V時)	
接點電阻	25mΩ以下 (初始值)	
額定絕緣電壓 (Ui)	600V(EN60947-5-1)	
額定閉路熱電流 (Ithe)	20A(EN60947-5-1)	
脈衝耐壓耐電壓 (Uimp)	同極和異極端子之間,各端子與大地之間、各端子與非充電金屬部位之間均為4kV (EN60947-5-1)	
閉路時逆起電壓	1,500V max. (EN60947-5-1)	
有條件的短路電流	100A(EN60947-5-1)	
污染程度 (使用環境)	3(EN60947-5-1)	
電擊保護級	I級 (附接地端子)	
抗振動	故障	10~500Hz, 單幅值為0.65mm
	耐久	1,000m/s <sup>2</sup> 以上 (IEC68-2-27)
抗衝擊	故障	300 m/s <sup>2</sup> 以上 (IEC68-2-27)
	耐久	300 m/s <sup>2</sup> 以上 (IEC68-2-27)
環境溫度	-40℃~80℃, 無結冰	
環境濕度	95%RH以下	
重量	約285g (D4BS-15FS型)	

註. 上述值是初始值。

- \*1. 保護等級用標準 (EN60947-5-1) 規定的方法測試。測試前確認密封程度滿足操作條件和環境。儘管開關盒可以防塵或防止水流入,仍請勿將D4NL用在粉末、水或藥品等異物可能進入頭部的鑰匙孔的地方,否則可能發生開關的磨損、損壞或故障。
- \*2. 耐久性針的條件為5℃~35℃的環境溫度和40%~70%的環境濕度。詳情諮詢各歐姆龍代表處。
- \*3. 這些數值是安全操作的最低要求。

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

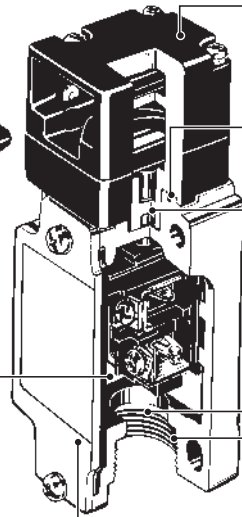
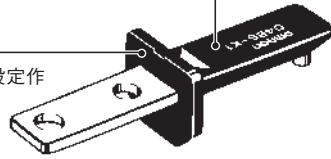
D4NS-SK  
D4JL-SK

## 構造與各部分名稱

### ■構造

**操作鑰匙**  
通過操作鑰匙可防止操作失誤，對觸點進行強制分離。

**調整設計區標示**  
三角形的標誌，便於衝程設定作業。



**頭部**  
紅色外表以利辨認。可以選定正面、左右側面、背面4個方向進行安裝。

**密封墊圈 (NBR)**

**油封 (NBR)**  
操作活柱頂塞使用油封，開關箱本體實現了 IP67 的高密封性。(但操作鑰匙插孔為 IP00)

**密封襯墊 (NBR)**

**導管**  
使用以下各式導管

大小 (SIZE)	標準	3導管
Pg13.5	○	○
G½	○	○
½-14NPT	○	○

**接地端子螺絲**  
為提高安全性，將接地端子螺絲列為標準裝備。(在本體內部)

### ■接觸形式 (表示鑰匙插入的狀態)

型號	接點	接觸形式	動作類型	說明
D4BS-□5□S型	1NC/1NO			拔出完成位置僅NC部位接點 (11-12) 具強制開離功能。(端子No.11-12,23-24可用作異極)
D4BS-□A□S型	2NC			僅NC部位接點 (11-12,21-22) 具強制開離功能。(端子No.11-12,21-22可用作異極)

註. 端子編號為EN50013，接觸標記依據IEC60947-5-1。

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

外觀尺寸/動作特性

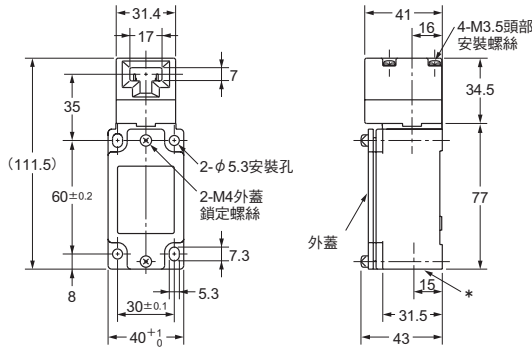
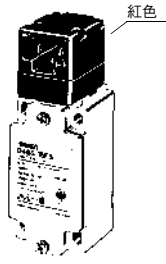
CAD檔 標有此標記的產品備有二維CAD圖面和三維CAD模型的資料。  
CAD檔可從歐姆龍Industrial Web網站 (<http://www.fa.omron.co.jp>) 下載。

(單位:mm)

安全門開關

●單導管型

- D4BS-1□□S型
- D4BS-2□□S型
- D4BS-3□□S型



CAD檔

型號	D4BS-1□□S型 D4BS-2□□S型 D4BS-3□□S型
動作特性	
操作鑰匙插入力量	最大 19.61N
操作鑰匙插入力量	最大 19.61N
動作行程	10±5mm
直接開路動作力	最小 19.61N
直接開路行程	最小 20mm

通用注意事項

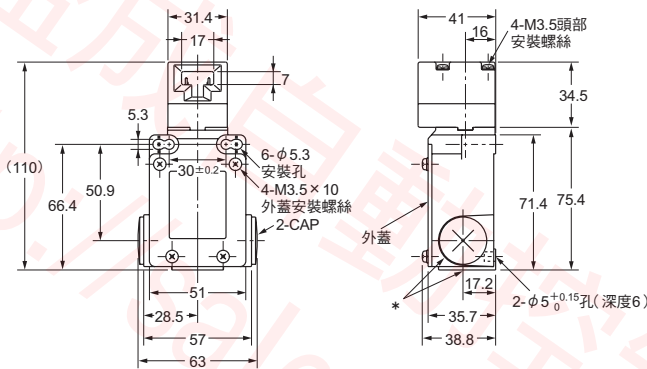
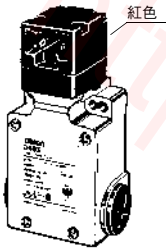
D4NS

D4GS-N

D4BS

●三導管型

- D4BS-5□□S型
- D4BS-6□□S型
- D4BS-7□□S型



CAD檔

型號	D4BS-5□□S型 D4BS-6□□S型 D4BS-7□□S型
動作特性	
操作鑰匙插入力量	最大 19.61N
操作鑰匙插入力量	最大 19.61N
動作行程	10±5mm
直接開路動作力	最小 19.61N
直接開路行程	最小 20mm

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

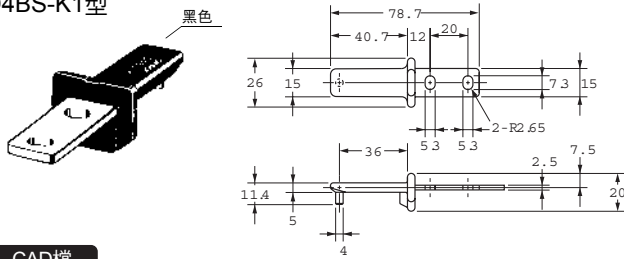
註1. 上述各機型的外觀尺寸圖中，未指定部分的尺寸公差為±0.4mm。

註2. 2NC接點的開/關動作的同時性可能存在差別，使用時請確認。

\* D4BS-1□□S型/-5□□S型採用導管尺寸Pg13.5，D4BS-2□□S型/-6□□S型採用尺寸(G1/2)，  
D4BS-3□□S型/-7□□S型採用導管尺寸(1/2-14NPT)。

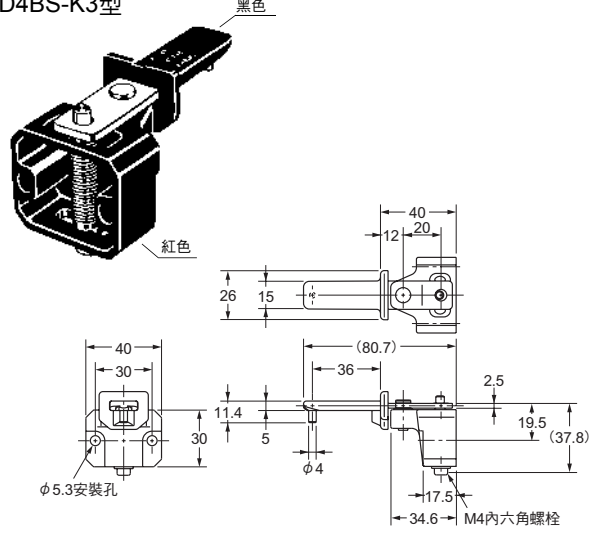
●操作鑰匙

D4BS-K1型



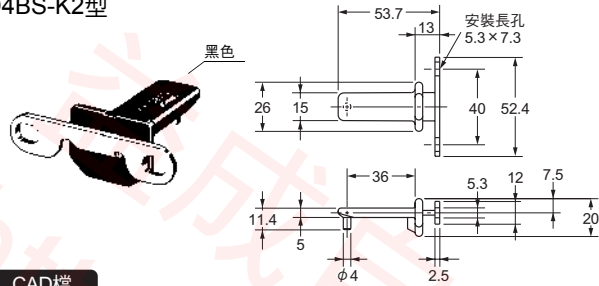
CAD檔

D4BS-K3型



CAD檔

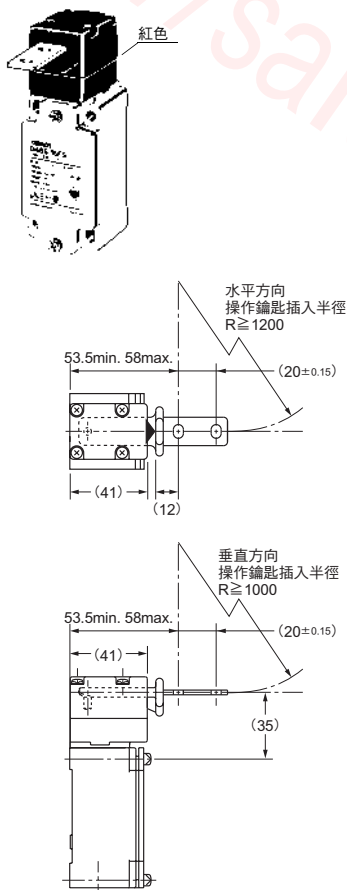
D4BS-K2型



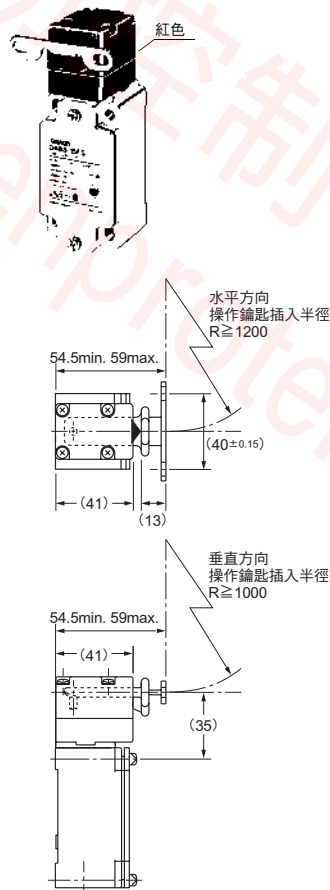
CAD檔

●操作鑰匙安裝時

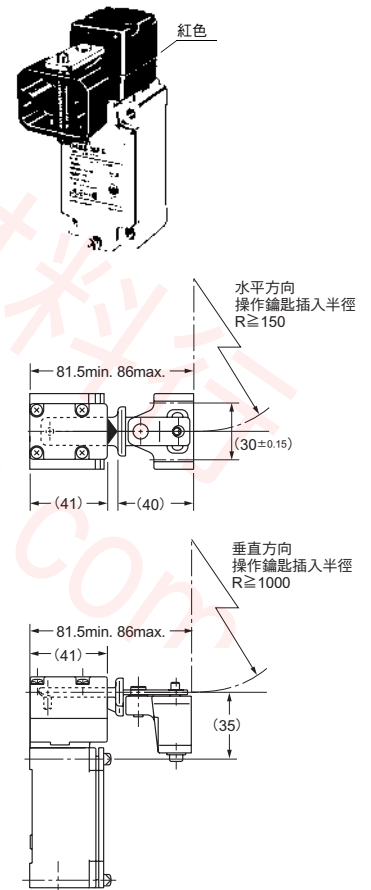
D4BS-1~3□□S+D4BS-K1型



D4BS-1~3□□S型+D4BS-K2型



D4BS-1~3□□S型+D4BS-K3型



註. 上述各機型的外觀尺寸圖中, 未指定部分的尺寸公差為±0.4mm。

請正確使用

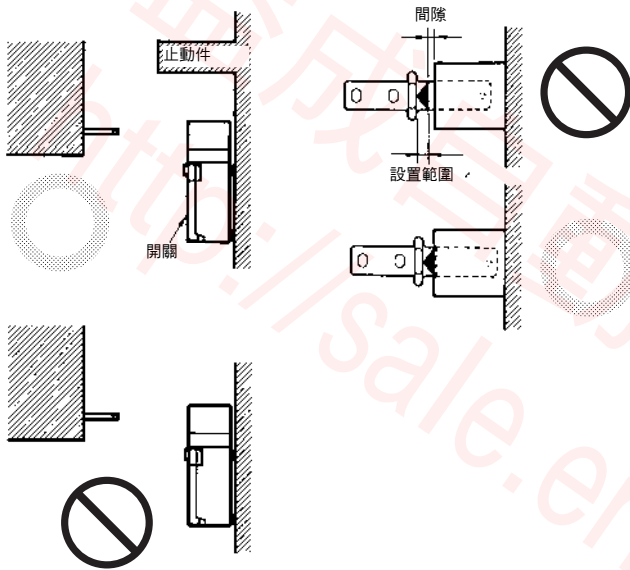
●詳細內容請參閱2~3頁的“安全門開關通用注意事項”。

安全要點

- 請勿在含有爆炸性氣體、易燃性氣體的環境中使用。
- 請勿在油中、水中或經常沾有水和油的環境中使用。否則可能導致水或油侵入開關內部。(本開關的保護構造IP67是指在水中放置一定時間後，測定水的浸入情況)
- 開關本體可防止塵埃或水侵入，但頭部不能對異物或水起到防護作用，請杜絕異物進入內部。否則可能導致提早磨損或破損。
- 接線作業後請務必安裝好保護蓋，以防觸電。

●關於止動件的設置

不可將本體當作止動元件使用。如下圖所示，務必設置止動元件，以免操作鑰匙的邊緣碰撞到頭部。



使用注意事項

●關於使用環境

- 此類開關採用室內規格。在室外使用時，將導致開關故障。
- 惡性氣體 (H<sub>2</sub>S、SO<sub>2</sub>、NH<sub>3</sub>、HNO<sub>3</sub>、Cl<sub>2</sub> 等)、塵埃以及高濕高濕將導致接點出現接觸不良或腐蝕等現象，從而造成開關破損，因此請勿在上述條件下使用。
- 下列環境中請勿使用
  - 溫度變化激烈的場所
  - 濕度高，可能發生結露的場所
  - 振動激烈的場所
  - 防護門內側沾有粉末、加工碎屑、油或藥品的場所
  - 有稀釋液、洗滌劑等溶劑的場所

●最佳旋轉扭力

螺絲鬆弛將造成提前故障，安裝時請按照下表所示最佳旋轉扭力擰緊螺絲。

種類	最佳旋轉扭力
端子螺絲 (含M3.5-接地端)	0.59~0.78N·m
保護蓋安裝螺絲 * 1	1.18~1.37N·m
頭部安裝螺絲	0.78~0.98N·m
本體安裝螺絲 (M5) * 2	4.90~5.88N·m
操作鑰匙安裝螺絲	2.35~2.75N·m
連接器	1.77~2.16N·m
外蓋螺絲釘	1.27~1.67N·m

\* 1. 三導管型為0.78~0.88N·m

\* 2. 螺絲尺寸請選用M5;內六角螺絲請用4.90~5.88N·m、埋頭螺絲請用2.35~2.75N·m的扭矩擰緊。

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

D4NH

D40A  
G9SX-NS

D40B

D4NS-SK  
D4JL-SK

安全門開關

通用注意事項

D4NS

D4GS-N

D4BS

D4GL

D4GL-SK10-LK

D4JL

D4NL

D4BL

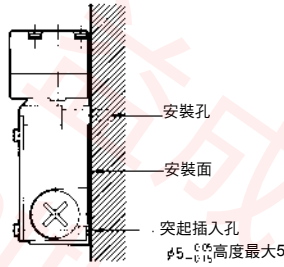
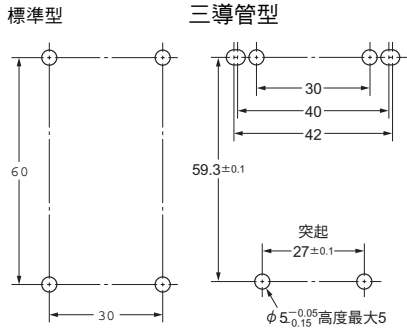
D4NH

D40A  
G9SX-NS

D40B

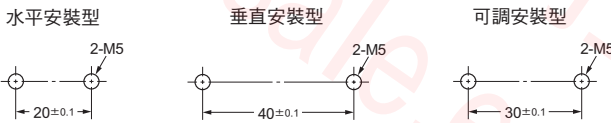
D4NS-SK  
D4JL-SK

●安裝孔加工尺寸 (M5加工)



使用三導管型產品時，為了將開關安裝地更加牢固，一般不僅採用開關本體安裝孔進行2點固定，而是如上圖  $\phi 5.0_{-0.05}^{0.15}$  在高度最大為5的突起處，設置2個點，通過插入開關下部的4個點進行固定。

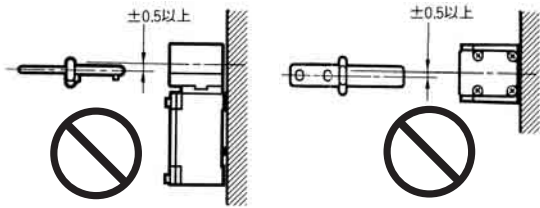
●操作鑰匙安裝孔加工尺寸



安裝本體和操作鑰匙時，為安全起見，請選用不易脫落的螺絲或與此同等的手段進行安裝。

●關於操作鑰匙

操作鑰匙的位置偏移或傾斜請控制在上下左右  $\pm 0.5\text{mm}$  的範圍內。如存在位置偏移或傾斜，可能導致提早磨損或破損。使用操作鑰匙時，請按指定的插入半徑，對準鑰匙插孔垂直插入。

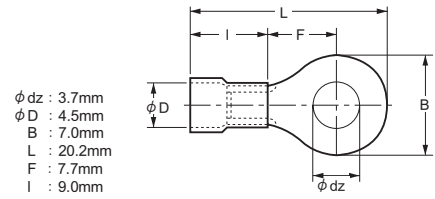


●關於頭部方向的變更

拆下頭部四個角的螺絲，即可將頭部任意變更為4個方向。欲變更頭部方向時，請將操作鑰匙插入頭部。注意防止異物夾於其間。

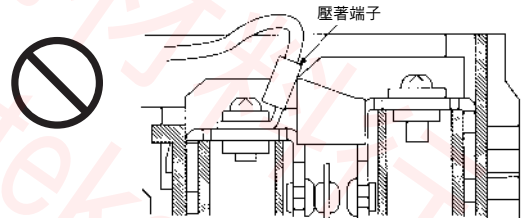
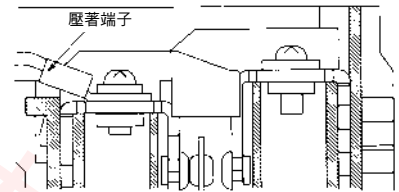
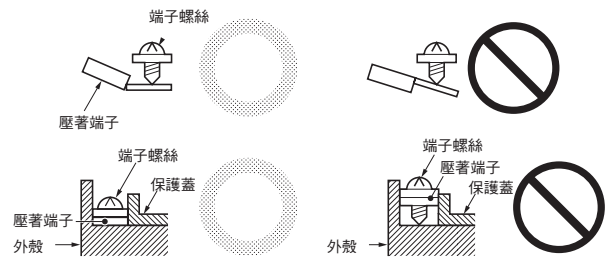
●關於配線

配線時，請勿將導線直接與端子相連，請使用絕緣導套管、M3.5圓形壓著端子及適當的扭緊。適用導線規格為AWG20~14 ( $0.5\sim 2.5\text{mm}^2$ )。



壓著端子請按下圖所示方向進行配線，且端子螺絲不要超過外殼和保護蓋。

外蓋如未能正確安裝，可能造成動作不良。



●關於導管口的處理

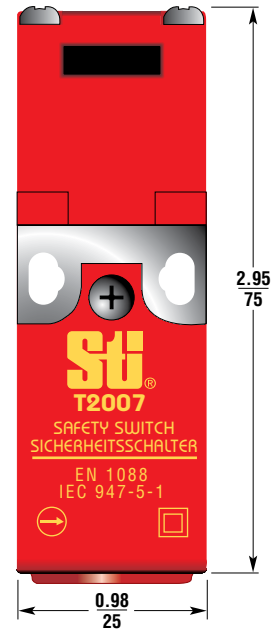
- 接頭請以適當的扭力固定。
- 扭矩過大可能造成本體外殼的破損。
- 使用1/2-14NPT時，為確保IP67安全級，接頭的導管口請用密封膠帶包卷好。
- Pg13.5連接器請使用ABS-08 Pg13.5型或ABS-12 Pg13.5型（日本FLEX公司：TEL052-211-3396）。
- 請使用與纜線外徑配套的連接器（SC接頭系列另售）。
- 對三導管型進行配線時，沒有使用導管口請用附屬之螺帽適當扭緊。



Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed



#### ■ Actual Size



G

safety interlock switches

# T2007

## Miniature Tongue-Operated Safety Interlock Switch

- Miniature size—The smallest tongue-actuated safety interlock switch available. Ideal for smaller machines with space restrictions. Fits on 1 in. square tubing.
- NEMA 6 enclosure—Enables the T2007 with conduit entry or connector to withstand water washdown cleaning.
- Rotatable head—Gives 8 possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Small swing radius—Allows use on doors with a swing radius as small as 2.5 in. when using the flex actuator with stainless steel guide.
- Long life—The T2007 with its stainless steel actuators and optional stainless steel guide is designed for one million actuations.
- Safety switch conformity—By including the safety-related functions of force-guided contacts and a tamper-resistant mechanism, the T2007 conforms to the European safety standards indicated here.

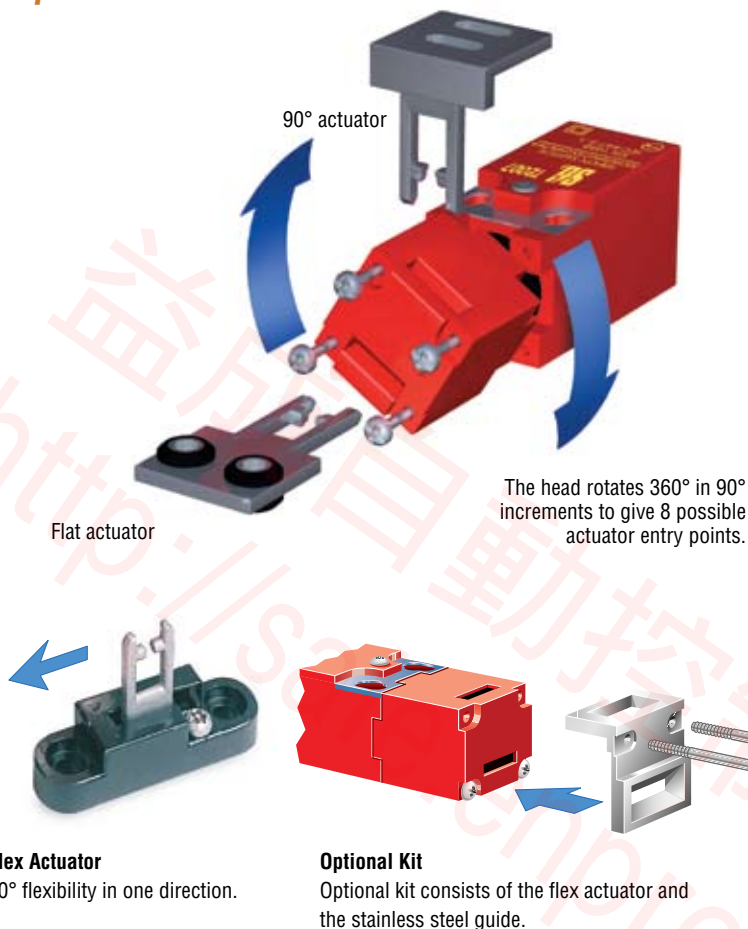
**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

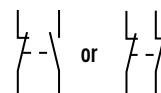




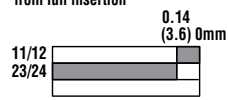
■ Operation



Contact Arrangements



Actuator withdrawal distance from full insertion



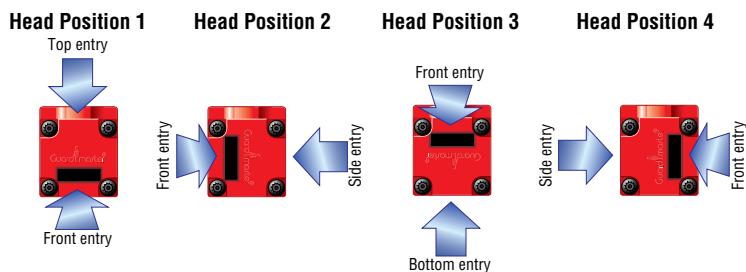
Flex Actuator

10° flexibility in one direction.

Optional Kit

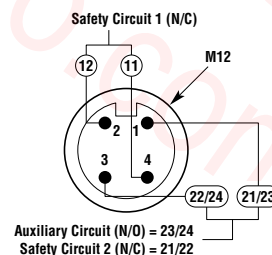
Optional kit consists of the flex actuator and the stainless steel guide.

8 possible actuator entry points

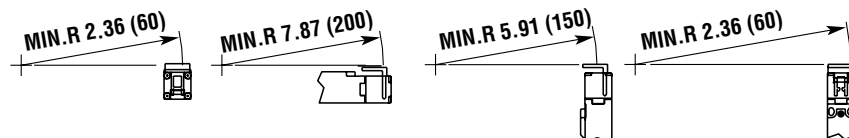


Connector Configurations

4-pin micro DC (M12) male connector



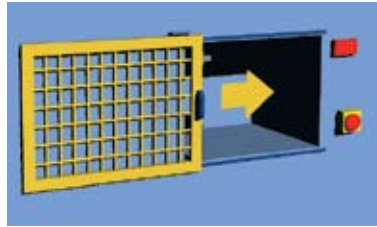
Minimum Operating Radius Front-Entry Using Flex Actuator With Stainless Steel Guide



G safety interlock switches

## ■ Applications

Typical applications are on sliding guard doors or swinging guard doors with a 6 in. minimum swing radius.



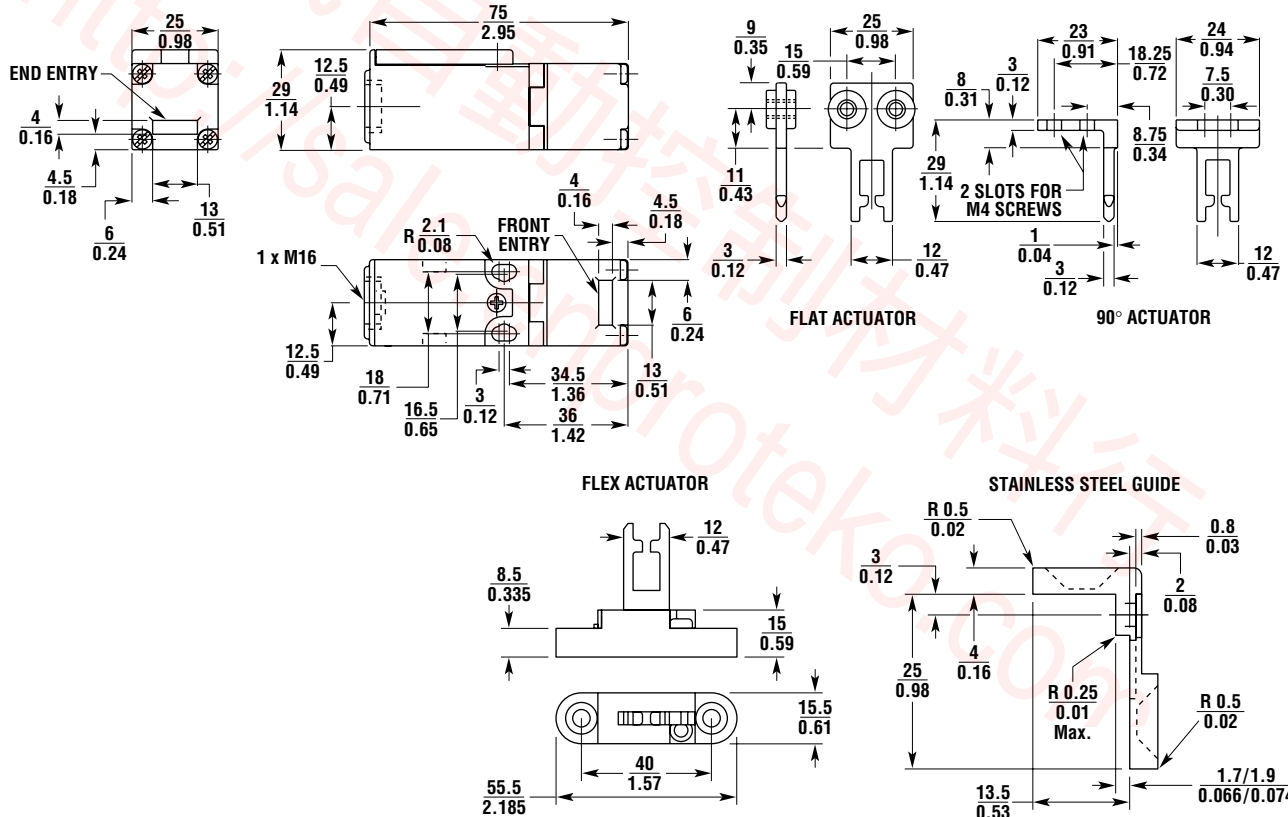
## ■ Specifications

	T2007-02TM	T2007-02SM	All Models	T2007-11TM	T2007-11SM
<b>Electrical</b>					
<b>Contact Configurations:</b>	2 N/C			1 N/C + 1 N/O	
<b>Safety Contacts:</b>	2 N/C positive break			1 N/C positive break	
<b>Switching Ability</b>	<b>AC:</b>	500 V–1 A, 250 V–2 A, 100 V–5 A			
	<b>DC:</b>	250 V–0.5 A, 24 V–2 A			
<b>Safety Contact Gap:</b>	> 2 mm (0.079 in.)				
<b>Auxiliary Contacts:</b>	1 N/O				
<b>Max Switching Current/Volt/Amp:</b>	500 V/500 VA				
<b>Minimum Current:</b>	5 V 5 mA DC				
<b>Electrical Life:</b>	1 x 10 <sup>6</sup> minimum				
<b>Mechanical</b>					
<b>Mounting:</b>	Any position				
<b>Mounting Hardware:</b>	2 x M4 screws				
<b>Actuator Travel for Positive Opening:</b>	3.6 mm (0.142 in.)				
<b>Min Operating Radius with Flex Actuator:</b>	60 mm (2.36 in.)				
<b>Break Contact Min Force:</b>	6 N (1.35 lb.)				
<b>Max Actuation Speed:</b>	160 mm/sec (6.30 in./sec)				
<b>Max Actuation Frequency:</b>	2 cycles/sec				
<b>Case Material:</b>	UL listed, glass-filled polyester				
<b>Actuator Material:</b>	Stainless steel				
<b>Wiring Entry:</b>	1 x M16 conduit with 0.5 in. NPT adapter; or Brad Harrison connector (Micro-Change, 8R Series, 4-pole male, M12 threads)				
<b>Weight:</b>	60 g (2.1 oz.)				
<b>Color:</b>	Red				
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum				
<b>Environmental</b>					
<b>Protection:</b>	IP67 (NEMA 6)				
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)				
<b>Cleaning:</b>	Water washdown				
<b>Compliance</b>					
<b>Standards:</b>	EN1088, EN292, EN60947-5, EN60204-1				
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL				

Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

■ Dimensions — mm/in.





Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed

#### Actual Size



## T2008

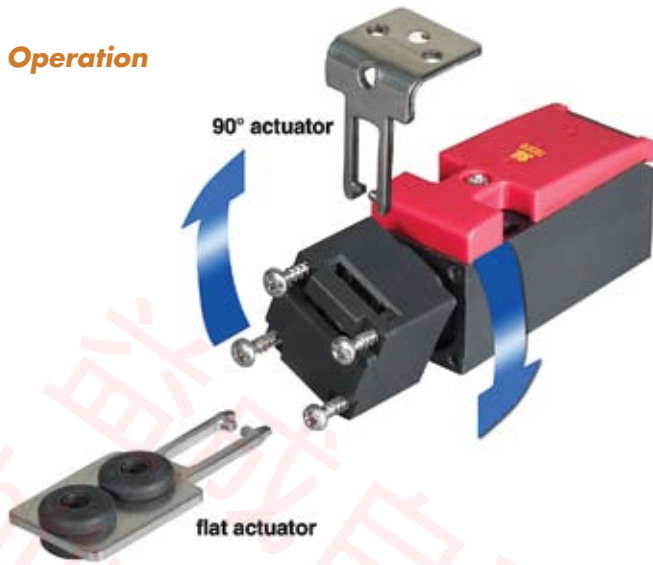
### Small Tongue-Operated Safety Interlock Switch

- Small size—these switches are ideal for guarding applications with space restrictions. Fits on 1 inch square tubing.
- NEMA 6 (IP67) enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives eight possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Long life—these switches, with their stainless steel actuators, are designed for a minimum of one million actuations.
- Available with two contact poles. Contact configurations of 1 N/O and 1 N/C or 2 N/C are available to meet requirements of Dual Channel Safety Monitoring.
- An optional stainless steel guide is available for demanding applications.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

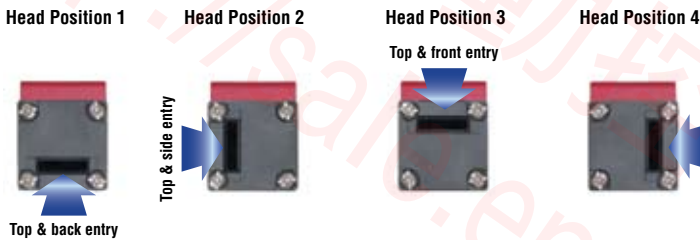
**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

■ **Operation**



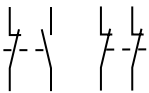
**Optional Slide Bolts**

- Allows easy installation of switch on machine guards
- Actuator included (order switch separately)
- Integral handle included
- Metal construction is suitable for demanding applications
- Yellow color for easy recognition



G  
safety interlock switches

**Contact Arrangements**



**Optional Alignment Guide**

Optional stainless steel alignment guide aids actuator entry and is easily installed.



**Optional SLD Series**



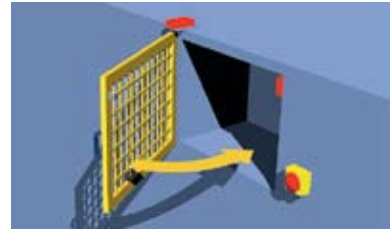
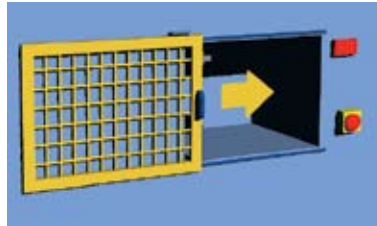
Optional switch locking devices are available. See accessories section for details.



 Universal Mounting Brackets can be used with this product. See page G241 for details.

■ Applications

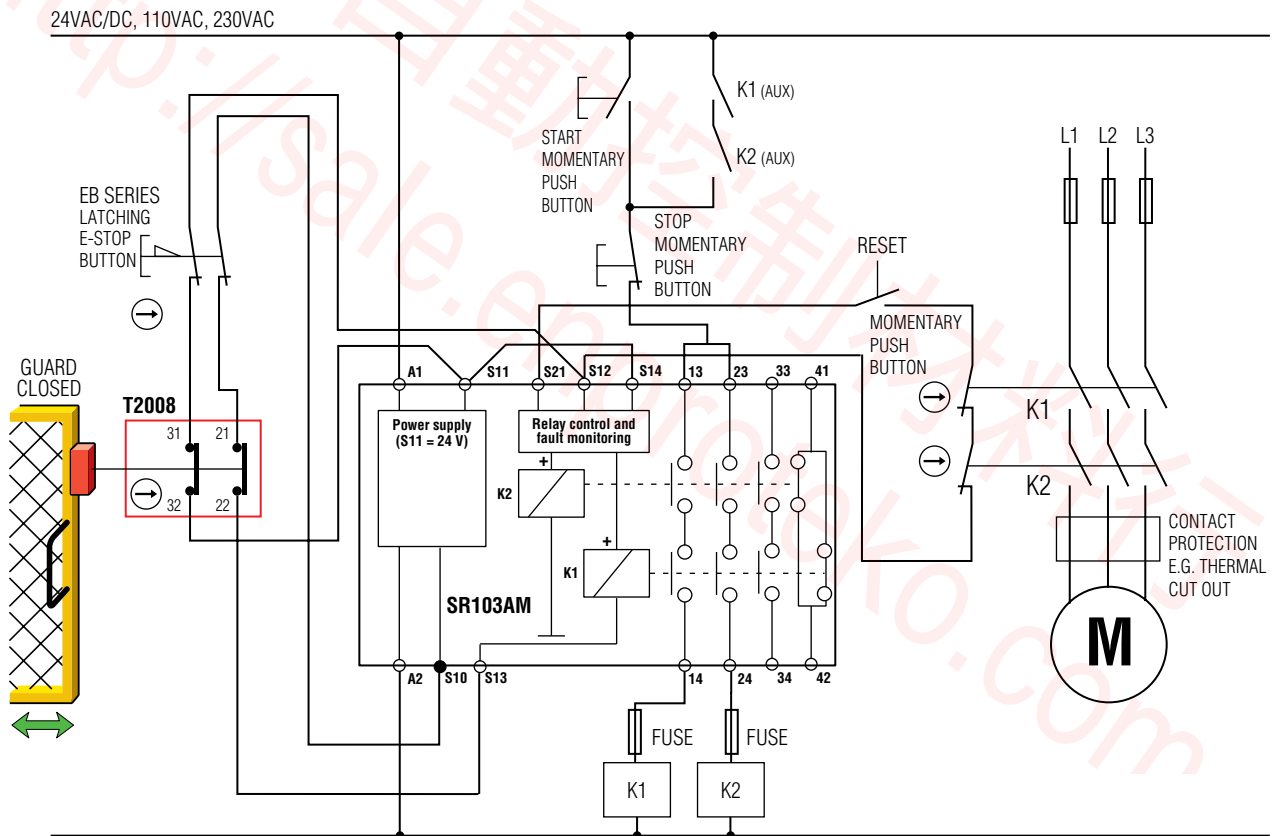
Typical applications are on sliding guard doors or swinging guard doors.



For a full explanation of the circuit operating principle and fault detection, see "Common Circuit Examples" in the Engineering Section of this catalog.

G

safety interlock switches



**A** Go to the Engineering Guide  
For in-depth information on safety standards and use.

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

## ■ Specifications

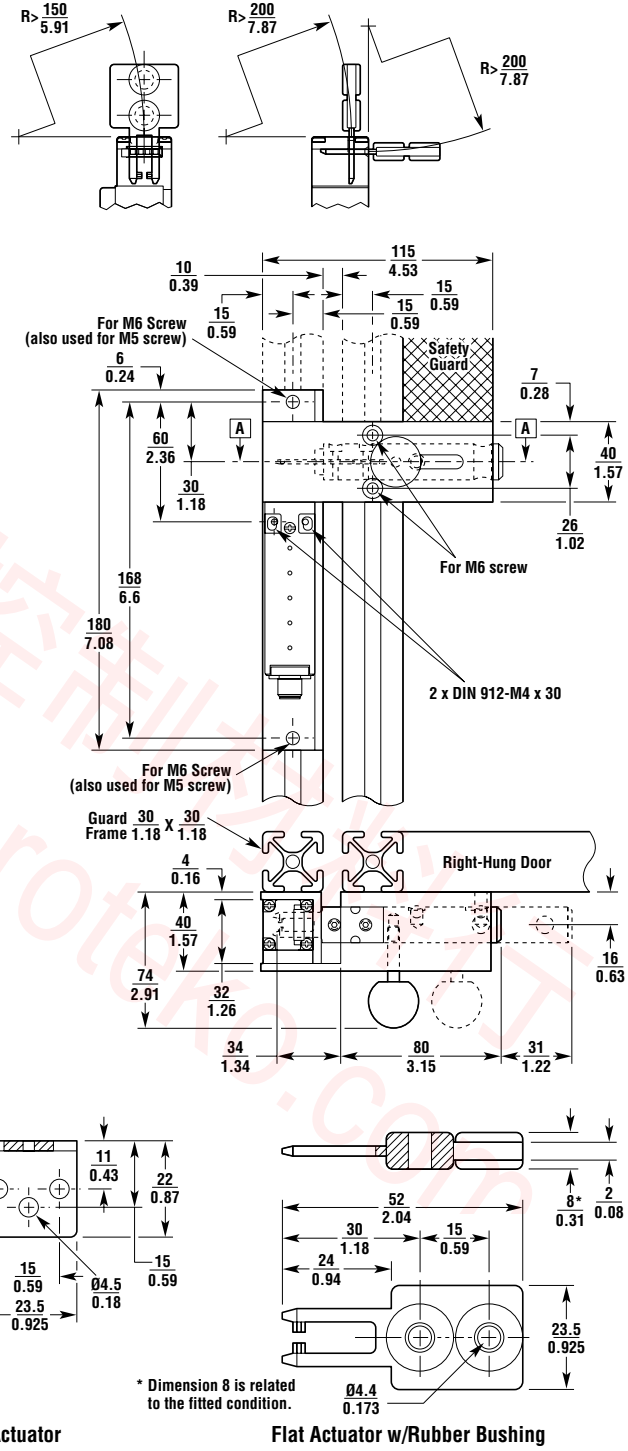
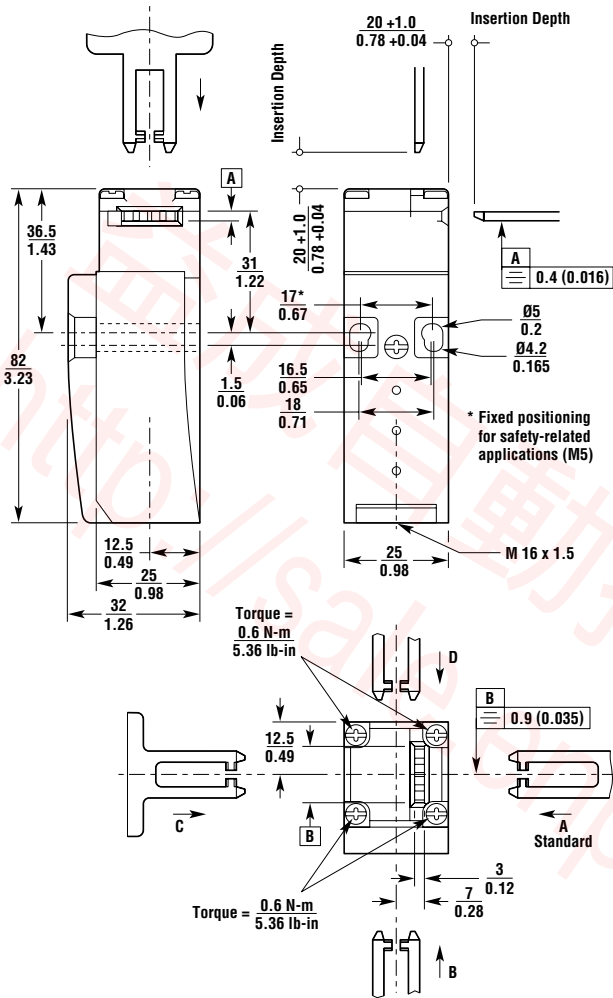
Electrical	All Models
<b>Contact Configurations:</b>	1 N/O + 1 N/C, 2 N/C
<b>Safety Contacts:</b>	1 N/C positive break, 2 N/C positive break
<b>Switching Ability</b>	
<b>AC:</b>	230 V, 4 A
<b>DC:</b>	24 V, 4 A
<b>Contact Material:</b>	Silver alloy, gold flashed
<b>Auxiliary Contacts:</b>	1 N/O (T2008-11 models only)
<b>Minimum Switching Voltage:</b>	12 V at 10 mA
<b>Minimum Switching Current:</b>	1 mA at 24 V
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M4 screws (not supplied)
<b>Min Operating Radius:</b>	150 to 200 mm based upon orientation of actuator to switch
<b>Break Contact Min Force:</b>	6 N (0.23 lb.)
<b>Max Actuation Speed:</b>	20 m/min.
<b>Max Actuation Frequency:</b>	7000 cycles/hour
<b>Case Material:</b>	Glass-fibre reinforced thermoplastic
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	1 x M16
<b>Weight:</b>	55 g (1.8 oz.)
<b>Color:</b>	Black with red lid
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
<b>Compliance</b>	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL (BG pending)

Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

■ Dimensions — mm/in.

G  
safety interlock switches



Flat Actuator

90-Degree Actuator

Flat Actuator w/Rubber Bushing

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines





Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed, BG approved

### ■ Actual Size



G

safety interlock switches

# T2011

## Universal Tongue-Operated Safety Interlock Switch

- Strong and versatile—the compact size of the strong, glass-filled thermoplastic housing allows this switch to be used in most applications.
- NEMA 6 (IP67) enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives eight possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Long life—these switches, with their stainless steel actuators, are designed for a minimum of two million actuations.
- Available with three contact poles. Contact configurations include 2 N/C and 1 N/O or 3 N/C. These switches can support Dual Channel Safety Monitoring and Status Monitoring.
- An optional stainless steel guide is available for demanding applications.



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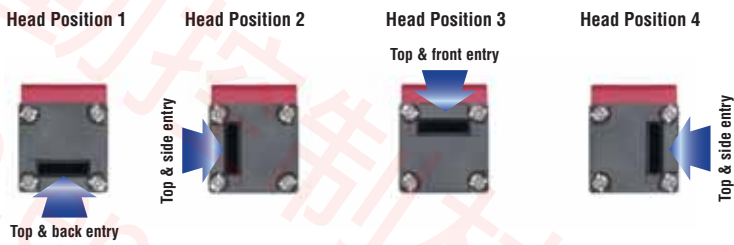
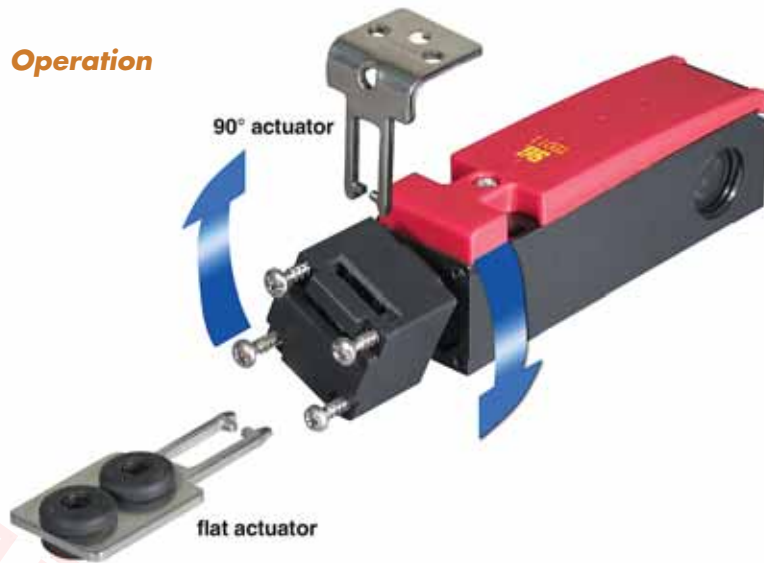
T2011

G

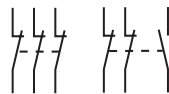
safety interlock switches

- **Optional Slide Bolts**
- Allows easy installation of switch on machine guards
- Actuator included (order switch separately)
- Integral handle included
- Metal construction is suitable for demanding applications
- Yellow color for easy recognition

■ **Operation**



■ **Contact Arrangements**



■ **Alignment Guide**

Optional stainless steel alignment guide aids actuator entry and is easily installed.



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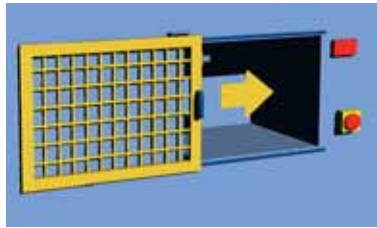
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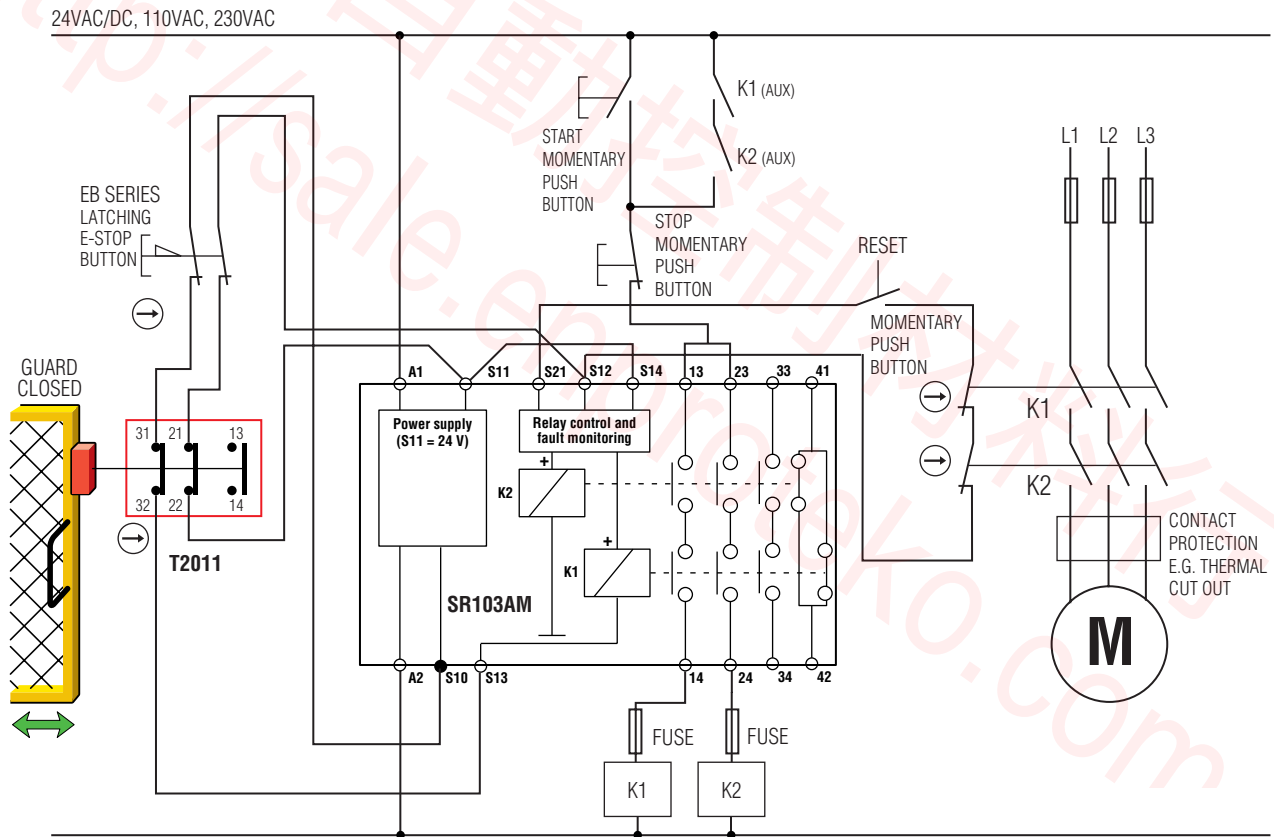
■ Applications

Typical applications are on sliding guard doors or swinging guard doors.



For a full explanation of the circuit operating principle and fault detection, see "Common Circuit Examples" in the Safety Corner Section of our website at [www.sti.com](http://www.sti.com).

G  
safety interlock switches



T2011

## ■ Specifications

Electrical	All Models
<b>Contact Configurations:</b>	2 N/C + 1 N/O, 3 N/C
<b>Safety Contacts:</b>	2 N/C or 3 N/C
<b>Switching Ability</b>	
<b>AC:</b>	230 V, 4 A
<b>DC:</b>	24 V, 4 A
<b>Contact Material:</b>	Silver alloy, gold flashed
<b>Auxiliary Contacts:</b>	1 N/O (T2011-021 models only)
<b>Minimum Switching Voltage:</b>	12 V at 10 mA
<b>Minimum Switching Current:</b>	1 mA at 24 V
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M4 screws (not supplied)
<b>Min Operating Radius:</b>	150 to 200 mm based upon orientation of actuator to switch
<b>Break Contact Min Force:</b>	6 N (0.23 lb.)
<b>Max Actuation Speed:</b>	20 m/min.
<b>Max Actuation Frequency:</b>	7000 cycles/hour
<b>Case Material:</b>	Glass-fibre reinforced thermoplastic
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	3 x M16
<b>Weight:</b>	75 g (2.63 oz.)
<b>Color:</b>	Black with red lid
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown

Specifications are subject to change without notice.

Note: The safety contacts of the STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

G

safety interlock switches



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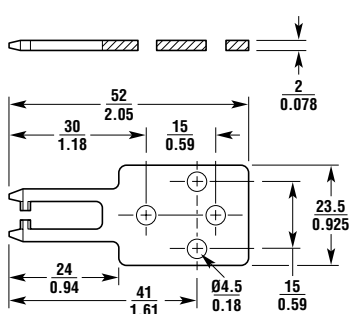
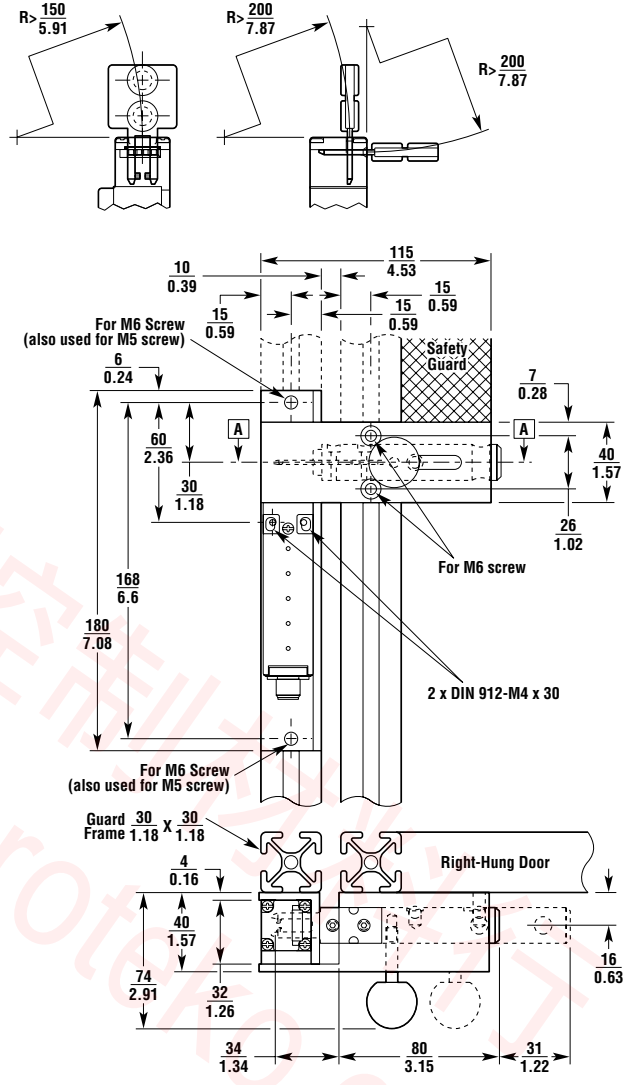
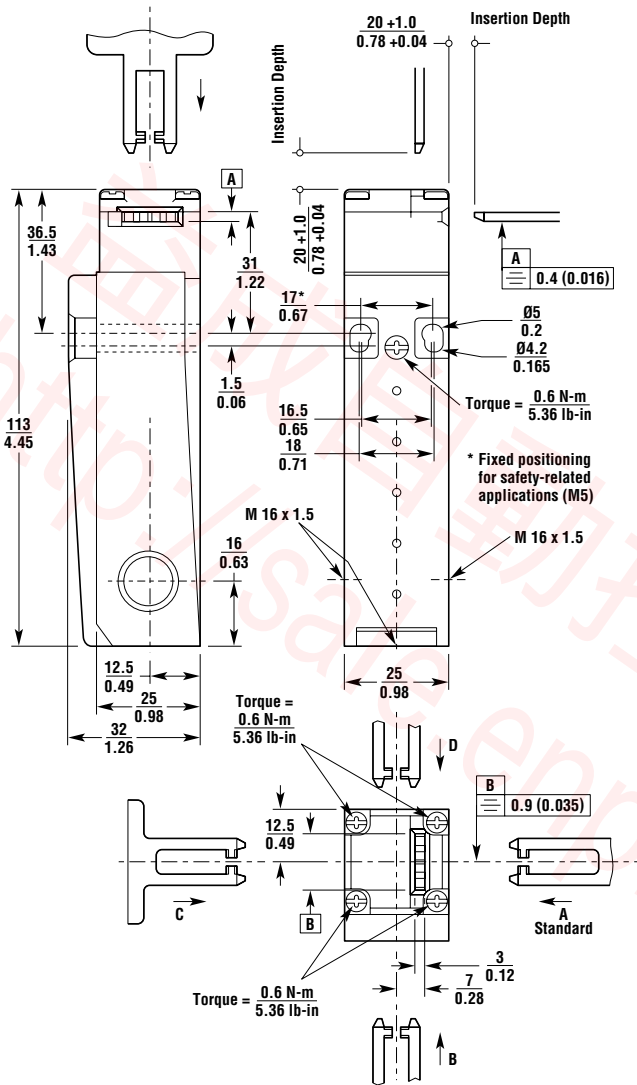
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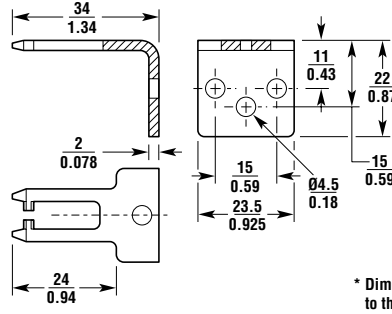


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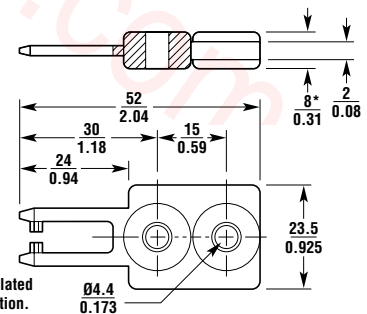
■ Dimensions — mm/in.



Flat Actuator



90-Degree Actuator



Flat Actuator w/Rubber Bushing

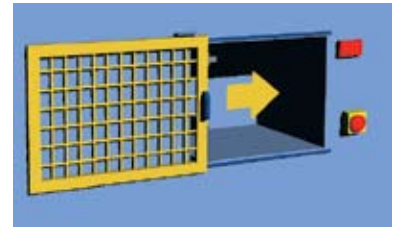
G safety interlock switches



Conforms to EN1088, EN60947-5-1, EN60204-1  
UL and C-UL listed, BG approved

### ■ Applications

Typical applications are on sliding guard doors or swinging guard doors with a 6 in. minimum swing radius.



G

safety interlock switches

# T3008

## Miniature Tongue-Operated Safety Interlock Switch

- Compact size—Allows the T3008 switch to be used on smaller machines with space restrictions.
- NEMA 6 enclosure—Enables the T3008 to withstand water washdown cleaning.
- Two mounting surfaces—Gives 4 possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Small swing radius—Allows use on doors with a swing radius of less than 2 in. when using the flex actuators.
- Long life—The T3008 with its stainless steel actuators is designed for one million actuations.
- Safety switch conformity—the T3008, with its force-guided contacts and a tamper-resistant mechanism, conforms to the European safety standards indicated here.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

■ Operation



**Mounting** — The switch may be mounted label side down or label side up to give four possible actuator entry points.

Four Different Actuators are Available —



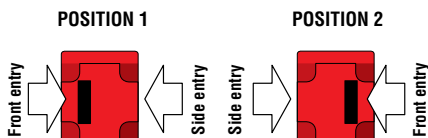
90° Actuator

Flat Actuator

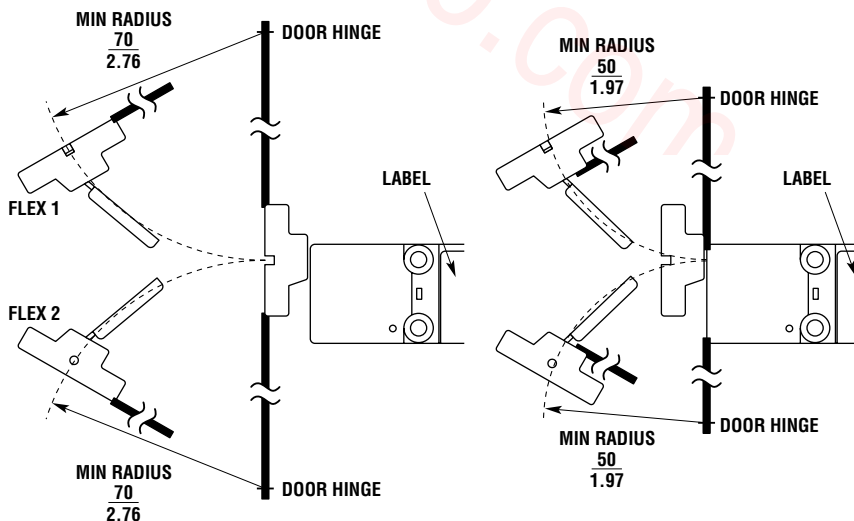
Flex 1 Actuator

Flex 2 Actuator

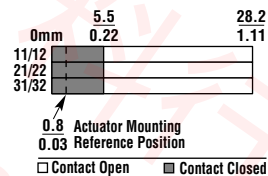
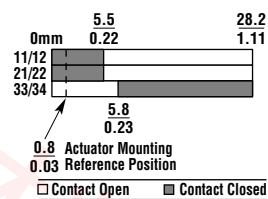
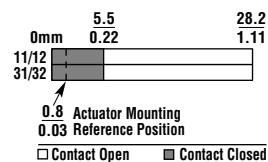
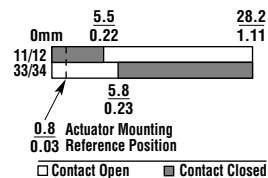
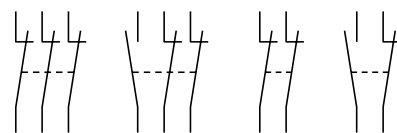
Four Possible Actuator Entry Points



Operating Range — mm/in.



Contact Arrangements



G

safety interlock switches

■ Specifications

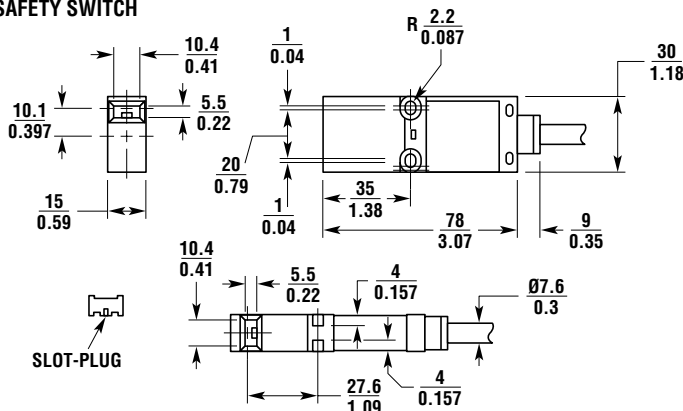
Electrical		All Models	
<b>Contact Configurations:</b>		1 N/C + 1 N/O, 2 N/C, 2 N/C + 1 N/O, 3 N/C	
<b>Safety Contacts:</b>		1 N/C, 2 N/C, or 3 N/C positive break	
<b>Switching Ability</b>	<b>Resistive Load</b>	<b>AC:</b>	250 V – 1.6 A; 125 V – 2.5 A
		<b>DC:</b>	250 V – 0.55 A; 125 V – 1.1 A; 30 V – 2.5 A
	<b>Inductive Load</b>	<b>AC:</b>	250 V – 0.75 A; 125 V – 1.5 A
		<b>DC:</b>	250 V – 0.27 A; 125 V – 0.55 A; 30 V – 0.27 A
<b>Auxiliary Contacts:</b>		1 N/O	
<b>Max Switching Current/Volt/Amp:</b>		250 V/400 VA	
<b>Electrical Life:</b>		1 x 10 <sup>6</sup> minimum	
Mechanical			
<b>Mounting:</b>		Any position	
<b>Mounting Hardware:</b>		2 x M4 screws	
<b>Actuator Travel for Positive Opening:</b>		5.5 mm (0.217 in.)	
<b>Min Operating Radius:</b>		50 mm (1.97 in.) with flex actuators	
<b>Break Contact Min Force:</b>		6 N (1.35 lb.)	
<b>Max Actuation Speed:</b>		1000 mm/sec. (39.4 in./sec.) maximum	
<b>Max Actuation Frequency:</b>		1200 cycles/hour	
<b>Actuator Material:</b>		Stainless steel	
<b>Cable:</b>		UL style 2464, 6 x 20 AWG stranded	
<b>Weight:</b>		142 g (5 oz.)	
<b>Color:</b>		Red	
<b>Mechanical Life:</b>		1 x 10 <sup>6</sup> minimum	
Environmental			
<b>Protection:</b>		IP67 (NEMA 6)	
<b>Operating Temperature:</b>		-20 to 80°C (-4 to 176°F)	
Compliance			
<b>Standards:</b>		EN1088, EN60947-5-1, EN60204-1	
<b>Approvals/Listings:</b>		CE marked for all applicable directives, UL and C-UL, BG	

Specifications are subject to change without notice.

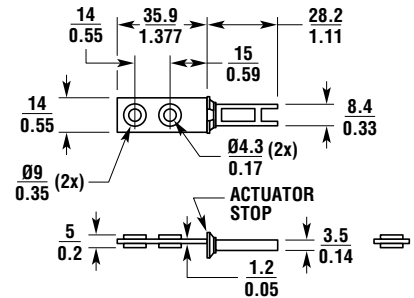
Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

■ Dimensions — mm/in.

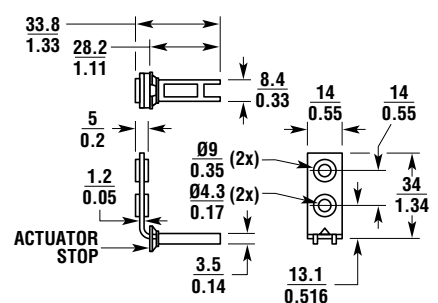
T3008 SAFETY SWITCH



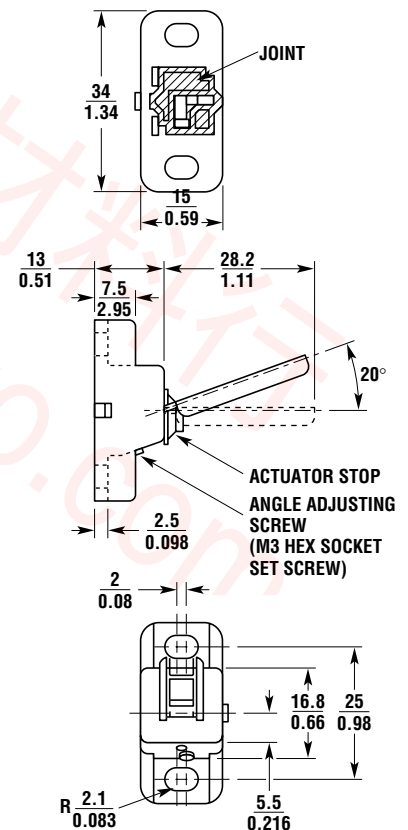
FLAT ACTUATOR



90 DEGREE ACTUATOR



FLEX 1 AND FLEX 2 ACTUATORS



**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines





Conforms to EN1088, EN292, EN60947-5-1, EN60204-1, EN50047

UL and C-UL listed



G

safety interlock switches

# T3009

## Compact Tongue-Operated Safety Interlock Switch

- Compact size—Allows the T3009 switch to be used on smaller machines with space restrictions
- Three sets of contacts—Provides a variety of contact configurations
- NEMA 6 enclosure—Enables the T3009 to withstand water washdown cleaning
- Rotatable head—Gives 8 possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Small swing radius—Allows use on doors with a swing radius as small as 2.5 in. when using the flex actuator with stainless steel guide
- Long life—The T3009 with its stainless steel actuators and optional stainless steel guide is designed for one million actuations
- Safety switch conformity—the T3009, with its force-guided contacts and a tamper-resistant mechanism, conforms to the European safety standards indicated here

A

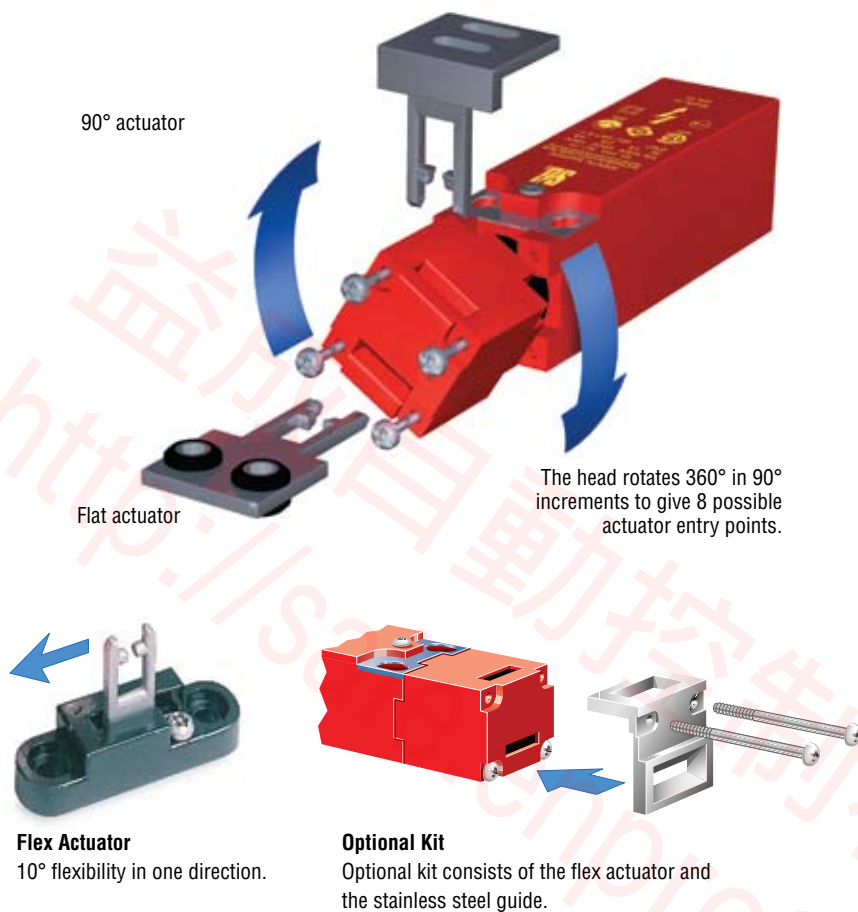
**Go to the Engineering Guide**  
For in-depth information on safety standards and use.

N

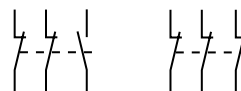
**For More Guarding Products**  
See Section N for safeguarding cutting and turning machines



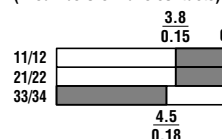
■ Operation



Contact Arrangements

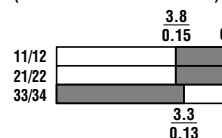


Actuator Withdrawal Distance from Full Insertion: type 2N/C + 1N/O BBM (Break before make contacts)



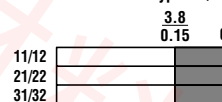
□ Contact Open ■ Contact Closed

Actuator Withdrawal Distance from Full Insertion: type 2N/C + 1N/O MBB (Make before break contacts)



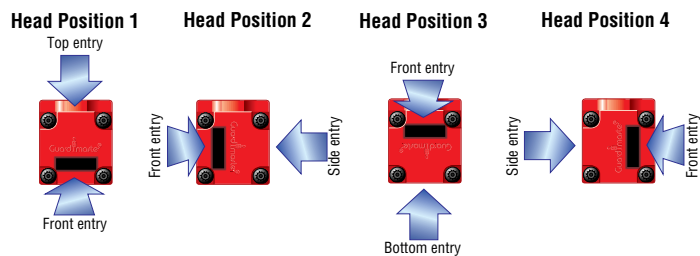
□ Contact Open ■ Contact Closed

Actuator Withdrawal Distance from Full Insertion: type 3N/C

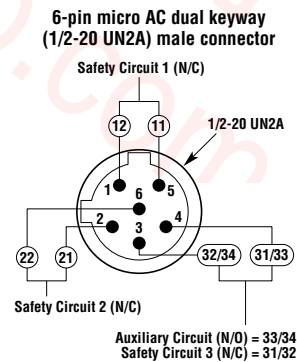


□ Contact Open ■ Contact Closed

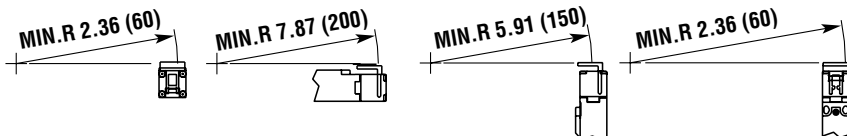
8 possible actuator entry points



Connector Configuration

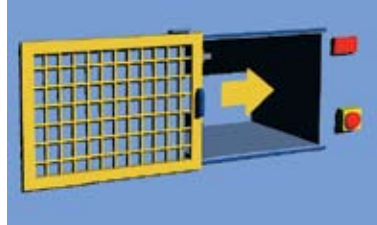


Minimum Operating Radius Front-Entry Using Flex Actuator With Stainless Steel Guide



■ Applications

Typical applications are on sliding guard doors or swinging guard doors with a 6 in. minimum swing radius.



■ Specifications

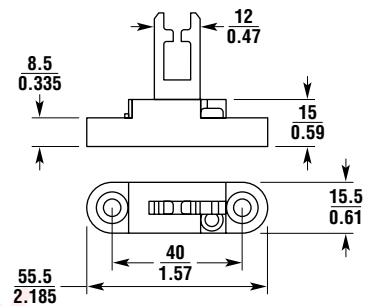
Electrical	All Models
<b>Contact Configurations:</b>	2 N/C + 1 N/O, 3 N/C
<b>Safety Contacts:</b>	2 N/C or 3 N/C
<b>Switching Ability</b>	
AC:	500 V-1 A, 250 V-2 A, 100 V-5 A
DC:	250 V-0.5 A, 24 V-2 A
<b>Safety Contact Gap:</b>	> 2 mm (0.079 in.)
<b>Auxiliary Contacts:</b>	1 N/O
<b>Max Switching Current/Volt/Amp:</b>	500 V/500 VA
<b>Minimum Current:</b>	5 V 5 mA DC
<b>Electrical Life:</b>	1 x 10 <sup>6</sup> minimum
Mechanical	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M4 screws
<b>Actuator Travel for Positive Opening:</b>	5 mm (0.197 in.)
<b>Min Operating Radius:</b>	150 mm (5.91 in.)
<b>Break Contact Min Force:</b>	15 N (3.4 lb.)
<b>Max Actuation Speed:</b>	160 mm/sec (6.30 in./sec)
<b>Max Actuation Frequency:</b>	2 cycles/sec
<b>Case Material:</b>	UL listed, glass-filled polyester
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	1 x M16 conduit with 0.5 in. NPT adapter
<b>Weight:</b>	80 g (2.8 oz.)
<b>Color:</b>	Red
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum
Environmental	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
Compliance	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1, EN50047
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL

Specifications are subject to change without notice.

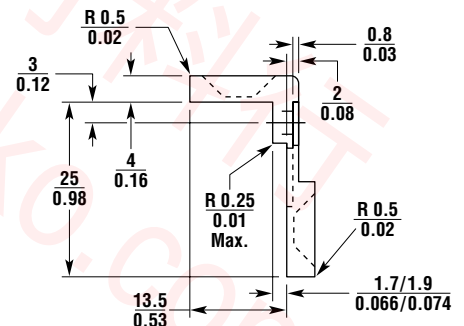
Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

■ Dimensions — mm/in.

FLEX ACTUATOR



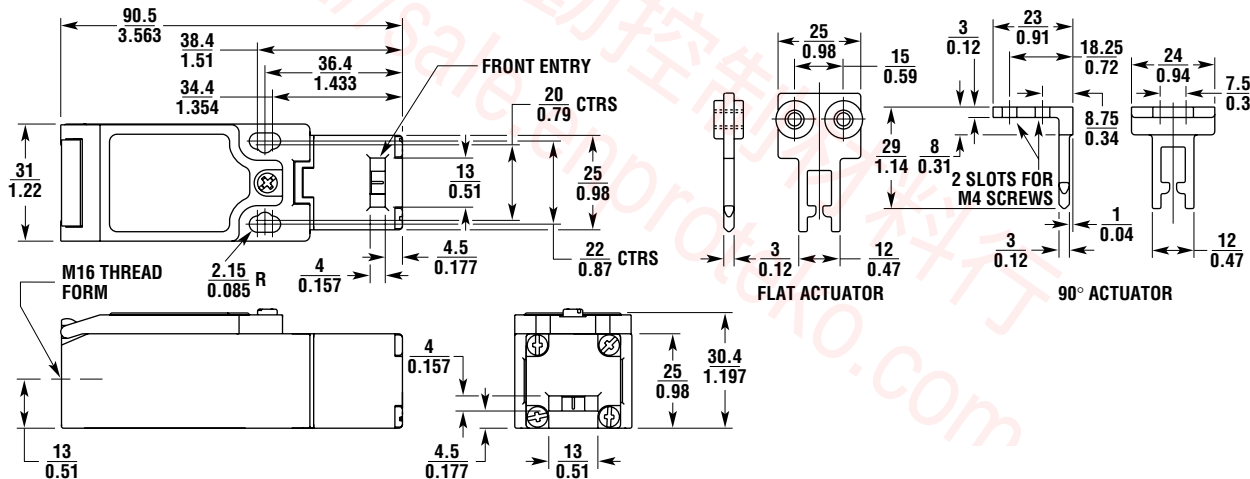
STAINLESS STEEL GUIDE



**A** Go to the Engineering Guide  
For in-depth information on safety standards and use.

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

## ■ Dimensions — mm/in. (continued)





Conforms to EN1088, EN292, EN60947-5-1, EN60204-1, EN50041  
UL and C-UL listed



G  
safety interlock switches

# T4011

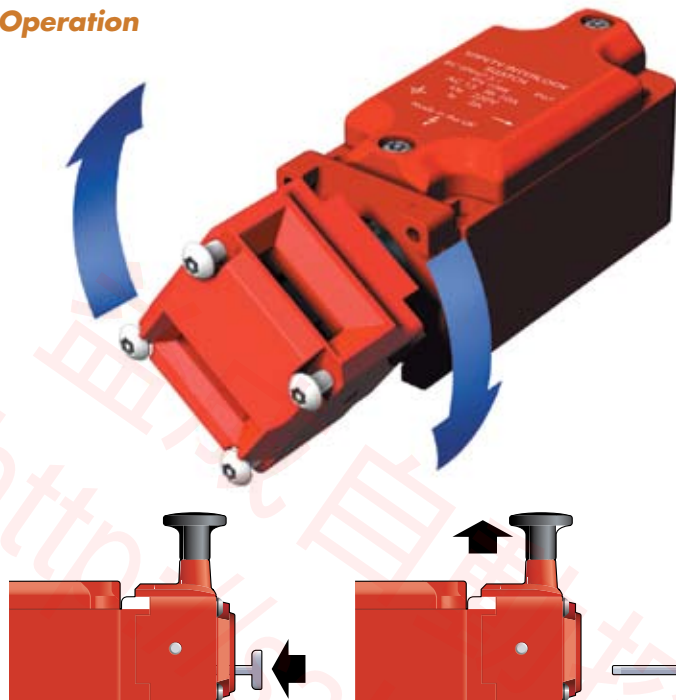
## Heavy-duty Metal Body Safety Interlock Switch

- Rugged enclosure — the all metal housing and stainless steel actuator of the T4011 makes it suitable for harsh environments
- Latching version — locks actuator in the switch until manually released. Prevents nuisance trips due to vibration
- Four sets of contacts — 2 sets of contacts for dual channel safety monitoring and 2 additional sets of contacts for status monitoring
- DIN mounting pattern for globally recognized mounting configuration
- Rotatable head — provides 8 possible actuator entry positions for versatile installation
- NEMA 6 enclosure — enables the T4011 to withstand water washdown cleaning
- Long life — the T4011 is designed for a minimum of one million actuations

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

■ Operation



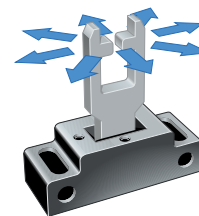
**Flat Actuator**

Allows mounting to flat surfaces. Flexible rubber mounting bushings also allow for some actuator flexibility.



**Flexible 1 Actuator**

15° flexibility in any direction. The actuator has 2 set screws for altering and locking adjustable angle.

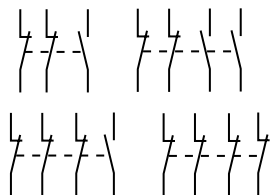


**Actuator with Chain**

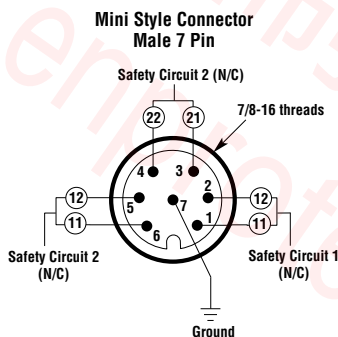
Allows actuator to be attached to guard gates with large misalignments.



**Contact Arrangements**



■ Optional Connector



G

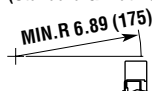
safety interlock switches

**Optional SLD Series** NEW!

Optional switch locking devices are available. See accessories section for details.

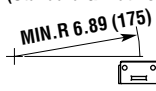


Minimum Operating Radius Front-Entry (Standard & Flat Actuator)



Flexible Actuator: MIN. R 2.36 (60)  
Semi flexible actuator: MIN. R 6.89 (175)

Minimum Operating Radius End-Entry (Standard & Flat Actuator)



Flexible Actuator: MIN. R 2.36 (60)  
Semi flexible actuator: MIN. R 6.89 (175)

**3 POLE CONTACT BLOCK**

Actuator withdrawal distance from full insertion: type BBM (Break Before Make Contacts)

20	15	10	5	0
0.79	0.60	0.39	0.20	0
11/12				
21/22				
33/34				
	5.5			
	0.22			

□ Contact Open ■ Contact Closed

**4 POLE CONTACT BLOCK**

4N/C Version					3N/C + 1N/O version MBB					2N/C + 2N/O version MBB					3N/C + 1N/O version BBM					2N/C + 2N/O version BBM				
20	15	10	5	0	20	15	10	5	0	20	15	10	5	0	20	15	10	5	0	20	15	10	5	0
0.79	0.60	0.39	0.20	0	0.79	0.60	0.39	0.22	0	0.79	0.60	0.39	0.22	0	0.79	0.60	0.39	0.20	0	0.79	0.60	0.39	0.20	0
11/12					11/12					11/12					11/12					11/12				
21/22					21/22					21/22					21/22					21/22				
31/32					31/32					31/32					31/32					31/32				
41/42					43/44					43/44					43/44					43/44				
			5.2					5.2					5.2					5.6					5.6	
			0.20					0.20					0.20					0.22					0.22	

□ Contact Open ■ Contact Closed



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USA Tel. 1/888/510-4357 Canada Tel. 1/866/986-6766



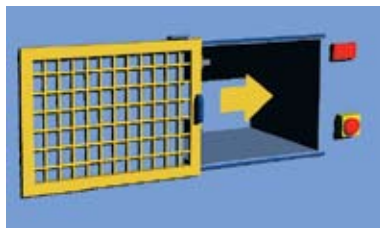
For the Latest Information  
On the Internet: [www.sti.com](http://www.sti.com) or [www.omron.ca](http://www.omron.ca)



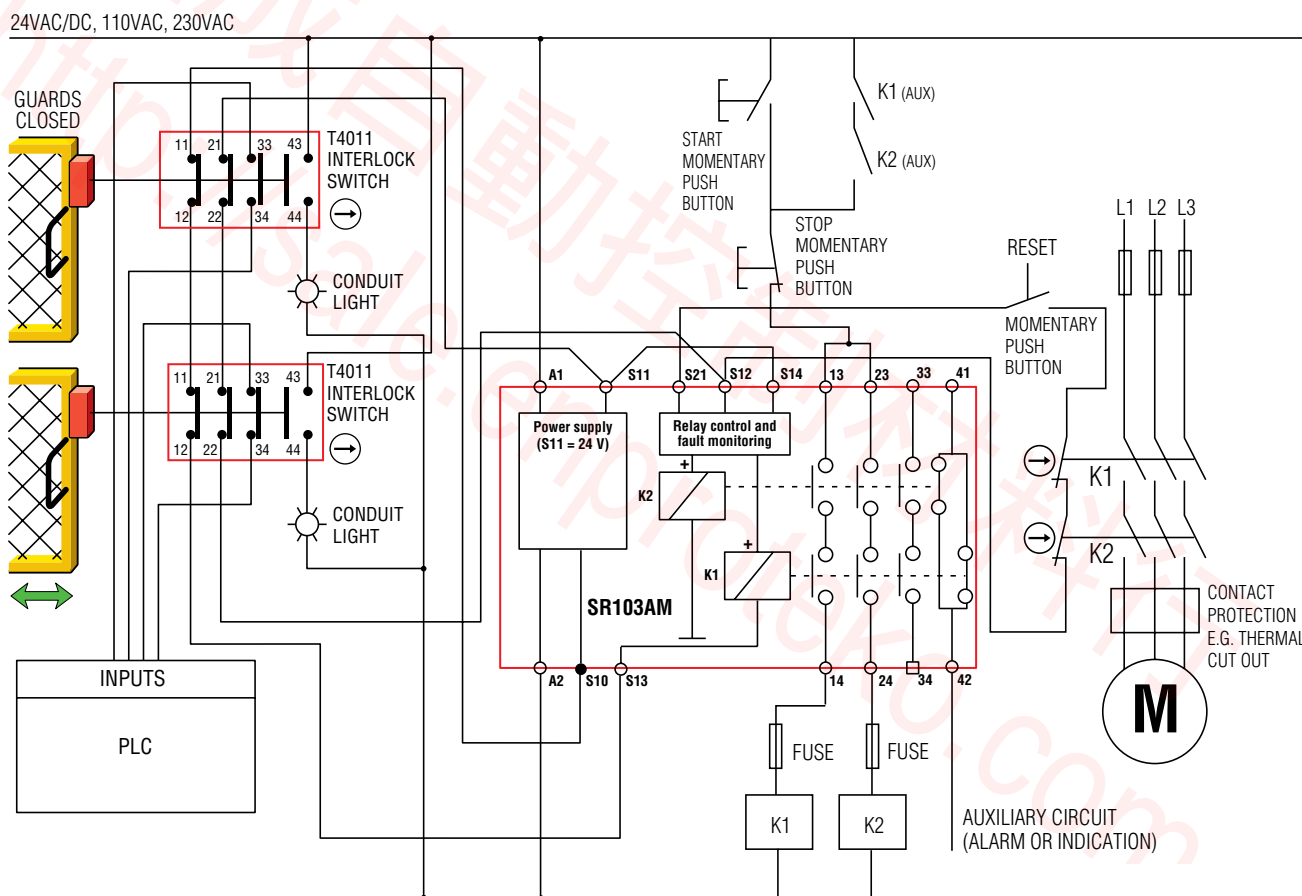
# T4011

## ■ Applications

Typical applications are on sliding guard doors or swinging guard doors with a 2.5 in. minimum swing radius when using the flexible 1 actuator.



G safety interlock switches



**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

## ■ Specifications

Electrical	All Models
<b>Contact Configurations:</b>	2 N/C + 1 N/O, 2 N/C + 2 N/O, 3 N/C + 1 N/O, 4 N/C
<b>Safety Contacts:</b>	2 N/C, 3 N/C, 4 N/C positive break
<b>Switching Ability</b>	
<b>AC:</b>	500 V–1 A, 250 V–2 A, 100 V–5 A (60 V–3 A with connector option)
<b>DC:</b>	250 V–0.5 A, 24 V–2 A
<b>Safety Contact Gap:</b>	2 x 2 mm or 3 x 2 mm or 4 x 2 mm
<b>Auxiliary Contacts:</b>	1 N/O or 1 N/C or 2 N/O
<b>Max Switching Current/Volt/Amp:</b>	500 V/500 VA
<b>Minimum Current:</b>	5 V 5 mA DC
<b>Electrical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	4 x M5 screws
<b>Actuator Travel for Positive Opening:</b>	6 mm (0.24 in.)
<b>Min Operating Radius:</b>	60 mm (2.5 in.) with Flex 1 actuator; 175 mm (6.89 in.) with standard actuator
<b>Break Contact Min Force:</b>	12 N (2.7 lb.)
<b>Max Actuation Speed:</b>	1 m/s
<b>Max Actuation Frequency:</b>	2 cycles/sec
<b>Case Material:</b>	Painted zinc
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	1/2 in. NPT or 1 x M20 or 1 x Pg 13.5, or Micro Style Connector, 8 Pole Male
<b>Weight:</b>	530 g (18.6 oz.)
<b>Color:</b>	Red
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
<b>Compliance</b>	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1, EN50041
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL

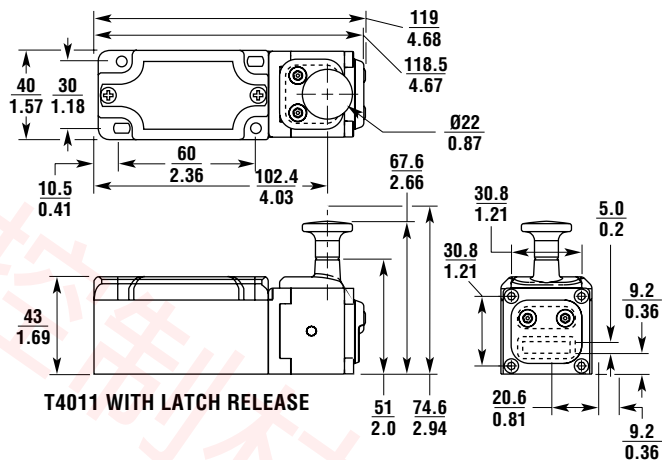
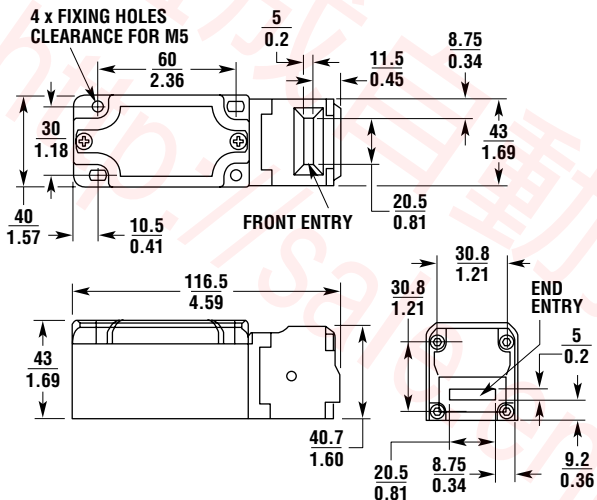
Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

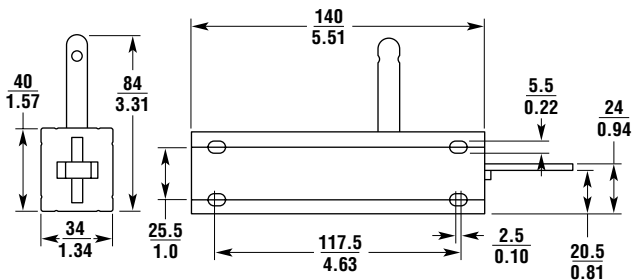
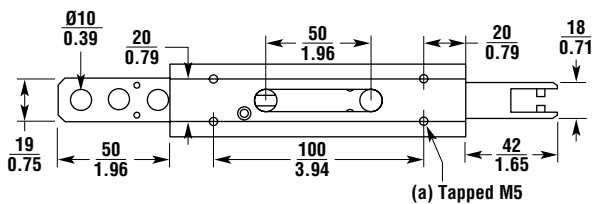


# T4011

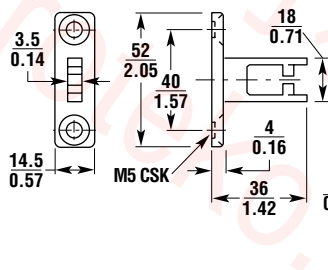
## ■ Dimensions — mm/in.



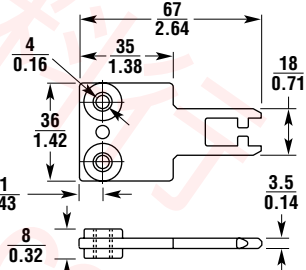
### LOCKOFF SLIDING ACTUATOR



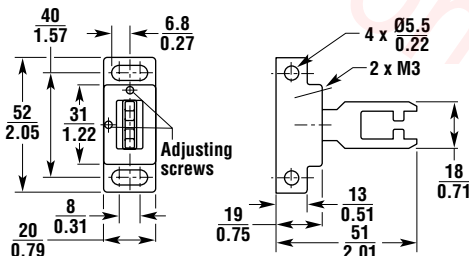
### STANDARD ACTUATOR



### FLAT ACTUATOR



### FLEXIBLE 1 ACTUATOR





Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed, BG approved



G

safety interlock switches

# T4012

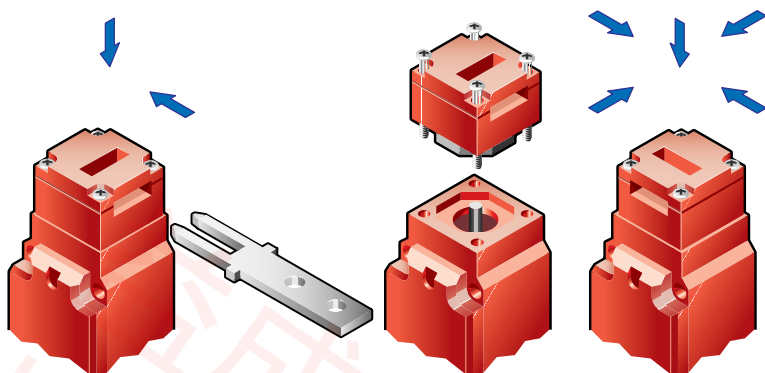
## Universal Tongue-Operated Safety Interlock Switch

- Strong and versatile—the compact size of the strong, glass-filled thermoplastic housing allows this switch to be used in most applications.
- NEMA 6 enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives eight possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Long life—these switches, with their stainless steel actuators, are designed for a minimum of two million actuations.
- Available in 2 or 4 contact pole versions. The 4 contact pole version provides 2 poles for dual channel safety monitoring and 2 additional poles for status monitoring.
- An optional stainless steel guide is available for demanding applications.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

■ **Operation**



**Contact Arrangements**



**Flexible 1 Actuator**

15 degree flexibility may be adjusted with the set screw.



**Flexible 2 Actuator**

15 degree flexibility may be adjusted with the set screw.



**Flat Actuator**

Available with and without rubber bushings.



**90-Degree Actuator**

Available with and without rubber bushings.



**Optional Alignment Guide**

Optional stainless steel alignment guide aids actuator entry and is easily installed.

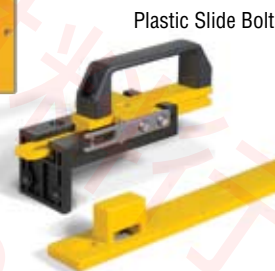


**Optional Slide Bolts**

- Allows easy installation of switch on machine guards
- Actuator included (order switch separately)
- Integral handle included
- Robust for use with heavy doors
- Slotted hole in bolt permits attaching multiple padlocks
- Yellow color for easy recognition



Metal Slide Bolt



Plastic Slide Bolt

**Optional SLD Series** NEW!

Optional switch locking devices are available. See accessories section for details.

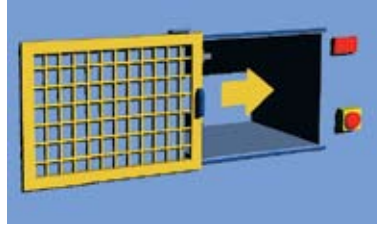


G

safety interlock switches

■ Applications

Typical applications are on sliding guard doors or swinging guard doors.

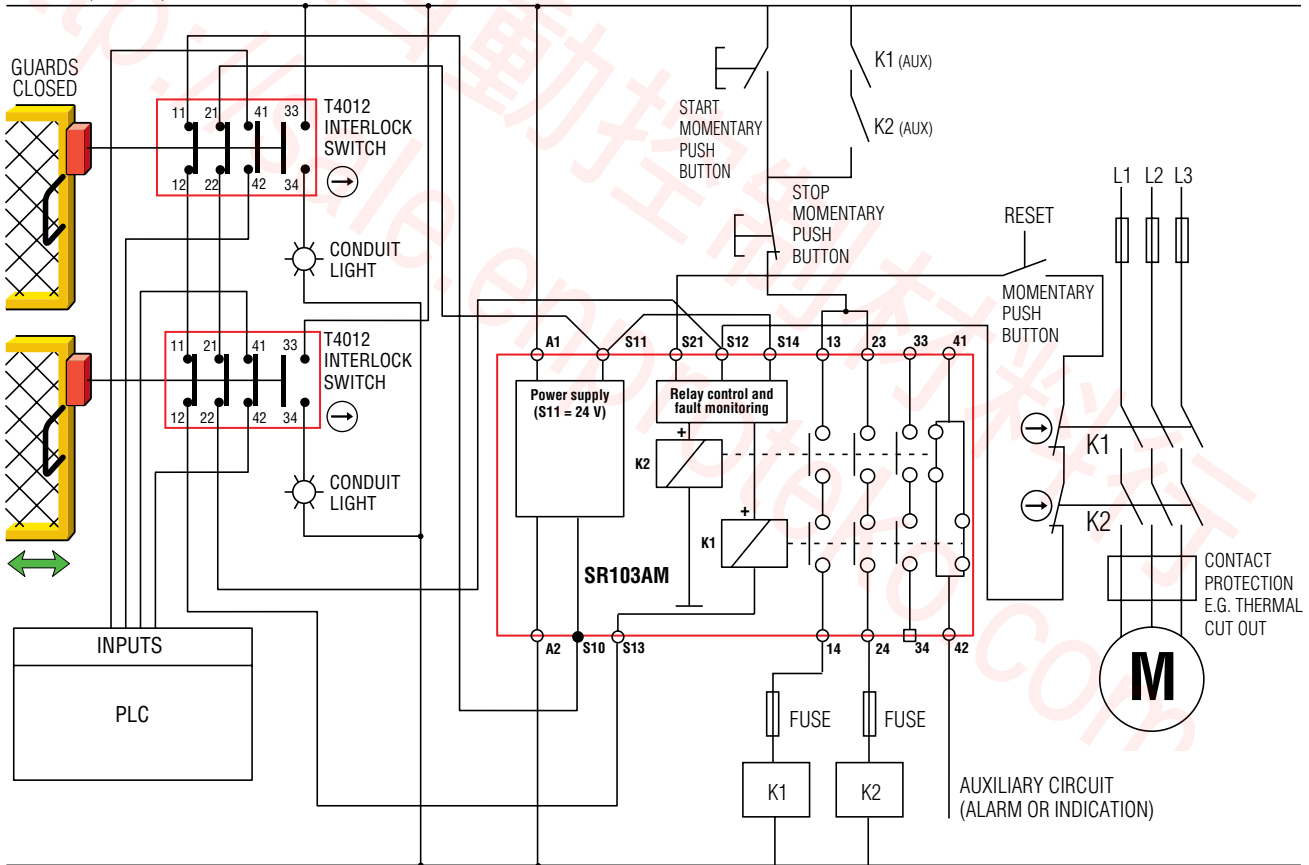


For a full explanation of the circuit operating principle and fault detection, see "Common Circuit Examples" in the Engineering Section of this catalog.

G

safety interlock switches

24VAC/DC, 110VAC, 230VAC



**A** Go to the Engineering Guide  
For in-depth information on safety standards and use.

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

## ■ Specifications

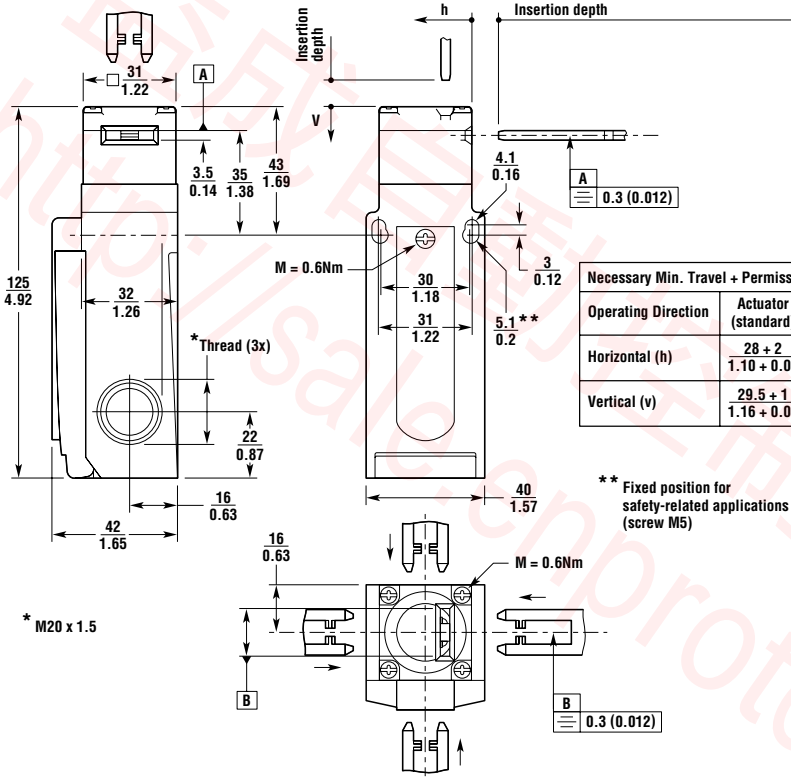
Electrical	All Models
<b>Contact Configurations:</b>	1 N/C + 1 N/O, 2 N/C, 2 N/C + 2 N/O, 3 N/C + 1 N/O, 4 N/C
<b>Safety Contacts:</b>	2 N/C positive break
<b>Switching Ability</b>	
<b>AC:</b>	230 V, 4 A
<b>DC:</b>	24 V, 4 A
<b>Contact Material:</b>	Silver alloy, gold flashed
<b>Auxiliary Contacts:</b>	1 N/O, 2 N/O
<b>Minimum Switching Voltage:</b>	12 V at 10 mA
<b>Minimum Switching Current:</b>	1 mA at 24 V
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M5 screws (not supplied)
<b>Actuator Travel for Positive Opening:</b>	5 mm (0.197 in.)
<b>Min Operating Radius:</b>	Approximately 100 mm (3.9 in.) with flex actuator Approximately 1000 mm (39 in.) with flat or 90-degree actuator
<b>Break Contact Min Force:</b>	25 N (5.6 lb.)
<b>Max Actuation Speed:</b>	20 m/min.
<b>Max Actuation Frequency:</b>	112 cycles/min.
<b>Case Material:</b>	Glass-fibre reinforced thermoplastic
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	3 x M20 conduit with 0.5 in. NPT adapter
<b>Weight:</b>	141 g (5 oz.)
<b>Color:</b>	Black with red lid
<b>Mechanical Life:</b>	2 x 10 <sup>6</sup> minimum
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
<b>Compliance</b>	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL, BG

Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

# T4012

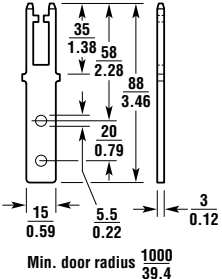
■ Dimensions — mm/in.



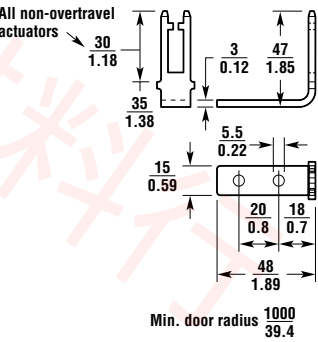
Necessary Min. Travel + Permissible Overtravel		
Operating Direction	Actuator (standard)	Actuator Travel
Horizontal (h)	28 + 2 1.10 + 0.08	28 + 7 1.10 + 0.28
Vertical (v)	29.5 + 1 1.16 + 0.04	29.5 + 7 1.16 + 0.28

\*\* Fixed position for safety-related applications (screw M5)

**Overtravel Flat Actuator**

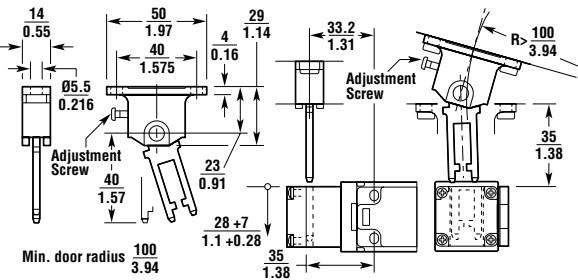


**Overtravel 90-Degree Actuator**

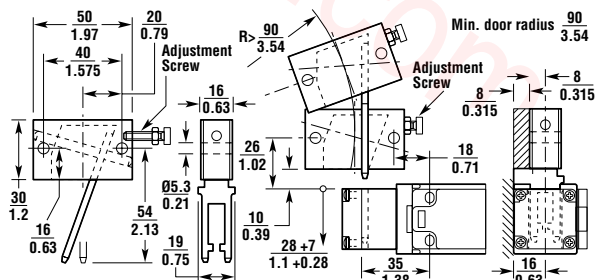


G safety interlock switches

**Flexible 1 Actuator**



**Flexible 2 Actuator**



T4016



Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed, BG approved



G

safety interlock switches

# T4016

## Heavy-Duty Metal-Body Safety Interlock Switch

- Rugged enclosure—The all metal housing and stainless steel actuator of the T4016 makes it suitable for harsh environments.
- NEMA 6/IP67 enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives eight possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Long life—These switches, with their stainless steel actuators, are designed for a minimum of two million actuations.
- A variety of 4 contact pole versions provides 2 poles for dual channel safety monitoring and 2 additional poles for status monitoring.

A

**Go to the Engineering Guide**  
For in-depth information on safety standards and use.

N

**For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

**sti**  
G164

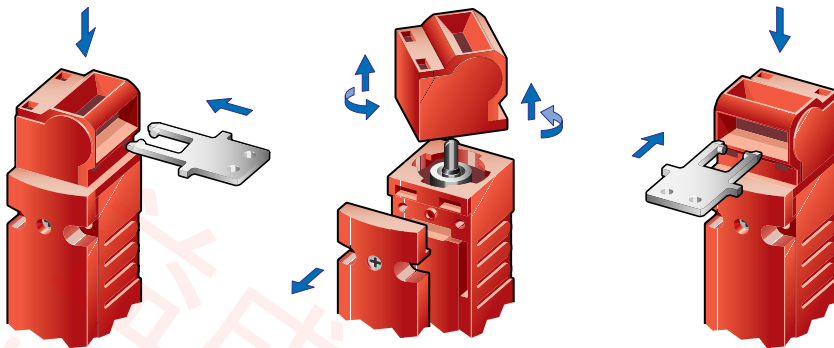
OMRON SCIENTIFIC TECHNOLOGIES, INC.  
USA Tel. 1/888/510-4357 Canada Tel. 1/866/986-6766



For the Latest Information  
On the Internet: [www.sti.com](http://www.sti.com) or [www.omron.ca](http://www.omron.ca)

**OMRON**

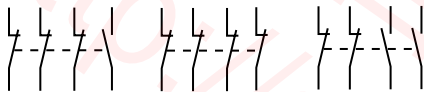
■ **Operation**



**Optional Slide Bolt**

- Allows easy installation of switch on machine guards
- Actuator included (order switch separately)
- Integral handle included
- Robust for use with heavy doors
- Slotted hole in bolt permits attaching multiple padlocks
- Yellow color for easy recognition

**Contact Arrangements**



**Flat Actuator**

Flexible rubber mounting bushings allow for some actuator flexibility.



**90-Degree Actuator**

Flexible rubber mounting bushings allow for some actuator flexibility.



**Flexible 1 Actuator**

15 degree flexibility may be adjusted with the set screw.



**Flexible 2 Actuator**

15 degree flexibility may be adjusted with the set screw.



**Optional SLD Series**



Optional switch locking devices are available. See accessories section for details.



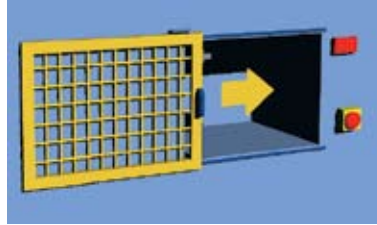
G

safety interlock switches

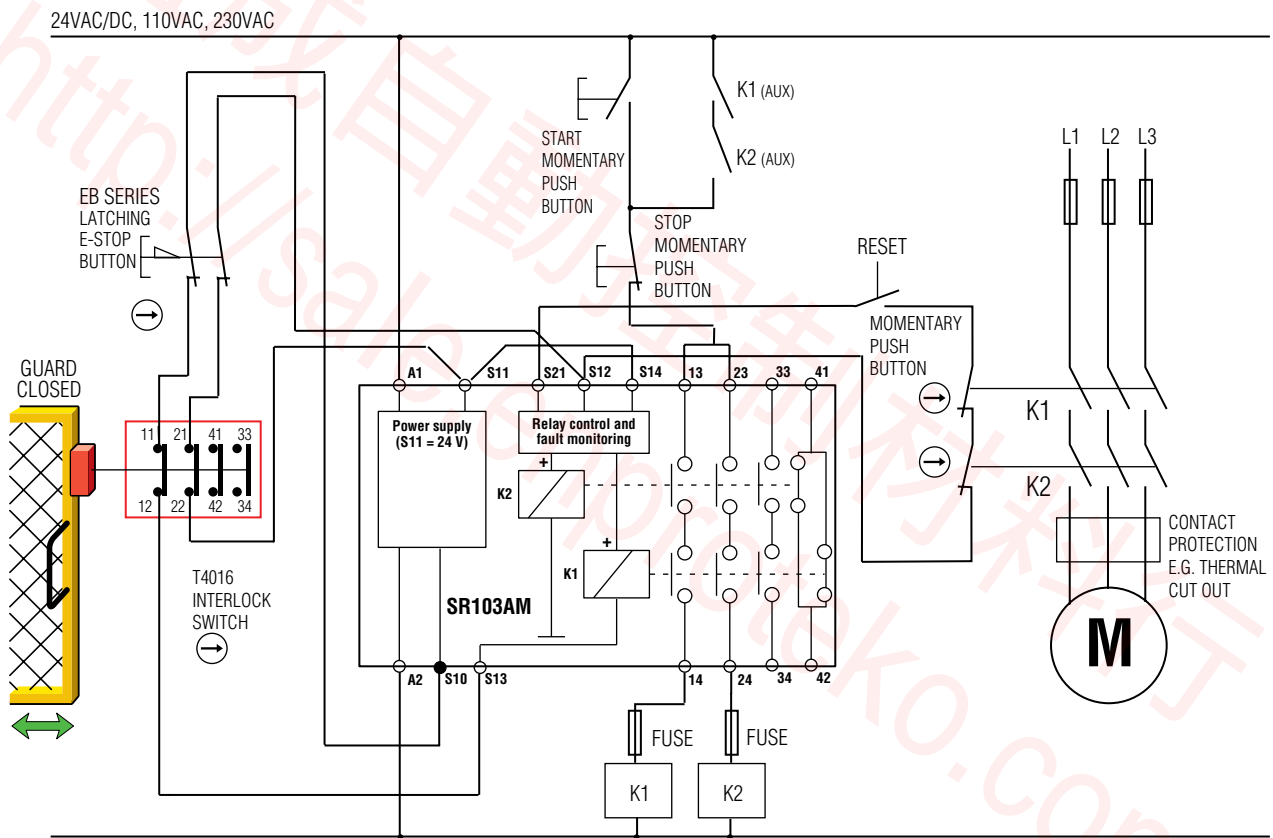


■ Applications

Typical applications are on sliding guard doors or swinging guard doors.



G safety interlock switches



**A** Go to the Engineering Guide  
For in-depth information on safety standards and use.

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

## ■ Specifications

Electrical	All Models
<b>Contact Configurations:</b>	2 N/C + 2 N/O, 3 N/C + 1 N/O, 4 N/C
<b>Safety Contacts:</b>	2 N/C, 3 N/C or 4 N/C positive break
<b>Switching Ability</b>	
<b>AC:</b>	230 V, 4 A
<b>DC:</b>	24 V, 4 A
<b>Contact Material:</b>	Silver alloy, gold flashed
<b>Auxiliary Contacts:</b>	1 N/O, 2 N/O
<b>Minimum Switching Voltage:</b>	12 V at 10 mA
<b>Minimum Switching Current:</b>	1 mA at 24 V
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M5 screws (not supplied)
<b>Min Operating Radius:</b>	Approximately 300 mm (12 in.) with 90-degree actuator
<b>Break Contact Min Force:</b>	50 N (11.2 lb.)
<b>Max Actuation Speed:</b>	20 m/min.
<b>Max Actuation Frequency:</b>	112 cycles/min.
<b>Case Material:</b>	Die-cast alloy, cathodically dipped
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	3 x 0.5 in. NPT
<b>Weight:</b>	400 g (14 oz.)
<b>Color:</b>	Black with red lid
<b>Mechanical Life:</b>	2 x 10 <sup>6</sup> operations
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
<b>Compliance</b>	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL, BG

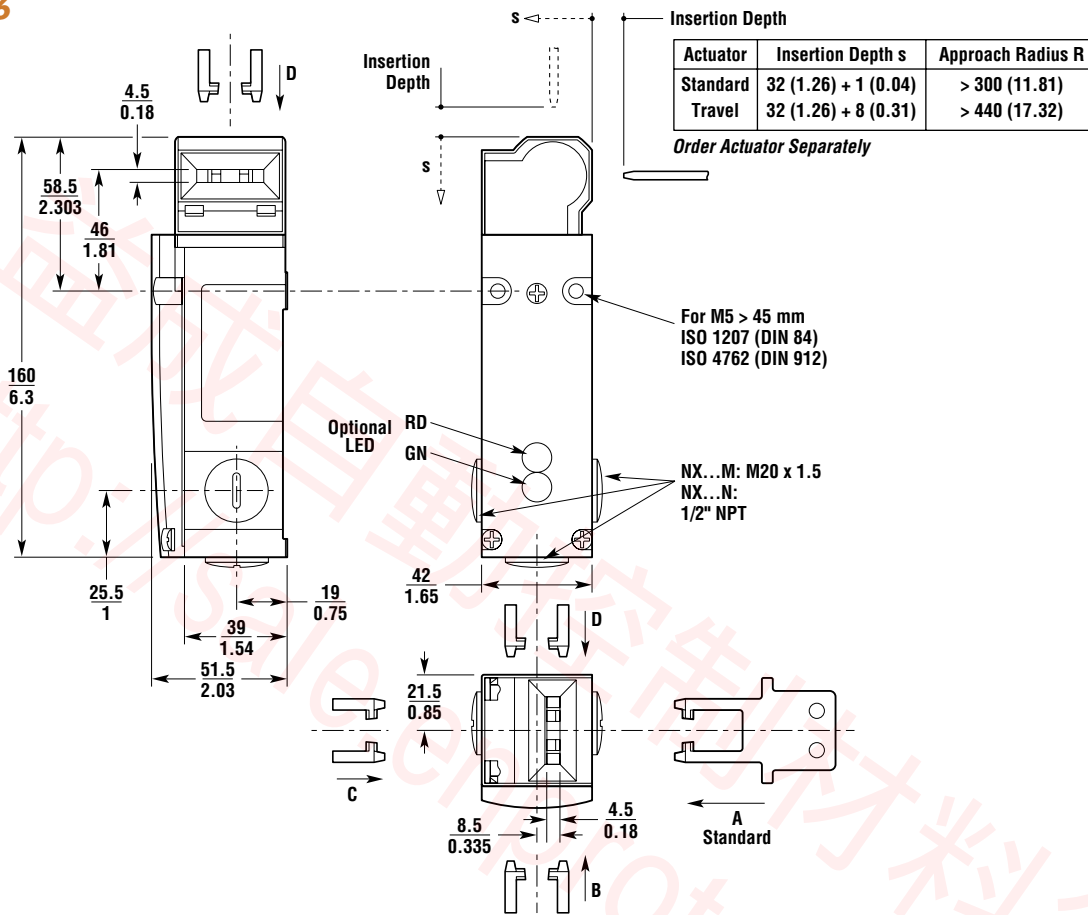
Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

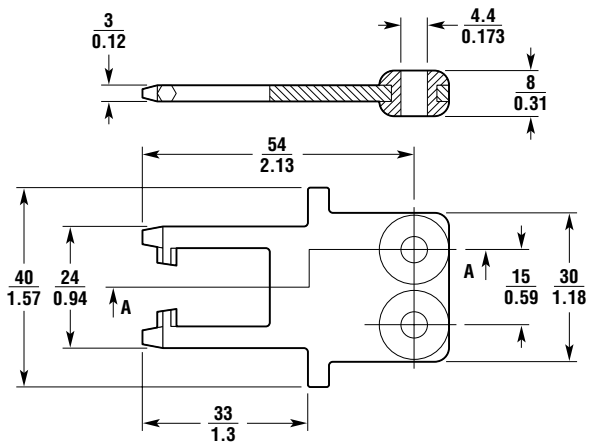
# T4016

## ■ Dimensions — mm/in.

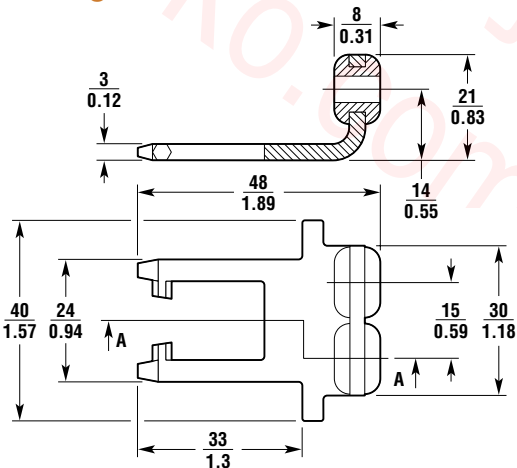
### T4016



### Flat Actuator



### 90-degree Actuator

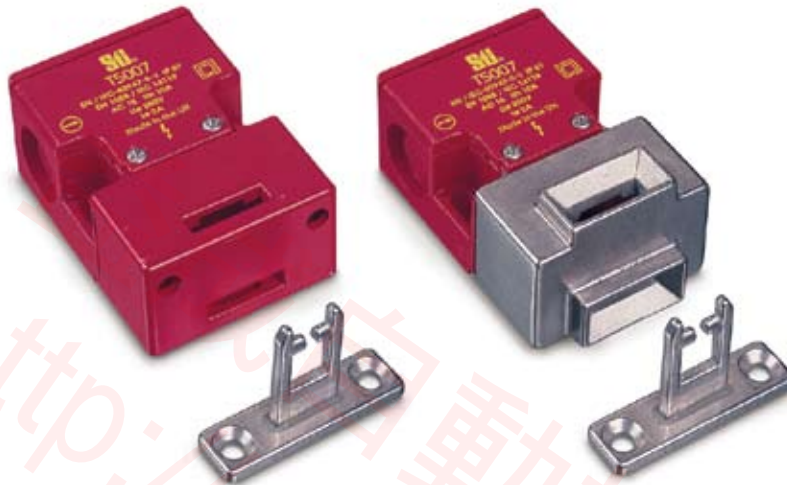


**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

G  
safety interlock switches



Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed



G

safety interlock switches

# T5007

## Compact Universal Tongue-Operated Safety Interlock Switch

- Strong and versatile—the compact size of the strong, glass-filled polyester housing allows this popular switch to be used in many applications.
- NEMA 6 enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives four possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Small swing radius allows use on doors with a swing radius as small as 64 mm (2.5 in.) when using the optional flexible 1 actuator with alignment guide.
- Vibration resistant—optional catch and retainer keeps vibrating guard doors shut, preventing unwanted opening of guard doors on vibrating machines.
- Long life—these switches, with their stainless steel actuators, are designed for a minimum of one million actuations.
- Optional connector makes installation of the T5007 quick and easy.
- An optional stainless steel head is available for demanding applications.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

### Operation



Blanking plug for unused entry.

The head rotates 180° to give 4 possible actuator entry points.

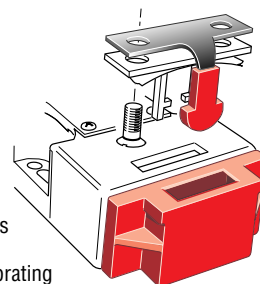
### Optional SLD Series



Optional switch locking devices are available. See accessories section for details.

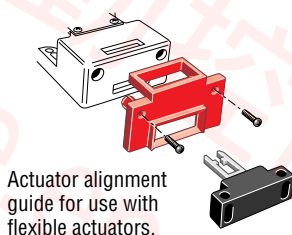


### Optional Catch & Retainer



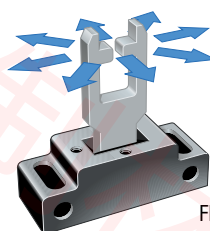
The catch and retainer is used to keep guards on vibrating machinery closed. Holding force = 50 N (11.2 lbs.).

### Optional Alignment Guide & Flexible Actuators



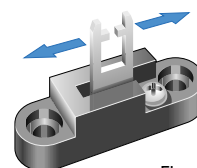
Actuator alignment guide for use with flexible actuators.

15° flexibility in any direction.



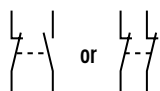
Flex 1

15° flexibility in two directions.



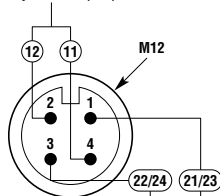
Flex 2

### Contact Arrangements



### Optional Connector

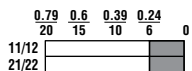
4-Pin Male, Micro DC, M12  
Safety Circuit 1 (N/C)



Auxiliary Circuit (N/O) = 23/24  
Safety Circuit 2 (N/C) = 21/22

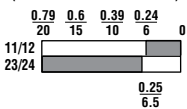


Actuator withdrawal distance from full insertion



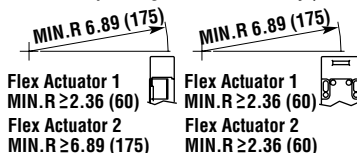
□ Contact Open ■ Contact Closed

Actuator withdrawal distance from full insertion: type BBM (Break Before Make Contact)

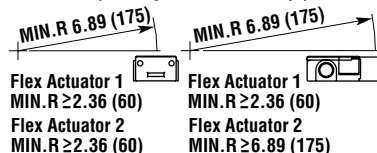


□ Contact Open ■ Contact Closed

### Minimum Operating Radius Front-Entry (Std Actuator)

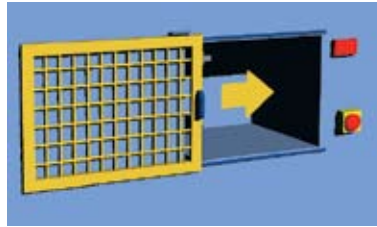


### Minimum Operating Radius End-Entry (Std Actuator)



■ Applications

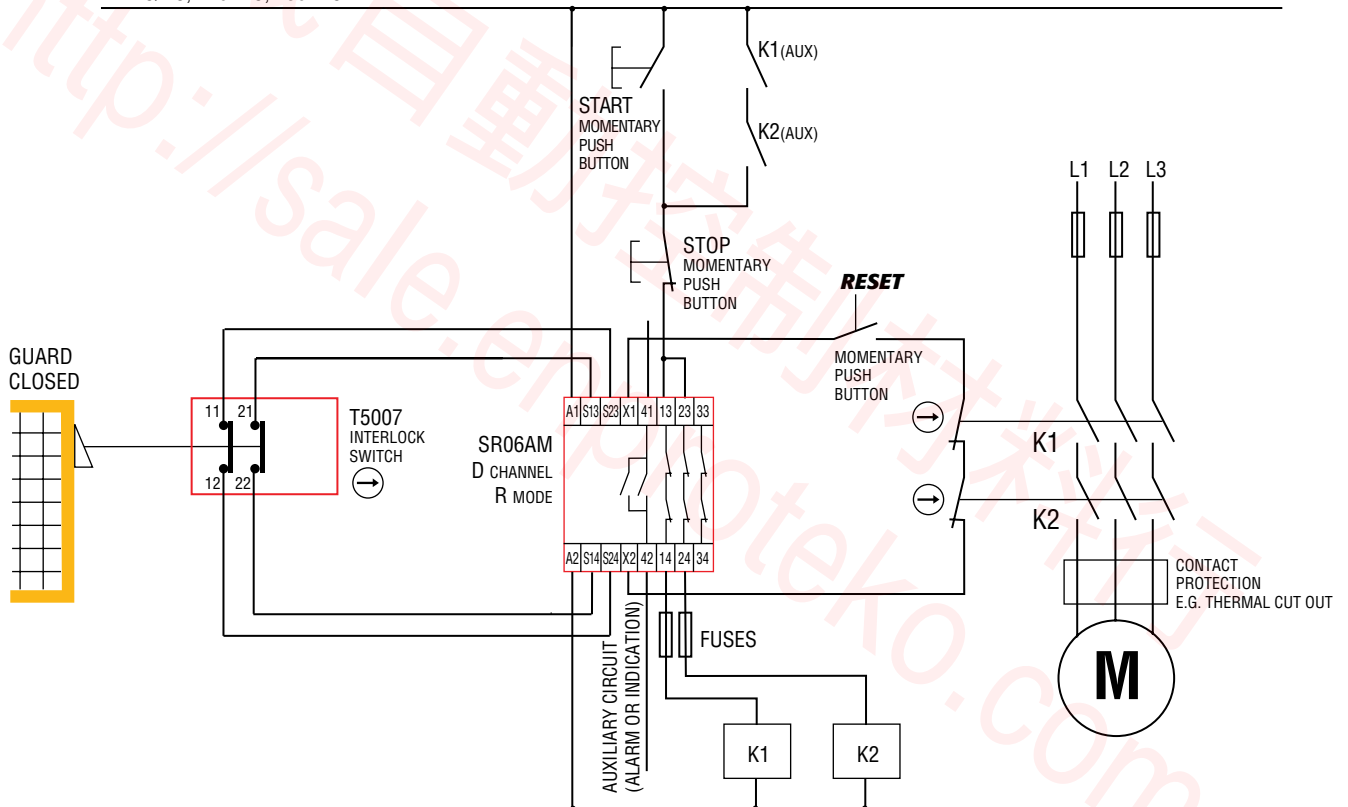
Typical applications are on sliding guard doors or swinging guard doors with a 64 mm (2.5 in.) minimum swing radius when using the flexible 1 actuator.



G

safety interlock switches

24VAC/DC, 110VAC, 230VAC



**A** Go to the Engineering Guide  
For in-depth information on safety standards and use.

**N** For More Guarding Products  
See Section N for safeguarding cutting and turning machines

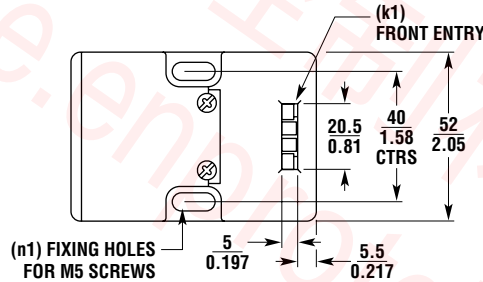
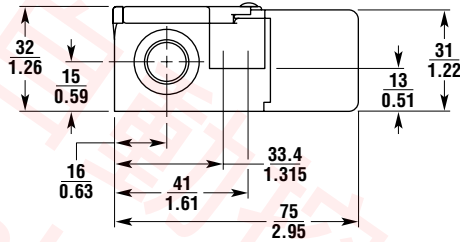
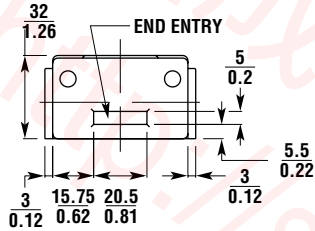
## ■ Specifications

Electrical	All Models
<b>Contact Configurations:</b>	2 N/C or 1 N/C + 1 N/O
<b>Safety Contacts:</b>	2 N/C or 1 N/C positive break
<b>Switching Ability</b>	
<b>AC:</b>	500 V – 1 A, 250 V – 2 A, 100 V – 5 A
<b>DC:</b>	250 V – 0.5 A, 24 V – 2 A
<b>Safety Contact Gap:</b>	> 2 mm (0.079 in.)
<b>Auxiliary Contacts:</b>	1 N/O (only with 1 N/C safety version)
<b>Max Switching Current/Volt/Amp:</b>	500 V/500 VA
<b>Minimum Current:</b>	5 V 5 mA DC
<b>Electrical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Mechanical</b>	
<b>Mounting:</b>	Any position
<b>Mounting Hardware:</b>	2 x M5 screws
<b>Actuator Travel for Positive Opening:</b>	6 mm (0.236 in.)
<b>Min Operating Radius:</b>	60 mm (2.5 in.) with Flex 1 actuator; 175 mm (6.89 in.) with standard actuator
<b>Break Contact Min Force:</b>	30 N (6.7 lb.)
<b>Max Actuation Speed:</b>	160 mm/sec (6.30 in./sec)
<b>Max Actuation Frequency:</b>	2 cycles/sec
<b>Case Material:</b>	UL listed, glass-filled polybutylene terephthalate (PBT), optional stainless steel head
<b>Actuator Material:</b>	Stainless steel
<b>Wiring Entry:</b>	3 x M20 conduit with 0.5 in. NPT adapter, or Brad Harrison connector type BG 16881-008, 4 pole male, M12
<b>Weight:</b>	120 g (4 oz.)
<b>Color:</b>	Red
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum
<b>Environmental</b>	
<b>Protection:</b>	IP67 (NEMA 6)
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)
<b>Cleaning:</b>	Water washdown
<b>Compliance</b>	
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL

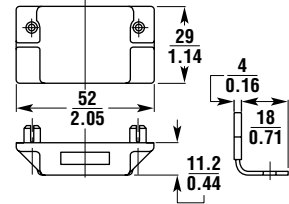
Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

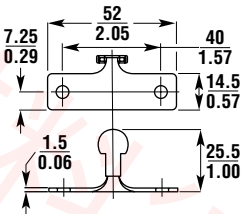
■ Dimensions — mm/in.



CATCH CASE



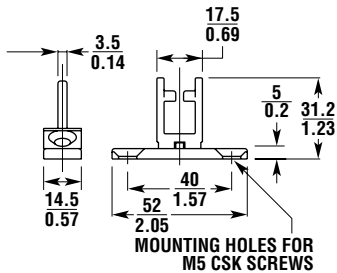
CATCH RETAINER



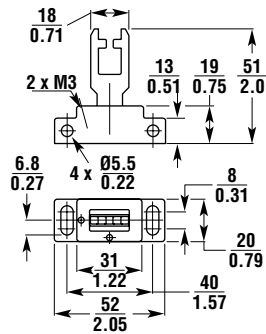
G

safety interlock switches

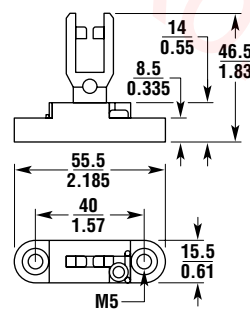
STANDARD ACTUATOR



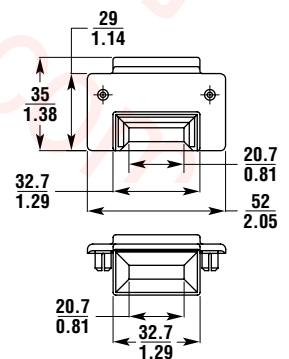
FLEX 1 ACTUATOR



FLEX 2 ACTUATOR



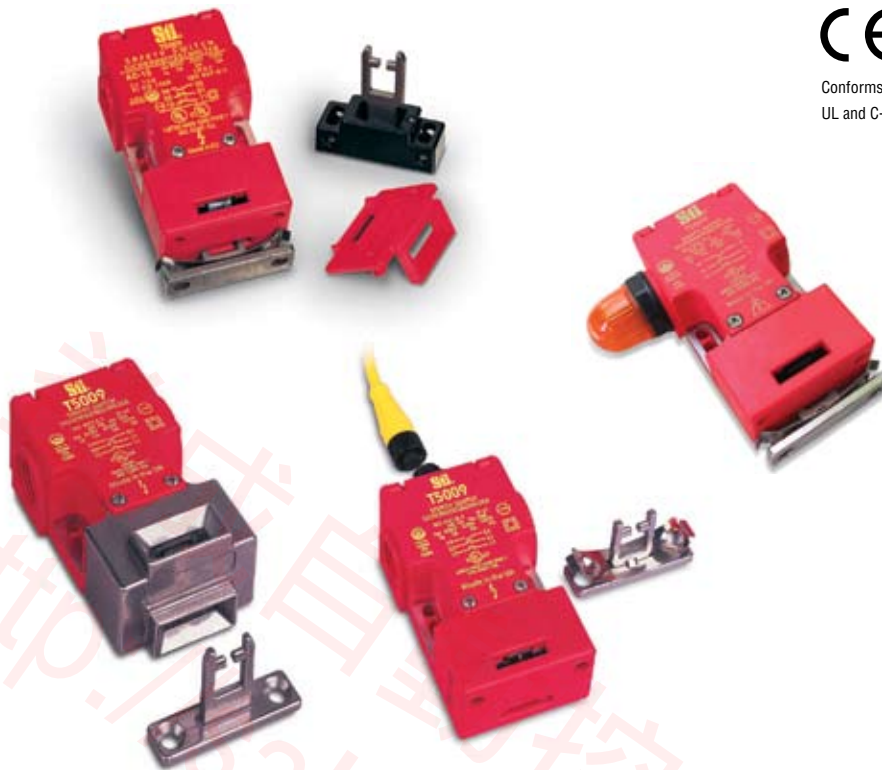
ALIGNMENT GUIDE FOR FLEX ACTUATORS







Conforms to EN1088, EN292, EN60947-5-1, EN60204-1  
UL and C-UL listed



G

safety interlock switches

# T5009 and T5009-6

## Universal Tongue-Operated Safety Interlock Switch

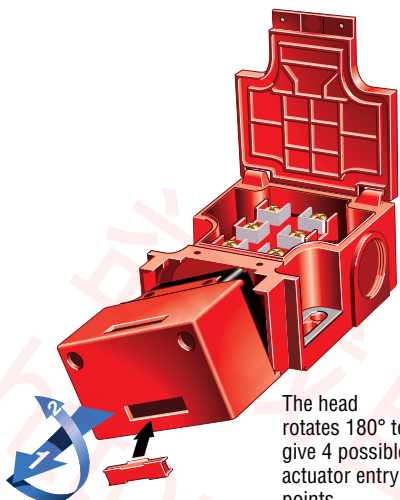
- Strong and versatile—the compact size of the strong, glass-filled polyester housing and metal reinforced cam allows this popular switch to be used in most applications.
- NEMA 6 enclosure enables these switches to withstand water washdown cleaning.
- Rotatable head gives four possible actuator entry points for versatile installation. A blanking plug is supplied for the unused entry.
- Small swing radius allows use on doors with a swing radius as small as 2.5 in. when using the optional flexible 1 actuator with alignment guide.
- Vibration resistant—optional catch and retainer keeps vibrating guard doors shut, preventing unwanted opening of guard doors on vibrating machines.
- Long life—these switches, with their stainless steel actuators, are designed for a minimum of one million actuations.
- The 4 contact poles in the T5009-6 provide 2 poles for dual channel safety monitoring and 2 additional poles for status monitoring.
- Optional connector makes installation of the T5009 quick and easy.
- An optional stainless steel head is available for demanding applications.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines



## Operation



The head rotates 180° to give 4 possible actuator entry points.

Blanking plug for unused entry.

## Optional SLD Series

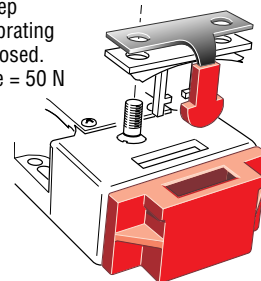


Optional switch locking devices are available. See accessories section for details.



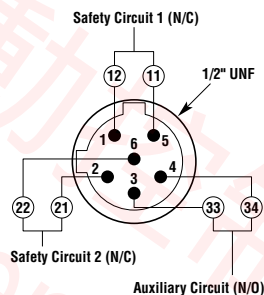
## Optional Catch & Retainer

The catch and retainer is used to keep guards on vibrating machinery closed. Holding force = 50 N (11.2 lb.).



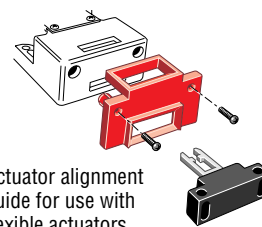
## Optional Connector

6-Pin Male, Micro AC, 1/2-20 UN2A



Available on 3 pole versions only.

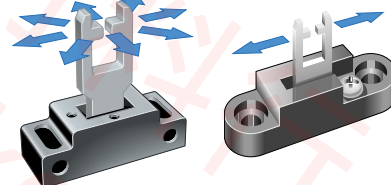
## Optional Alignment Guide & Flexible Actuators



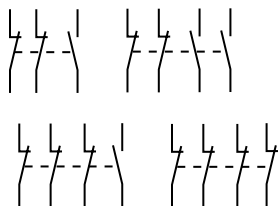
Actuator alignment guide for use with flexible actuators.

Flex 1  
15° flexibility in any direction.

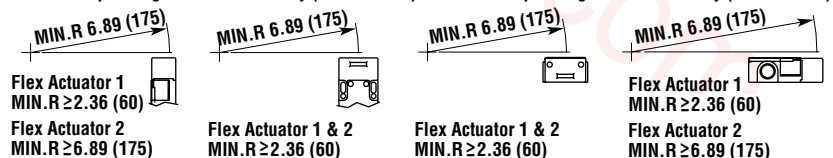
Flex 2  
15° flexibility in two directions.



## Contact Arrangements



Minimum Operating Radius Front-Entry (Std Actuator)    Minimum Operating Radius End-Entry (Std Actuator)



Actuator withdrawal distance from full insertion: type BBM		Actuator withdrawal distance from full insertion: type MBB		4N/C Version		3N/C + 1N/O version BBM		2N/C + 2N/O version BBM		3N/C + 1N/O version MBB		2N/C + 2N/O version MBB															
20	15	10	5	20	15	10	5	20	15	10	5	20	15	10	5												
0.79	0.60	0.39	0.20	0.79	0.60	0.39	0.20	0.79	0.60	0.39	0.18	0.79	0.60	0.39	0.20												
11/12	21/22	31/32	41/42	11/12	21/22	31/32	41/42	11/12	21/22	31/32	43/44	11/12	21/22	31/32	43/44												
5.5 0.22				4.8 0.19				4.6 0.18				5.1 0.201				5.1 0.201				4.6 0.18				4.5 0.177			

□ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed    □ Contact Open ■ Contact Closed

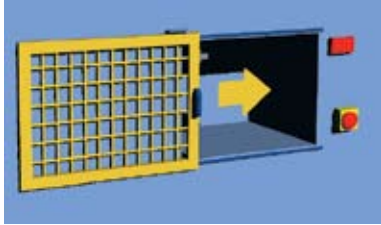
G  
safety interlock switches



# T5009 and T5009-6

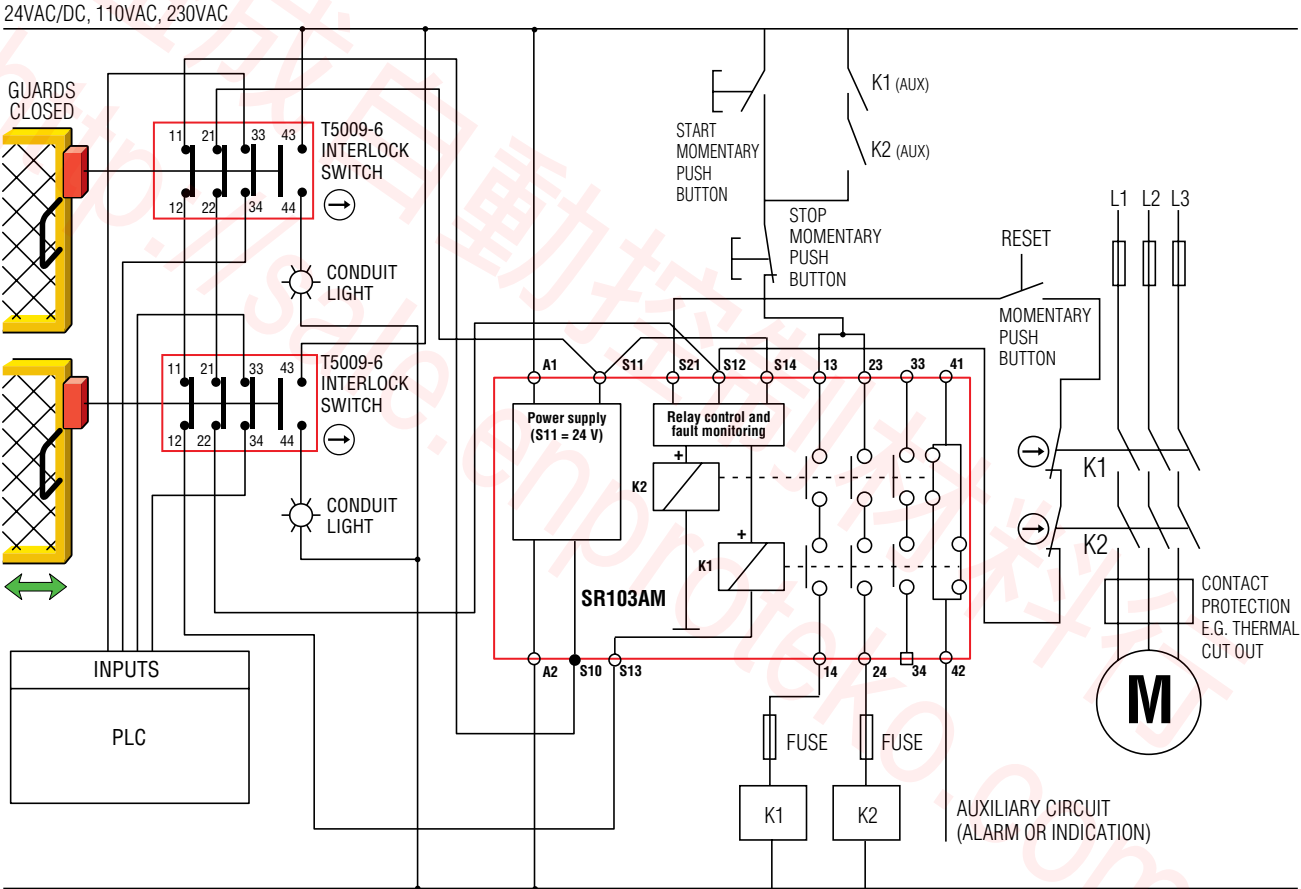
## ■ Applications

Typical applications are on sliding guard doors or swinging guard doors with a 2.5 in. minimum swing radius when using the flexible 1 actuator.



G

safety interlock switches



For a full explanation of the circuit operating principle and fault detection, see "Common Circuit Examples" in the Engineering Section of this catalog.

**A** **Go to the Engineering Guide**  
For in-depth information on safety standards and use.

**N** **For More Guarding Products**  
See Section N for safeguarding cutting and turning machines

## ■ Specifications

Electrical	All Models	T5009	T5009-6
<b>Contact Configurations:</b>		2 N/C + 1 N/O	2 N/C + 2 N/O, 3 N/C + 1 N/O, 4 N/C
<b>Safety Contacts:</b>	2 N/C positive break		
<b>Switching Ability</b>			
<b>AC:</b>	500 V–1 A, 250 V–2 A, 100 V–5 A		
<b>DC:</b>	250 V–0.5 A, 24 V–2 A		
<b>Safety Contact Gap:</b>	> 2 mm (0.079 in.)		
<b>Auxiliary Contacts:</b>		1 N/O	1 N/C + 1 N/O, 2 N/C, 2 N/O
<b>Max Switching Current/Volt/Amp:</b>	500 V/500 VA		
<b>Minimum Current:</b>	5 V 5 mA DC		
<b>Electrical Life:</b>	1 x 10 <sup>6</sup> minimum		
<b>Mechanical</b>			
<b>Mounting:</b>	Any position		
<b>Mounting Hardware:</b>	2 x M5 screws		
<b>Actuator Travel for Positive Opening:</b>	5 mm (0.197 in.)		
<b>Min Operating Radius:</b>	60 mm (2.5 in.) with Flex 1 actuator; 175 mm (6.89 in.) with standard actuator		
<b>Break Contact Min Force:</b>	12 N (2.7 lb.)		
<b>Max Actuation Speed:</b>	160 mm/sec (6.30 in./sec)		
<b>Max Actuation Frequency:</b>	2 cycles/sec		
<b>Case Material:</b>	UL listed, glass-filled polyester, optional stainless steel head		
<b>Actuator Material:</b>	Stainless steel		
<b>Wiring Entry:</b>	3 x M20 conduit with 0.5 in. NPT adapter, or Brad Harrison connector (7R6 Series, 6 pole male, M26, A19C3005) (Mating Cable 706000D02FXXX)		
<b>Weight:</b>	160 g (5.6 oz.)		
<b>Color:</b>	Red		
<b>Mechanical Life:</b>	1 x 10 <sup>6</sup> minimum		
<b>Environmental</b>			
<b>Protection:</b>	IP67 (NEMA 6)		
<b>Operating Temperature:</b>	-20 to 80°C (-4 to 176°F)		
<b>Cleaning:</b>	Water washdown		
<b>Compliance</b>			
<b>Standards:</b>	EN1088, EN292, EN60947-5-1, EN60204-1		
<b>Approvals/Listings:</b>	CE marked for all applicable directives, UL and C-UL		

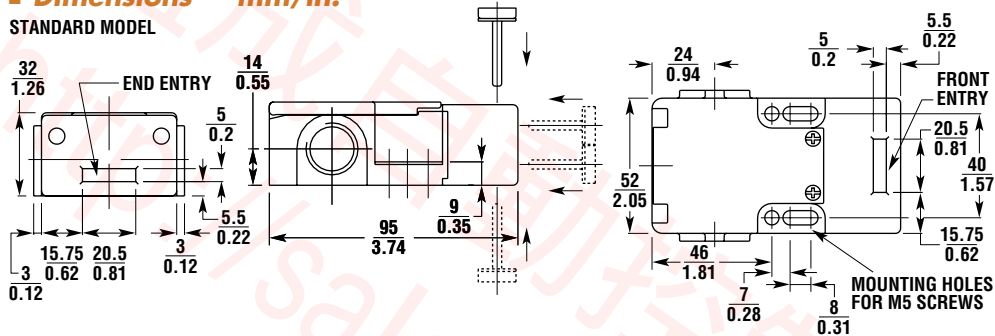
Specifications are subject to change without notice.

Note: The safety contacts of the Omron STI switches are described as normally closed (N/C)—i.e., with the guard closed, actuator in place, and the machine able to be started.

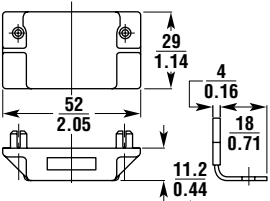
# T5009 and T5009-6

## ■ Dimensions — mm/in.

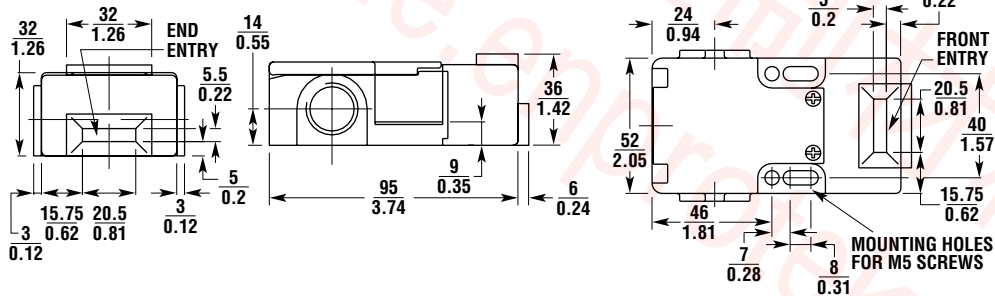
### STANDARD MODEL



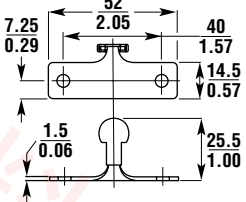
### CATCH CASE



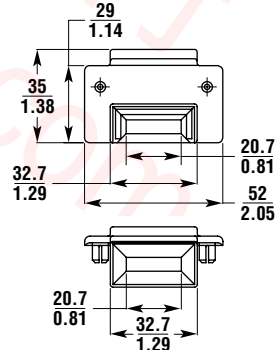
### MODELS WITH STAINLESS HEAD



### CATCH RETAINER



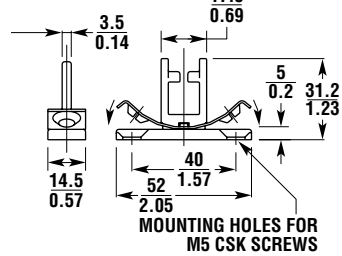
### ALIGNMENT GUIDE FOR FLEX ACTUATORS



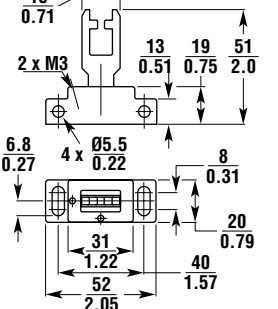
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safety interlock switches

### STANDARD ACTUATOR



### FLEX 1 ACTUATOR



### FLEX 2 ACTUATOR

