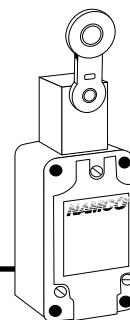


Compact Body
Standard Environment
Butt Contacts

Limit Switches



Limit Switches

- **Small Size**
- **Rotatable Head**
- **Light Operating Force**
- **Compact Durable Housing**
- **SPDT; Positive Opening in event of Minor Contact Welding**

The new Namco Snap-Lock® EA530 Series limit switches are intended for reliable sensing performance in rugged industrial environments. They have a compact 30mm x 60mm mounting footprint and trip force of 40 in • oz., making them ideal for lighter force applications. These compact limit switches have a die cast zinc housing with epoxy paint and positive-acting contacts. They are NEMA A300 AC and Q300 DC rated and UL and CSA listed.

A variety of actuator styles are available, including top roller plunger and rotary roller lever. The switch heads are rotatable by 90° increments to allow for four positions of operation. Action can be changed from momentary clockwise and counterclockwise to momentary clockwise only or momentary counterclockwise only by setting the head internally.

EA530 Single Pole 1 N.O. - 1 N.C. / Butt Contacts

Model Number	Type	A Trip Travel	B Reset Travel	C Recommended Travel	D Total Travel	Operating Force
STANDARD TRAVEL/COMPACT						
EA530-14700	Plunger	.130"	.053"	.169"	.197"	33 oz.
EA530-15701	Roller Plunger	.102"	.053"	.141"	.197"	33 oz.
EA530-17702	Lever	35°	17°	48.5°	75°	40 in oz.

EA530 DPDT 2 N.O. - 2 N.C. / Butt Contacts

Model Number	Type	A Trip Travel	B Reset Travel	C Recommended Travel	D Total Travel	Operating Force
STANDARD TRAVEL/COMPACT						
EA530-47702	Lever	25°	10°	48.5°	75°	40 in oz.

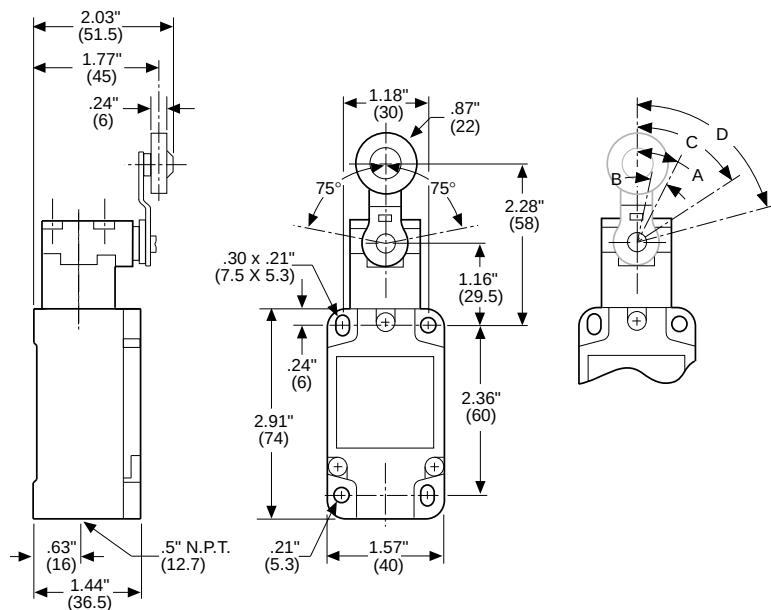
Common Switch Characteristics

SINGLE POLE, STANDARD ENVIRONMENT, COMPACT BODY, BUTT CONTACTS	
NEMA Enclosure Type	Designed to meet 1, 2, 4, 12 & 13 (IP66)
Ambient Temperature Range	-25°C to +80°C
Rotatable Head	yes
Light Operating Force	yes
UL/CSA	yes

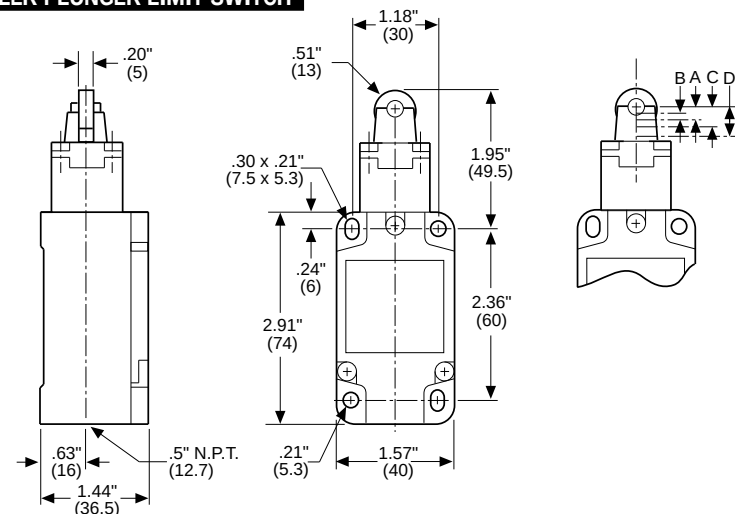
Dimensions and Mounting

EA530

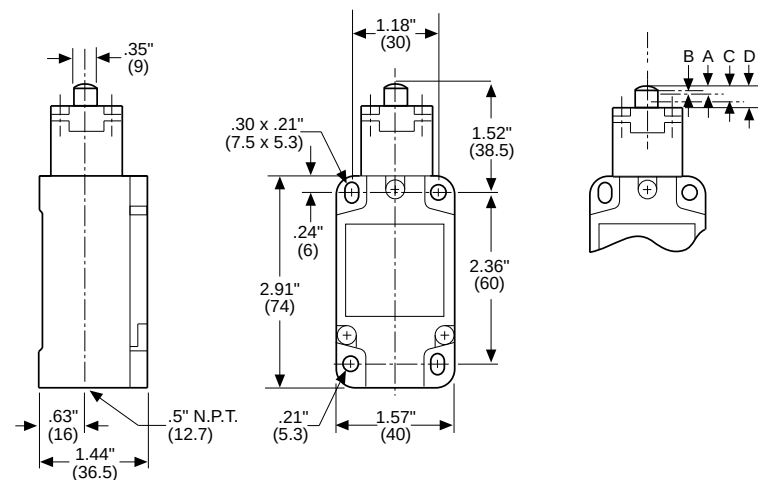
LEVER LIMIT SWITCH



ROLLER PLUNGER LIMIT SWITCH



PLUNGER LIMIT SWITCH



Dimensions: inches/(mm)

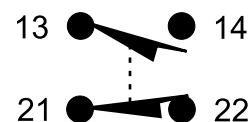
Continuous Current Rating - Amperes

AC 50/60 Hz NEMA A300				
AC	Make	Break	Continuous	Voltamperes
120V	60A	6A	10A	7200 (make) 720 (break)
240V	30A	3A		
480V	15A	1.5A		
480V	15A	1.5A		
600V	12A	1.2A		

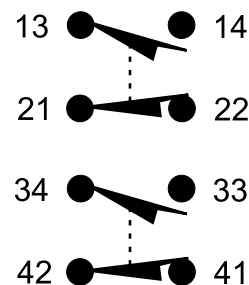
DC NEMA Q300			
DC	Make or Break	Continuous	Voltamperes
125V	.55A	N/A	69
250V	.27A	N/A	69
300V to 600V	12A	1.2A	N/A

Contact Configurations

SPST



DPDT



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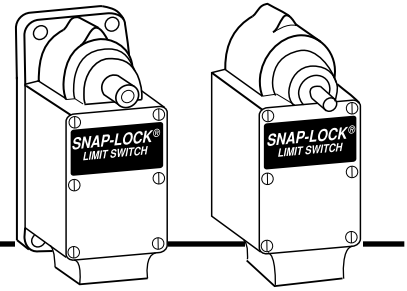
For technical assistance, call 1-800-NAMTECH

Limit Switches

Single Pole Standard Environment

Limit Switches

Butt Contacts



Limit Switches

EA080

Single pole, double throw, heavy duty limit switch having mechanical travel of 10° to trip and with one normally open and one normally closed circuit. Can be furnished with wide and long mountings.

EA060

With mechanical travel of 6-1/2° required to trip, this heavy duty limit switch operates

with one normally open and one normally closed circuit. Can be furnished with wide and long mountings.

EA040

Designed for applications where a neutral position is essential in operation. This series provides the same snap locking action of the other series of Snap-Lock switches.

EA700

The versatility of the Snap-Lock mechanism is gained through the use of a series of uniquely designed cams. The cam and cam mechanism allow features such as bi-directional operation and generous overtravel. These features make the EA700 Series one of the most popular. Can be furnished with standard, wide or long mounting.

EA060 & EA080 Single Pole 1 N.O. - 1 N.C. / EA040 2 N.O. / Butt Contacts / Standard Travel / Rocker Type

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
NEUTRAL POSITION												
-	EA040-21100	EA040-11100	CW/CCW	7°	6°	7°30'	33°	-	-	22	C	1
SHORT TRAVEL												
-	EA060-21100	EA060-11100	CW	6°30'	4°	7°	35°	-	-	24	A	1
-	EA060-22100	EA060-12100	CCW	6°30'	4°	7°	35°	-	-	24	B	1
-	EA060-23100	EA060-13100	Maintained	6°30'	4°	7°	35°	-	-	12	-	1
STANDARD TRAVEL												
-	EA080-21100	EA080-11100	CW	10°	8°	13°	38°	-	-	14	A	1
-	EA080-22100	EA080-12100	CCW	10°	8°	13°	38°	-	-	14	B	1
-	EA080-23100	EA080-13100	Maintained	10°	8°	13°	38°	-	-	5	-	1

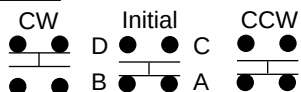
EA700 Single Pole 1 N.O. - 1 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA700-10000	EA700-40000	EA700-70000	CW	18°	14°	30°	90°	-	-	15	A	1
EA700-10001	EA700-40001	EA700-70001	CCW	18°	14°	30°	90°	-	-	15	D	1
EA700-10100	EA700-40100	EA700-70100	CW/CCW	18°	14°	30°	90°	-	-	15	E	1
MAINTAIN CONTACT AND LEVER POSITION												
EA700-16000	EA700-46000	EA700-76000	CW	55°	22°	60°	116°	55°	64°	6	J	2
			CCW	25°	25°	60°	124°	54°	56°	9		
MAINTAIN CONTACTS AND SPRING RETURN LEVER POSITION												
EA700-16700	EA700-46700	EA700-76700	CW	30°	26°	45°	90°	30°	-	12	J	3
			CCW	16°	30°	45°	90°	26°	-	13.5		
NEUTRAL POSITION - ALL CONTACTS OPEN												
EA700-15000	EA700-45000	EA700-75000	CW	11°	9°	45°	90°	-	-	18	F	1
			CCW	35°	13°	45°	90°	-	-	13.5		
NEUTRAL POSITION - ALL CONTACTS CLOSED												
EA700-15100	EA700-45100	EA700-75100	CW	11°	9°	45°	90°	-	-	18	G	1
			CCW	35°	13°	45°	90°	-	-	13.5		
NEUTRAL POSITION - ALL CONTACTS OPEN												
EA700-15700	EA700-45700	EA700-75700	CW	31°	22°	45°	90°	-	-	15	H	1
			CCW	31°	12°	45°	90°	-	-	19.5		
NEUTRAL POSITION - ALL CONTACTS CLOSED												
EA700-15800	EA700-45800	EA700-75800	CW	31°	22°	45°	90°	-	-	15	I	1
			CCW	31°	12°	45°	90°	-	-	19.5		

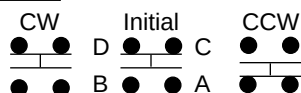
See Operating Levers Section

Contact Configurations

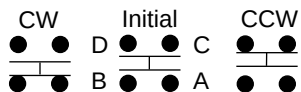
CIRCUIT A



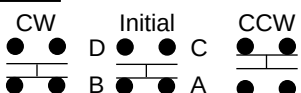
CIRCUIT B



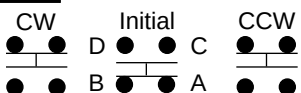
CIRCUIT C



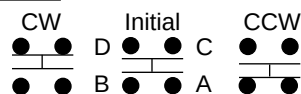
CIRCUIT D



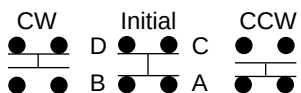
CIRCUIT E



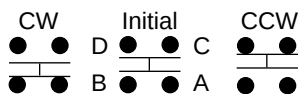
CIRCUIT F



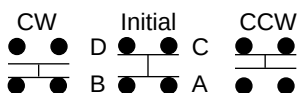
CIRCUIT G



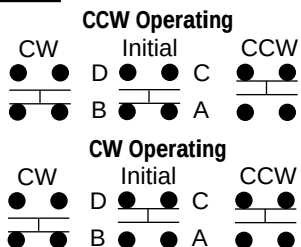
CIRCUIT H



CIRCUIT I



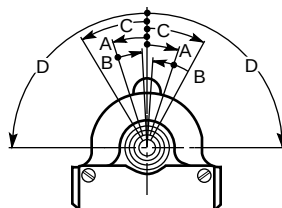
CIRCUIT J



EA040/EA060/EA080/EA700

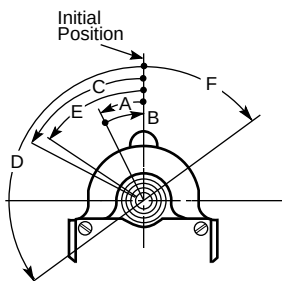
Operational Data Drawings

DRAWING #1

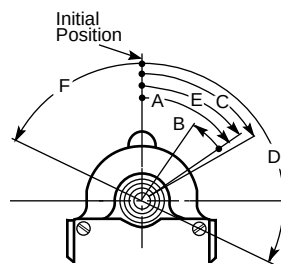


DRAWING #2

CCW Operating



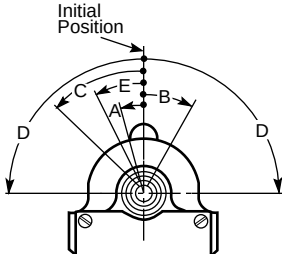
CW Operating



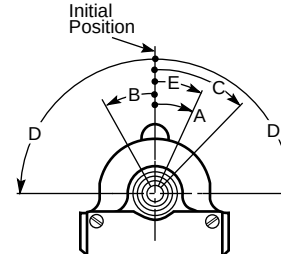
To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

DRAWING #3

CCW Operating



CW Operating



To change switch operation from CW operating to CCW operating, operate switch through angle E.

Limit Switches

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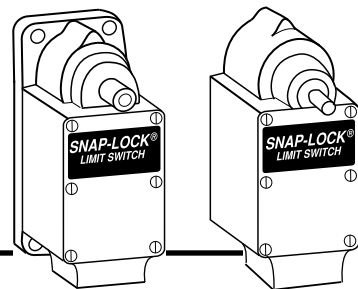
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For technical assistance, call 1-800-NAMTECH

Single Pole
Standard Environment

Limit Switches

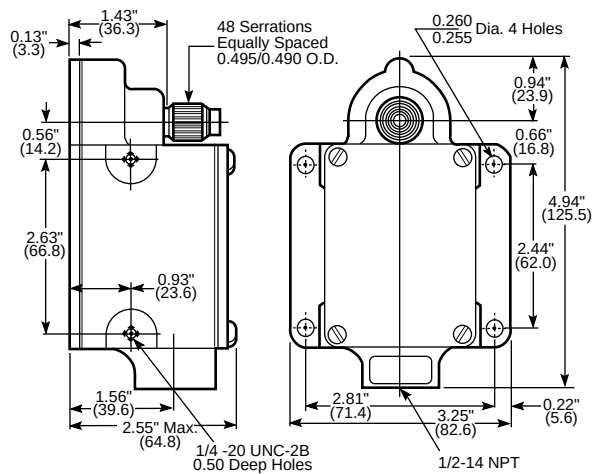
Butt
Contacts



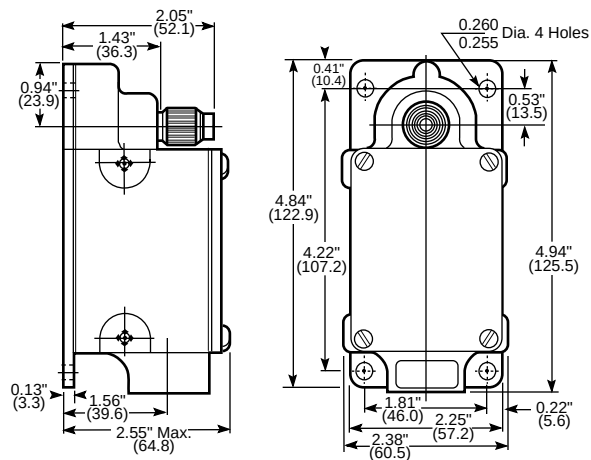
Limit Switches

EA040/060/080 Series Drawings

WIDE MOUNTING PLATE

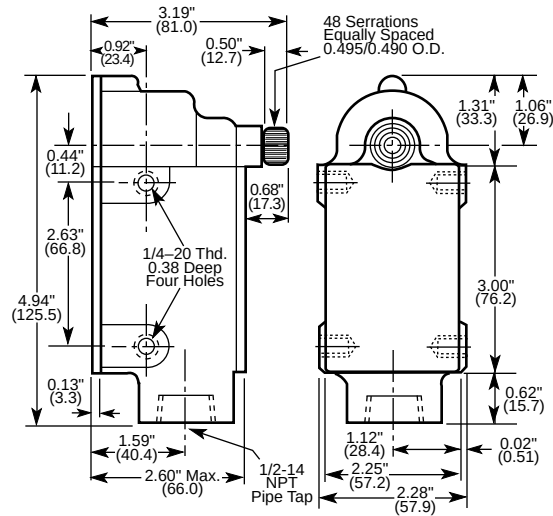


LONG MOUNTING PLATE

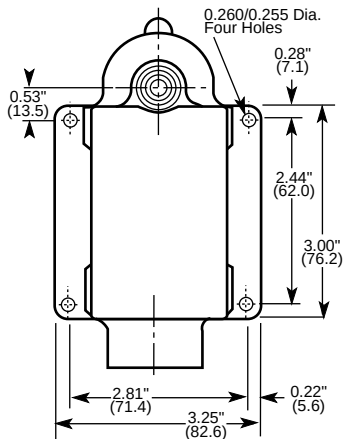


Dimensions: inches/(mm)

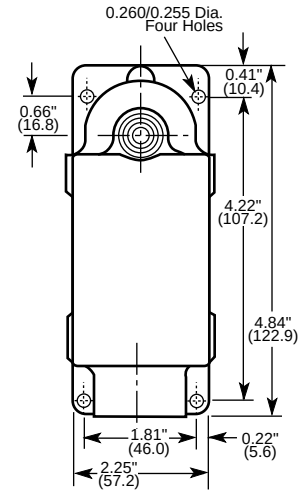
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

Common Switch Characteristics

SINGLE POLE, STANDARD ENVIRONMENT, BUTT CONTACTS		
	EA040, 060, 080	EA700
NEMA Enclosure Type	1, 4, 13	
Housing Material	Zinc	
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	2.3 lbs. approx.	3 lbs. approx.
Lever Adjustment	7°30' Increments thru 167°	7°30' Increments thru 360°
Contacts	Butt, Silver Alloy, Form Z	

*Some high temperature (+20°C to 180°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

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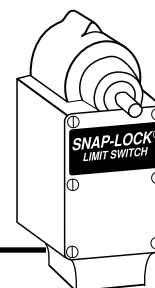
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For technical assistance, call 1-800-NAMTECH

Single Pole
Standard Environment

Limit Switches

Sliding
Contacts



Limit Switches

The versatility of the Snap-Lock mechanism is gained through the use of a series of uniquely designed cams. The cam and cam mechanism allow features such as bi-directional operation and generous overtravel. These features make the EA710 Series one of the most popular. Can be furnished with Standard, Wide or Long mounting.

EA710 Single Pole 1 N.O. - 1 N.C. / Sliding Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA710-10000	EA710-40000	EA710-70000	CW	18°	14°	30°	90°	-	-	15	A	1
EA710-10001	EA710-40001	EA710-70001	CCW	18°	14°	30°	90°	-	-	15	B	1
EA710-10100	EA710-40100	EA710-70100	CW/CCW	18°	14°	30°	90°	-	-	15	C	1
MAINTAINED CONTACTS AND LEVER POSITION												
EA710-16000	EA710-46000	EA710-76000	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		

Common Switch Characteristics

SINGLE POLE, STANDARD ENVIRONMENT, SLIDING CONTACTS	
NEMA Enclosure Type	1, 4, 13
Housing Material	Zinc
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	3 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Sliding, Silver Alloy, Form Z

Continuous Current Rating - Amperes

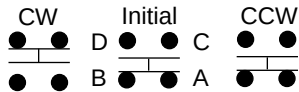
VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

75-100% Power Factor

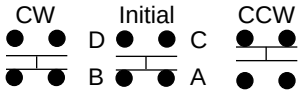
See Operating Levers Section

Contact Configurations

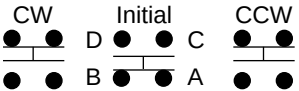
CIRCUIT A



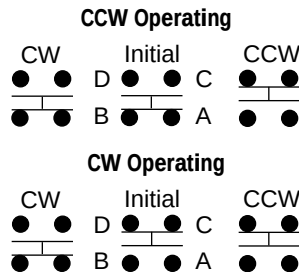
CIRCUIT B



CIRCUIT C

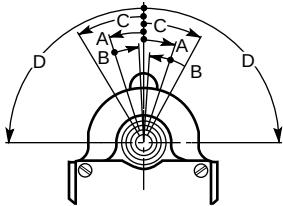


CIRCUIT D



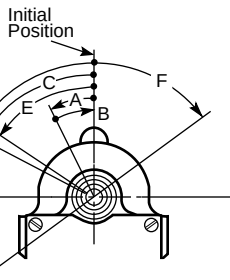
Operational Data Drawings

DRAWING #1

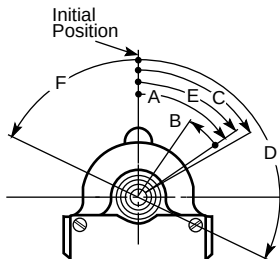


DRAWING #2

CCW Operating



CW Operating

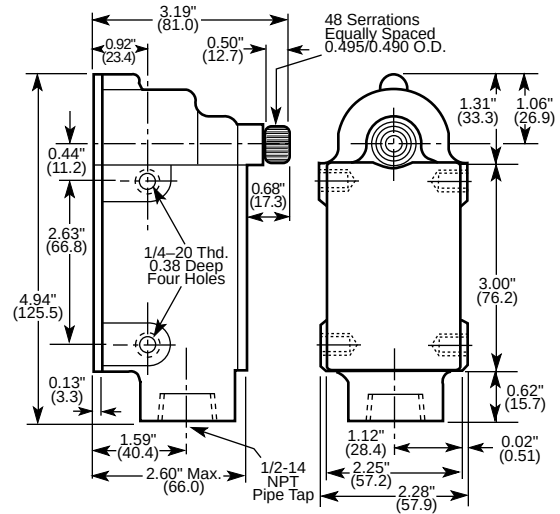


To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

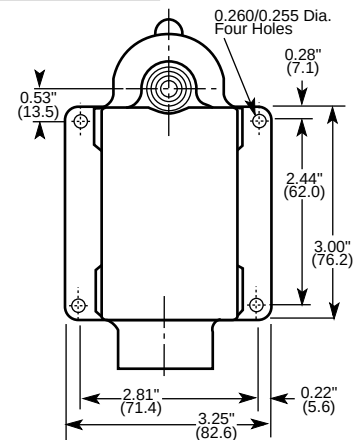
Dimensions and Mounting

EA710

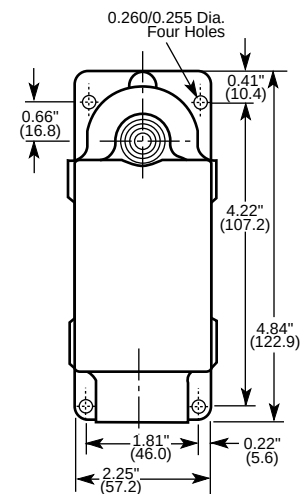
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

Limit Switches

NAMCO

Namco Controls Corporation

Mayfield Village, OH 44143

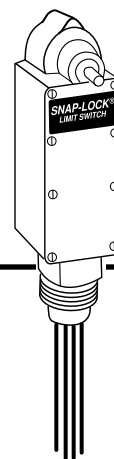
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For technical assistance, call 1-800-NAMTECH

Single Pole
Standard Environment
(Super Sealed)

Limit Switches

Butt
Contacts



Limit Switches

- Multiple Contacts — SPDT
- Epoxy Sealed
- Generous Overtravel
- Heavy Duty Cam Operated
- Flexibility of Motion CW, CCW and CW/CCW

Wide range of operation...modular construction...practical flexibility.

The Series EA770 Super Sealed Water & Oil Tight Snap-Lock Limit Switches are the “ultimate” of the industry. By incorporating the moisture seal with these switches, trouble caused by water, soluble oils or condensation has been eliminated. The scope of models is tailored to meet today’s rugged requirements...there is a model of size and type to meet virtually all demands.

Besides covering all functional requirements, this line is designed to meet practically every condition of installation. These Snap-Lock Switches provide reliable “machine-life” service and have the stamina to operate under unusual conditions...at the same time giving millions of consistently fast, accurate contacts.

Here are a few of the outstanding features built into the switch for maximum performance. Generous overtravel and by-pass, flexibility of motion, fast contact action, and Form Z contact arrangement.

Options Available

- Low temperature (-40°C to +90°C) components and lubricants.
- A variety of levers can be ordered from Namco Controls Series EL. NOTE: Levers must be ordered as separate item. See pages 294-301.
- Basic design permits mounting from either side or back. Style L or W mounting plates, for back mounting.

EA770 Single Pole 1 N.O. - 1 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA770-10000	EA770-40000	EA770-70000	CW	18°	14°	30°	90°	-	-	15	A
EA770-10001	EA770-40001	EA770-70001	CCW	18°	14°	30°	90°	-	-	15	B
EA770-10100	EA770-40100	EA770-70100	CW/CCW	18°	14°	30°	90°	-	-	15	C

See Operating Levers Section

Common Switch Characteristics

**SINGLE POLE, STANDARD (SUPER-SEALED) ENVIRONMENT,
BUTT CONTACTS**

NEMA Enclosure Type	1, 4, 6, 13
Housing Material	Zinc
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	3 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Butt, Silver Alloy, Form Z
Lead Wires**	4 lead wires, part no. shown is for 15 ft.

*Some low temperature (-40°C to +90°C) versions available. Contact factory.

**Available in increments of 5 ft. Contact factory.

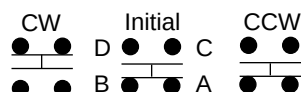
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

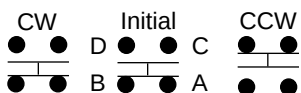
75-100% Power Factor

Contact Configurations

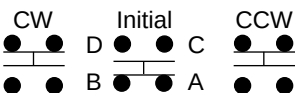
CIRCUIT A



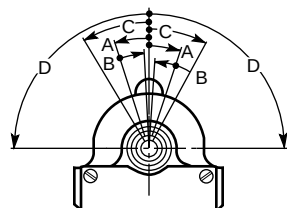
CIRCUIT B



CIRCUIT C



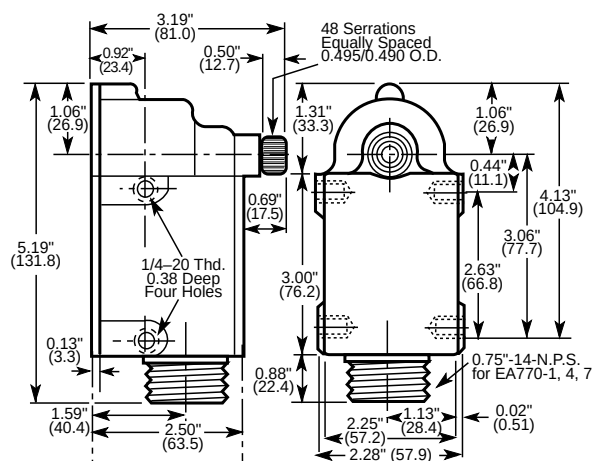
Operational Data Drawings



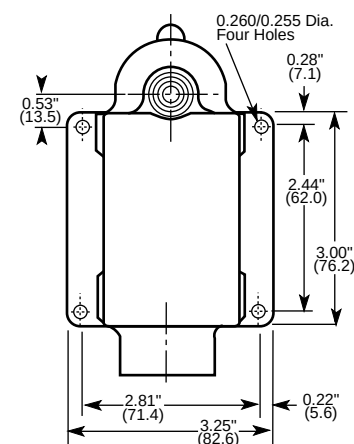
Dimensions and Mounting

EA770

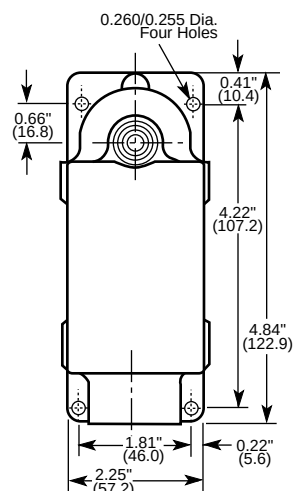
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Limit Switches

NAMCO

Namco Controls Corporation

Mayfield Village, OH 44143

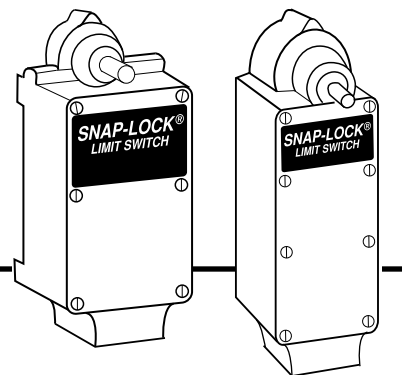
(440) 460-1360 • FAX (440) 460-3800 • namcocontrols.com

For technical assistance, call 1-800-NAMTECH

Double Pole
Standard Environment

Limit Switches

Butt
Contacts



Limit Switches

Standard (EA170)

Double pole, double break, double throw, heavy duty limit switch having mechanical travel of 10° to trip and with two normally open and two normally closed circuits. Can be furnished with standard, wide or long mounting.

Short Travel (EA170)

With mechanical travel of 6-1/2° required to trip, this heavy duty limit switch operates with two normally open

and two normally closed circuits. Can be furnished with standard, wide or long mounting.

Reverse Shaft (EA170)

Designed for applications where a reverse shaft is essential in operation. This series provides the same snap locking action of the other series of EA170 Snap-Lock Switches. Can be furnished with standard, wide or long mounting.

EA700 (Standard)

The versatility of the Snap-Lock mechanism is gained through the use of a series of uniquely designed cams. The cam and cam mechanism allow features such as bi-directional operation and generous overtravel. These features make the EA700 Series one of the most popular. Can be furnished with Standard, Wide or Long mounting.

EA170 Double Pole 2 N.O. - 2 N.C. / Butt Contacts / Rocker Type

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA170-11100	EA170-21100	EA170-31100	CW	10°	8°	13°	37°	-	-	23	A	1
EA170-12100	EA170-22100	EA170-32100	CCW	10°	8°	13°	37°	-	-	23	B	1
EA170-13100	EA170-23100	EA170-33100	Maintain	10°	8°	13°	37°	-	-	10	-	1
SHORT TRAVEL												
EA170-14100	EA170-24100	EA170-34100	CW	6° 30'	4°	7°	36°	-	-	32	A	1
EA170-15100	EA170-25100	EA170-35100	CCW	6° 30'	4°	7°	36°	-	-	32	B	1
EA170-16100	EA170-26100	EA170-36100	Maintain	6° 30'	4°	7°	36°	-	-	10.5	-	1
STANDARD TRAVEL - REVERSE SHAFT												
EA170-41100	EA170-51100	EA170-61100	CW	10°	8°	13°	37°	-	-	30	A	1
EA170-42100	EA170-52100	EA170-62100	CCW	10°	8°	13°	37°	-	-	30	B	1
EA170-43100	EA170-53100	EA170-63100	Maintain	10°	8°	13°	37°	-	-	23	-	1

EA700 Double Pole Standard 2 N.O. - 2 N.C. / Neutral Position 4 N.O. or 4 N.C. / Butt Contacts

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL / CAM ACTION												
EA700-20000	EA700-50000	EA700-80000	CW	18°	14°	30°	90°	-	-	27	C	1
EA700-20001	EA700-50001	EA700-80001	CCW	18°	14°	30°	90°	-	-	27	D	1
EA700-20100	EA700-50100	EA700-80100	CW/CCW	18°	14°	30°	90°	-	-	27	E	1
NEUTRAL POSITION / CAM ACTION - ALL CONTACTS OPEN												
EA700-25000	EA700-55000	EA700-85000	CW	11°	9°	45°	90°	-	-	19.5	F	1
			CCW	35°	13°	45°	90°	-	-	15		

See Operating Levers Section

EA700 Double Pole Standard

2 N.O. - 2 N.C. / Neutral Position 4 N.O. or 4 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
NEUTRAL POSITION - ALL CONTACTS OPEN												
EA700-25102	EA700-55102	EA700-85102	CW	31°	22°	45°	90°	-	-	16.5	G	1
			CCW	31°	12°	45°	90°	-	-	20.5		
NEUTRAL POSITION - ALL CONTACTS CLOSED												
EA700-25108	EA700-55108	EA700-85108	CW	31°	22°	45°	90°	-	-	16.5	H	1
			CCW	31°	12°	45°	90°	-	-	20.5		
MAINTAINED CONTACT - MAINTAINED CONTACTS & LEVER POSITION												
EA700-26000	EA700-56000	EA700-86000	CW	55°	22°	60°	116°	55°	64°	6	I	2
			CCW	25°	25°	60°	124°	54°	56°	12		
MAINTAINED CONTACT - MAINTAINED CONTACTS - LEVER RETURNED												
EA700-26700	EA700-56700	EA700-86700	CW	30°	26°	45°	90°	30°	-	15	I	3
			CCW	16°	30°	45°	90°	26°	-	16.5		

Contact Configurations

CIRCUIT A			CIRCUIT B		
CW	Initial	CCW	CW	Initial	CCW
● ● H ● ● G	● ● F ● ● E	● ● D ● ● C	● ● H ● ● G	● ● F ● ● E	● ● D ● ● C
● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A
CIRCUIT C			CIRCUIT D		
CW	Initial	CCW	CW	Initial	CCW
● ● H ● ● G	● ● F ● ● E	● ● D ● ● C	● ● H ● ● G	● ● F ● ● E	● ● D ● ● C
● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A
CIRCUIT E			CIRCUIT F		
CW	Initial	CCW	CW	Initial	CCW
● ● H ● ● G	● ● F ● ● E	● ● D ● ● C	● ● H ● ● G	● ● F ● ● E	● ● D ● ● C
● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A
CIRCUIT G			CIRCUIT H		
CW	Initial	CCW	CW	Initial	CCW
● ● H ● ● G	● ● F ● ● E	● ● D ● ● C	● ● H ● ● G	● ● F ● ● E	● ● D ● ● C
● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A
CIRCUIT I			CIRCUIT I		
CCW Operating			CW Operating		
CW	Initial	CCW	CW	Initial	CCW
● ● H ● ● G	● ● F ● ● E	● ● D ● ● C	● ● H ● ● G	● ● F ● ● E	● ● D ● ● C
● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A	● ● B ● ● A

Operational Data Drawings

DRAWING #1

DRAWING #2

CCW Operating **CW Operating**

To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

DRAWING #3

CCW Operating **CW Operating**

To change switch operation from CW operating to CCW operating, operate switch through angle E.

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Mayfield Village, OH 44143

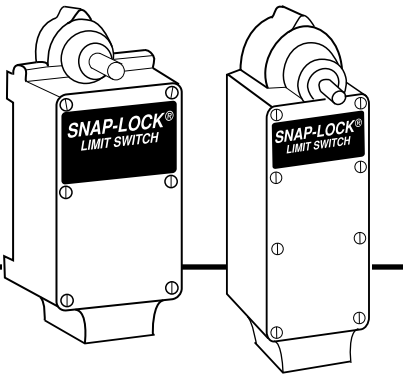
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For technical assistance, call 1-800-NAMTECH

Double Pole
Standard Environment

Limit Switches

Butt
Contacts



Limit Switches

Common Switch Characteristics

DOUBLE POLE, STANDARD ENVIRONMENT, BUTT CONTACTS		
	EA170	EA700
NEMA Enclosure Type	1, 4, 13	
Housing Material	Zinc/Al.	Zinc
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	3.5 lbs. approx.	4 lbs. approx.
Lever Adjustment	EA170 Std. Shaft: 7°30' Increments thru 167° EA170 Rev. Shaft: 7°30' Increments thru 360°	7°30' Increments thru 360°
Contacts	Butt, Silver Alloy, Form Z	

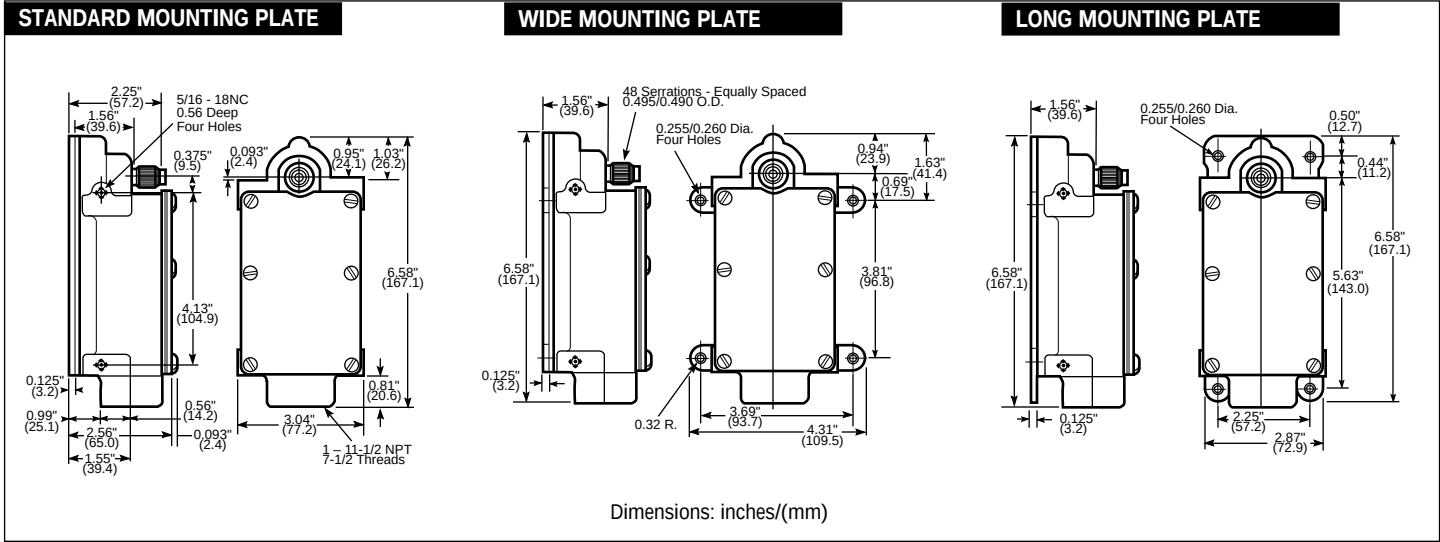
*Some high temperature (+20°C to 180°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

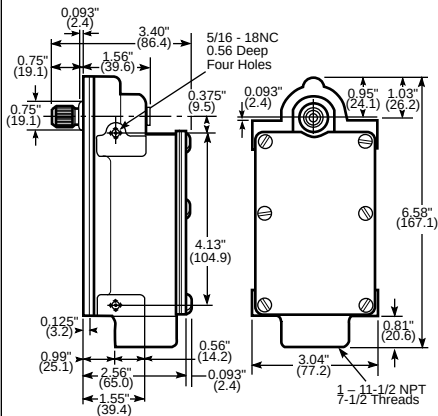
75-100% Power Factor

EA170 (Standard) Series Drawings

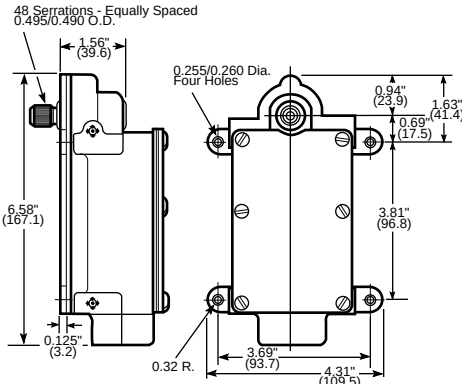


EA170 (Reverse Shaft) Series Drawings

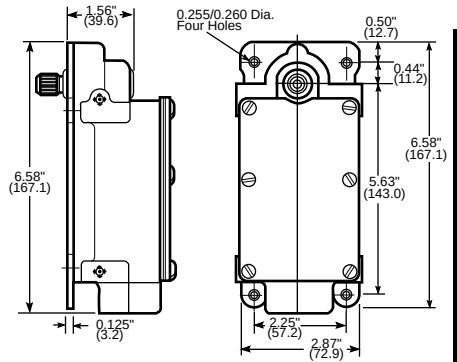
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE

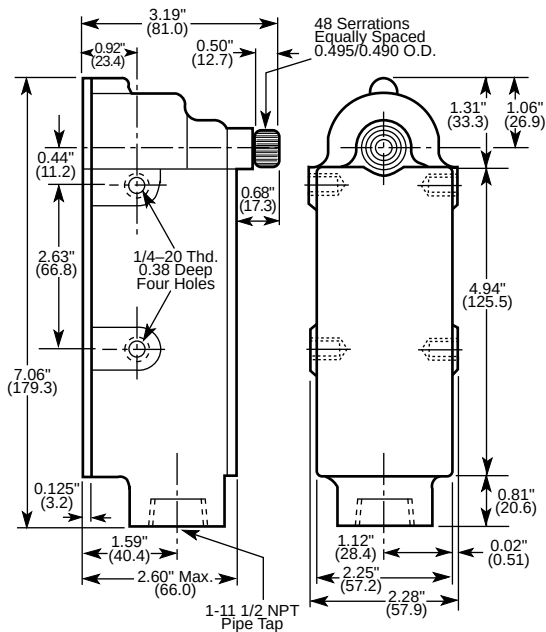


Dimensions: inches/(mm)

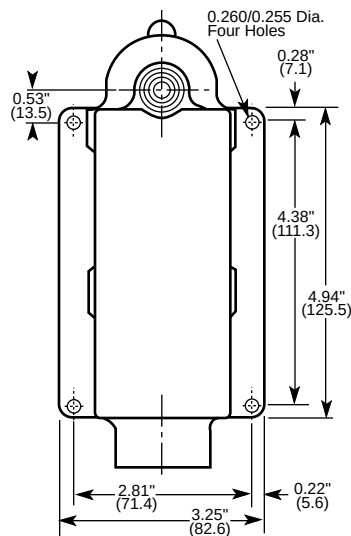
Limit Switches

EA700 Series Drawings

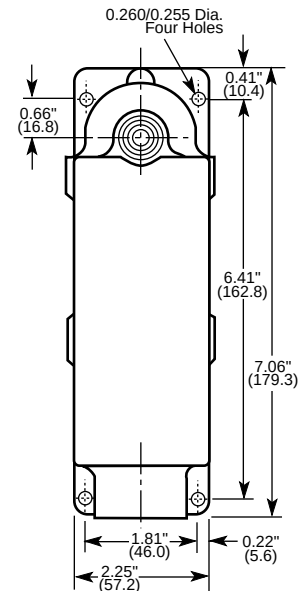
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

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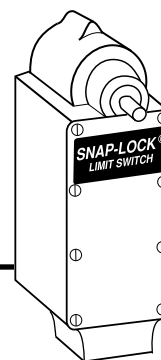
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For technical assistance, call 1-800-NAMTECH

Double Pole
Standard Environment

Limit Switches

Sliding
Contacts



Limit Switches

The versatility of the Snap-Lock mechanism is gained through the use of a series of uniquely designed cams. The cam and cam mechanism allow features such as bi-directional operation and generous overtravel. These features make the EA710 Series one of the most popular. Can be furnished with Standard, Wide or Long mounting.

EA710 Double Pole 2 N.O. - 2 N.C. / Sliding Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA710-20000	EA710-50000	EA710-80000	CW	18°	14°	30°	90°	-	-	20	A	1
EA710-20001	EA710-50001	EA710-80001	CCW	18°	14°	30°	90°	-	-	20	B	1
EA710-20100	EA710-50100	EA710-80100	CW/CCW	18°	14°	30°	90°	-	-	20	C	1
MAINTAINED CONTACT AND LEVER POSITION												
EA710-26000	EA710-56000	EA710-86000	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		

Common Switch Characteristics

DOUBLE POLE, STANDARD ENVIRONMENT, SLIDING CONTACTS	
NEMA Enclosure Type	1, 4, 13
Housing Material	Zinc
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	4 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Sliding, Silver Alloy, Form Z

*Some high temperature (0 to 150°C) versions available. Contact factory.

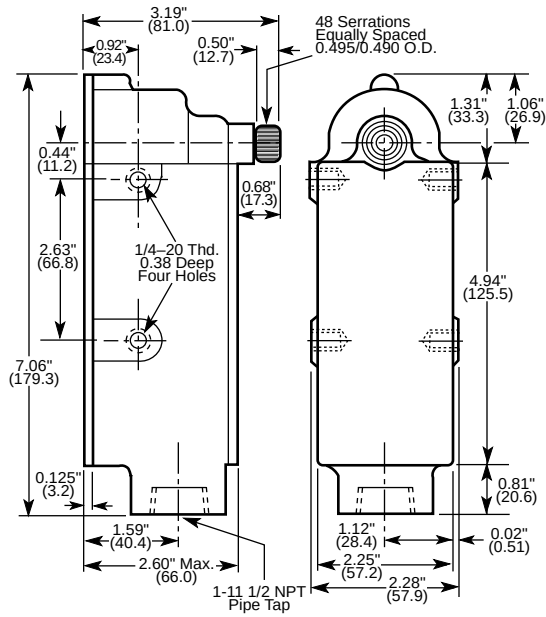
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

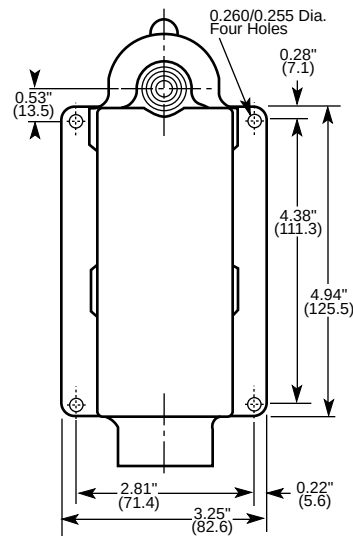
75-100% Power Factor

See Operating Levers Section

STANDARD MOUNTING PLATE

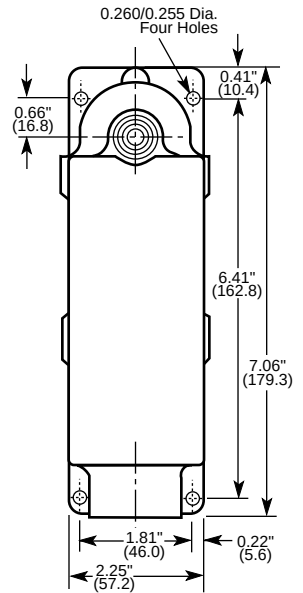


WIDE MOUNTING PLATE



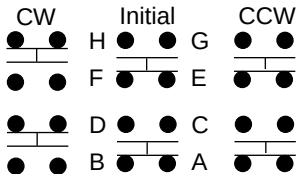
Dimensions: inches/(mm)

LONG MOUNTING PLATE

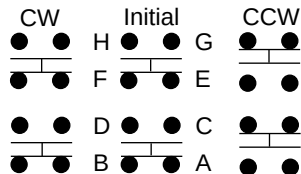


Contact Configurations

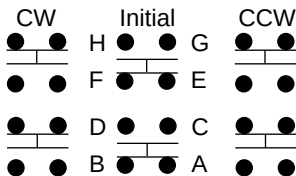
CIRCUIT A



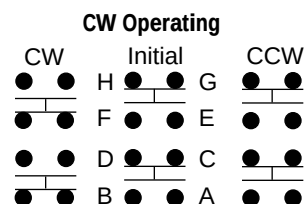
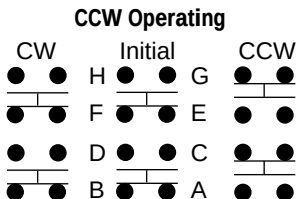
CIRCUIT B



CIRCUIT C

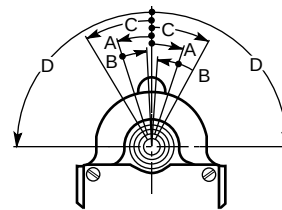


CIRCUIT D

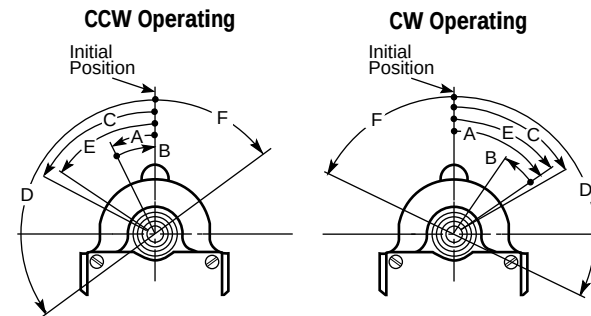


Operational Data Drawings

DRAWING #1



DRAWING #2



To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

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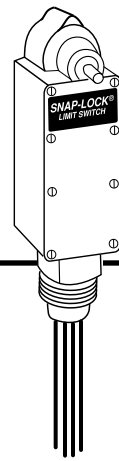
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For technical assistance, call 1-800-NAMTECH

Double Pole
Standard Environment
(Super Sealed)

Limit Switches

Butt
Contacts



Limit Switches

- Multiple Contacts - DPDT
- Epoxy Sealed
- Generous Overtravel
- Heavy Duty Cam Operated
- Flexibility of Motion CW & CCW

Wide Range of Operation...Modular Construction...Practical Flexibility

The Series EA770 Super Sealed Water & Oil Tight Snap-Lock Limit Switches are the "ultimate" of the industry. By incorporating the moisture seal with these switches, trouble caused by water, soluble oils or condensate interfering with switching mechanism

has been eliminated. The scope of models is tailored to meet today's rugged requirements...there is a model of size and type to meet virtually all demands.

Besides covering all functional requirements this line is designed to meet practically every condition of installation. These Snap-Lock Switches provide reliable "machine-life" service and have the stamina to operate under unusual conditions...at the same time giving millions of consistently fast, accurate contacts.

Here are a few of the outstanding features built into the switch for maximum performance. Generous overtravel and by-pass; Flexibility of motion, clockwise and counterclockwise; Light operating torque; Fast contact action; and Form Z contact arrangement.

Options Available

- Low temperature (-40°C to + 90°C) components and lubricants.
- A variety of levers can be ordered from Namco Controls Series EL. NOTE: Levers must be ordered as separate items.
- Basic design permits mounting from either side or back. Style L or W mounting plates, for back mounting, available at no extra cost.

EA770 Double Pole 2 N.O. - 2 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA770-20000	EA770-50000	EA770-80000	CW	18°	14°	30°	90°	-	-	27	A
EA770-20001	EA770-50001	EA770-80001	CCW	18°	14°	30°	90°	-	-	27	B
EA770-20100	EA770-50100	EA770-80100	CW/CCW	18°	14°	30°	90°	-	-	27	C

Common Switch Characteristics

DOUBLE POLE, STANDARD (SUPER SEALED) ENVIRONMENT, BUTT CONTACTS	
NEMA Enclosure Type	1, 4, 6, 13
Housing Material	Zinc
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	4 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Butt, Silver Alloy, Form Z
Lead Wires**	8 lead wires, part no. shown is for 15 ft.

*Some low temperature (-40 to +90°C) versions available. Contact factory.

**Available in increments of 5 ft. Contact factory.

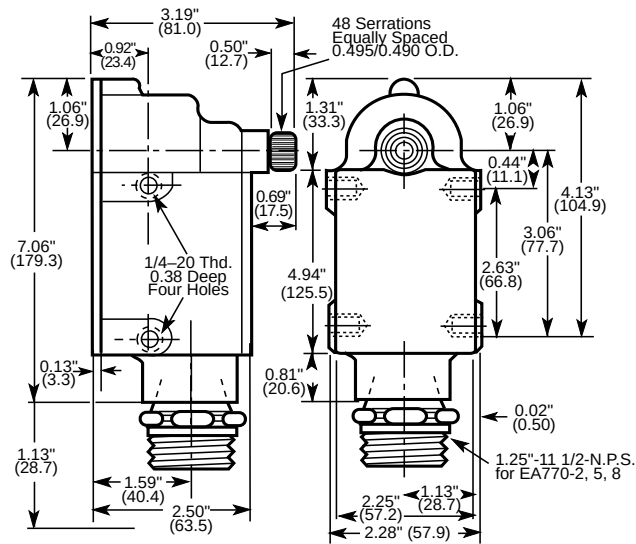
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

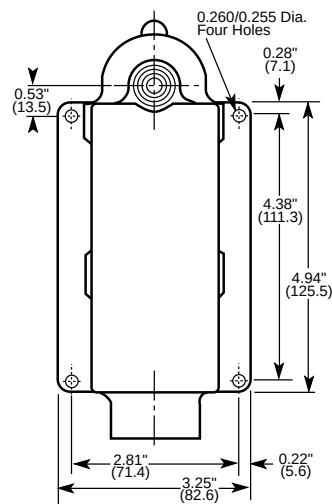
75-100% Power Factor

See Operating Levers Section

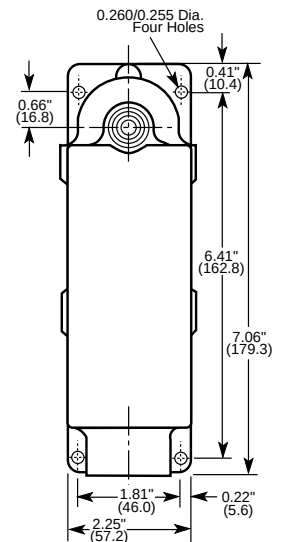
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



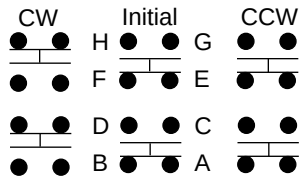
LONG MOUNTING PLATE



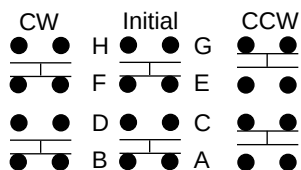
Limit Switches

Contact Configurations

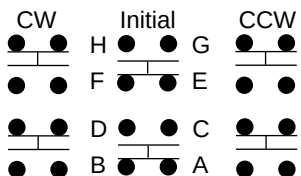
CIRCUIT A



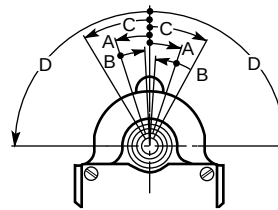
CIRCUIT B



CIRCUIT C



Operational Data Drawing



NAMCO

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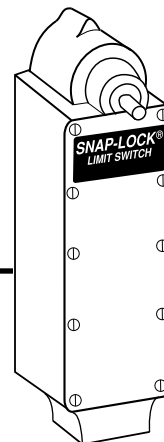
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For technical assistance, call 1-800-NAMTECH

Triple Pole
Standard Environment

Limit Switches

Butt
Contacts



Limit Switches

The versatility of the Snap-Lock mechanism is gained through the use of a series of uniquely designed cams. The cam and cam mechanism allow features such as bi-directional operation and generous overtravel. These features make the EA700 Series one of the most popular. Can be furnished with Standard, Wide or Long mounting.

EA700 Triple Pole 3 N.O. - 3 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA700-30000	EA700-60000	EA700-90000	CW	18°	14°	30°	90°	-	-	33	A
EA700-30001	EA700-60001	EA700-90001	CCW	18°	14°	30°	90°	-	-	33	B
EA700-30100	EA700-60100	EA700-90100	CW/CCW	18°	14°	30°	90°	-	-	33	C

Common Switch Characteristics

TRIPLE POLE, STANDARD ENVIRONMENT, BUTT CONTACTS	
NEMA Enclosure Type	1, 4, 13
Housing Material	Zinc
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	5 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Butt, Silver Alloy, Form Z

*Some high temperature (+20°C to 180°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

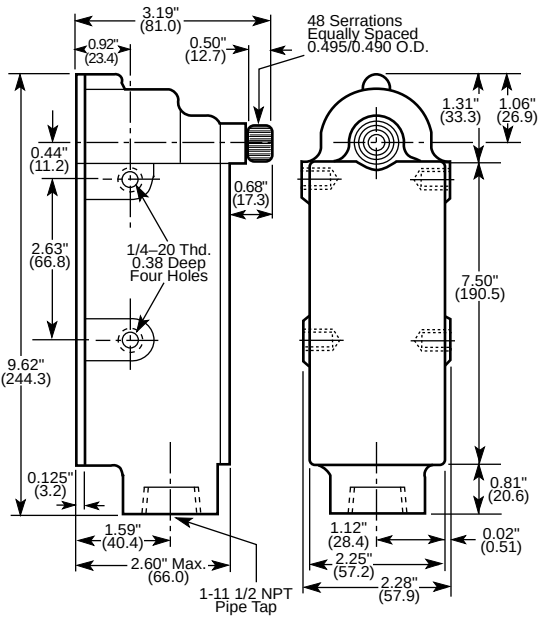
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

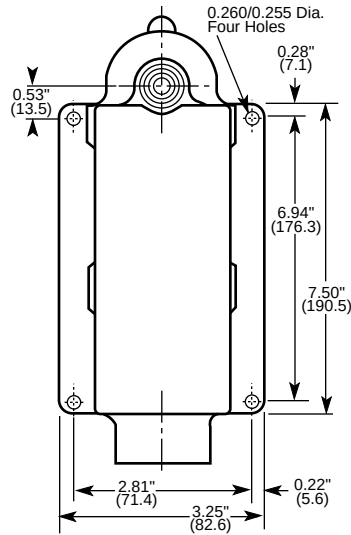
75-100% Power Factor

See Operating Levers Section

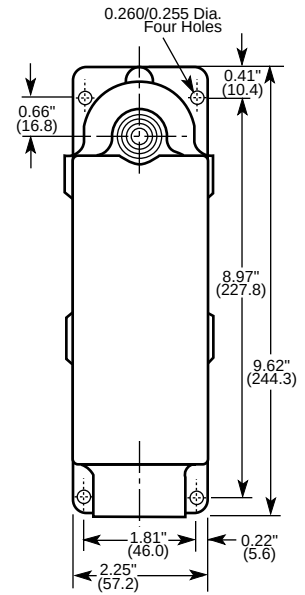
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE

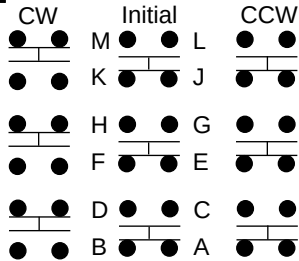


Dimensions: inches/(mm)

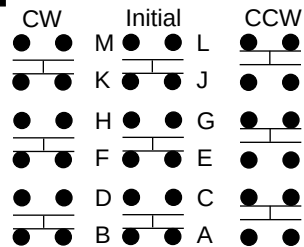
Limit Switches

Contact Configurations

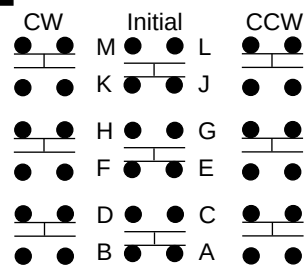
CIRCUIT A



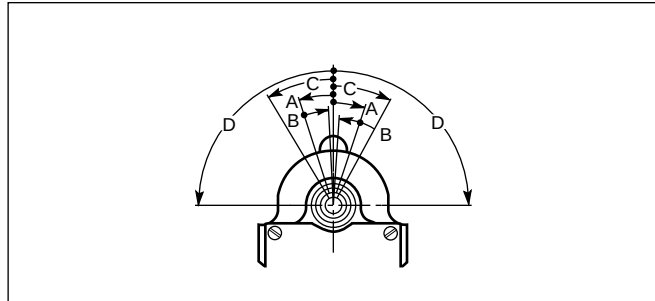
CIRCUIT B



CIRCUIT C



Operational Data Drawings



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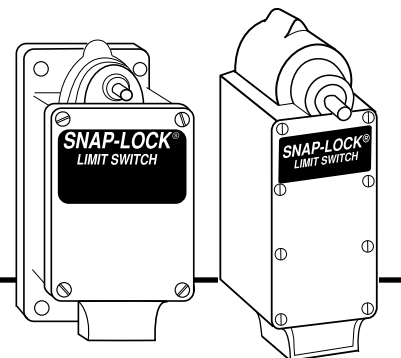
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For technical assistance, call 1-800-NAMTECH

Single Pole
Mild Environment/
Navy Marine

Limit Switches

Butt/ Sliding Contacts



Limit Switches

EA140 — Standard

Single pole, double throw, double break limit switch having mechanical travel of 14.83° to trip with one normally open and one normally closed circuit.

EA130 — Short Travel

Single pole, double throw, double break limit switch having mechanical travel of 5.8° to trip with one normally open and one normally closed circuit.

EA130 — Neutral Position

Single pole, double throw, double break limit switch having mechanical travel of 7° to trip with normally open contacts.

EA730

Construction — The aluminum housing with epoxy paint and high quality stainless steel shaft provide a high degree of corrosion resistance. Sealing against leakage is achieved through the use of high quality gaskets on machined surfaces and “O” ring protection, plus close tolerance between the shaft and bushing.

Durability — All internal components are of high grade stainless steel or copper alloy, chrome plated when required, to protect against bearing surface wear and to provide millions of operations.

Contacts — The EA730 switches are available with sliding contact arrangement 1 N.O.-1 N.C. Operation direction available CW, CCW or CW/CCW.

Levers — A variety of corrosion resistant levers are available to meet specific actuating requirements.

EA130, EA140 & EA730 Single Pole 1 N.O. - 1 N.C. Butt / Sliding Contacts

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL / ROCKER TYPE / BUTT CONTACTS											
EA140-12200	EA140-22200	—	CW	14.83°	12.3°	16.5°	41.5°	—	—	15	A
EA140-11200	EA140-21200	EA140-31200	CCW	14.83°	12.3°	16.5°	41.5°	—	—	15	B
—	EA140-23200	—	Maintain	14.83°	12.3°	16.5°	41.5°	—	—	5.5	-
STANDARD TRAVEL / ROCKER TYPE / BUTT CONTACTS											
—	—	EA140-32300	CW	14.83°	12.3°	16.5°	41.5°	—	—	15	A
EA140-11300	—	—	CCW	14.83°	12.3°	16.5°	41.5°	—	—	15	B
SHORT TRAVEL / ROCKER TYPE / BUTT CONTACTS											
EA130-11202	EA130-21202	EA130-31202	CW	5.8°	4°	8°	26°	—	—	22	A
EA130-12202	EA130-22202	—	CCW	5.8°	4°	8°	26°	—	—	22	B
SHORT TRAVEL / ROCKER TYPE / HI - TEMP / BUTT CONTACTS											
—	—	EA130-31302	CW	5.8°	4°	8°	26°	—	—	22	A
NEUTRAL POSITION / ROCKER TYPE / BUTT CONTACTS											
EA130-14200	EA130-24200	EA130-34200	Neutral	7°	6°	7.5°	26°	—	—	22	C
STANDARD TRAVEL / CAM ACTION / SLIDING CONTACTS											
EA730-10000	EA730-40000	EA730-70000	CW	18°	14°	30°	90°	—	—	15	D
EA730-10001	EA730-40001	EA730-70001	CCW	18°	14°	30°	90°	—	—	15	E
EA730-10100	EA730-40100	EA730-70100	CW/CCW	18°	14°	30°	90°	—	—	15	F

See Operating Levers Section

EA130/EA140/EA730

Common Switch Characteristics

SINGLE POLE, MILD ENVIRONMENT/NAVY MARINE, BUTT/SLIDING CONTACTS		
	EA130/140	EA730
NEMA Enclosure Type	1, 2, 3, 4, 5, 6	1, 4, 6, 6P, 13
Housing Material	Zinc	Aluminum
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	2.3 lbs. approx.	3 lbs. approx.
Lever Adjustment	7°30' Increments thru 167°	7°30' Increments thru 360°
Contacts	Butt, Silver Alloy, Form Z	Sliding, Silver Alloy Alloy, Form Z
Special Switch Features (EA730 Series)	MIL-C-2212F Watertight (3 ft. for 60 min.) and (15 ft. for 30 min.) per MIL-STD-108E Vibration Requirements per MIL-STD-167B, type 1 High Shock per MIL-S-901, grade A, Class 1, type A	

*Some high temperature (0°C to 150°C) versions available (EA130/140).
See chart.

EA130/140

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

EA730

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

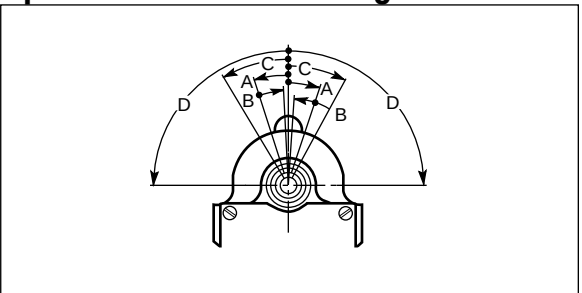
75-100% Power Factor

Limit Switches

Contact Configurations

CIRCUIT A	
CIRCUIT B	
CIRCUIT C	
CIRCUIT D	
CIRCUIT E	
CIRCUIT F	

Operational Data Drawings



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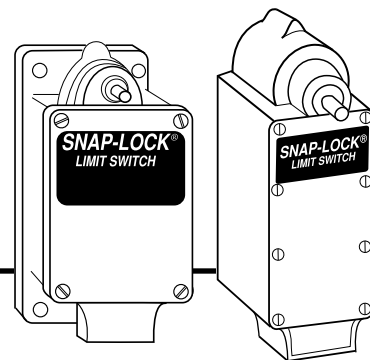
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Single Pole
Mild Environment/
Navy Marine

Limit Switches

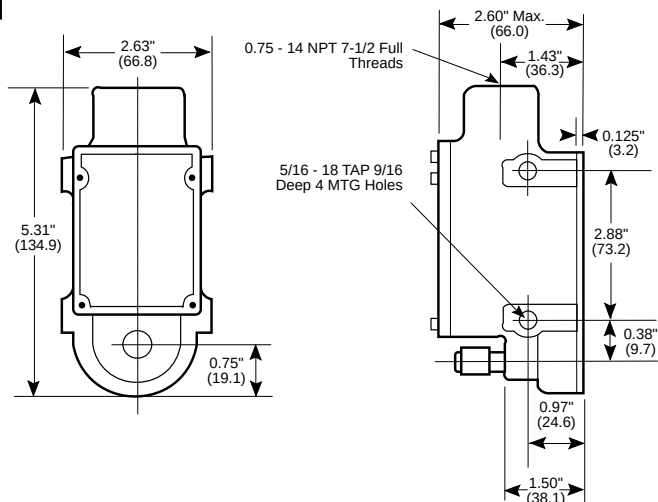
Butt/
Sliding
Contacts



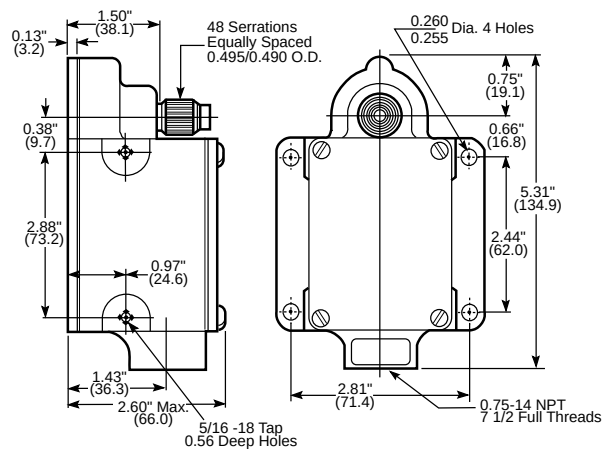
Limit Switches

EA130/140 Series Drawings

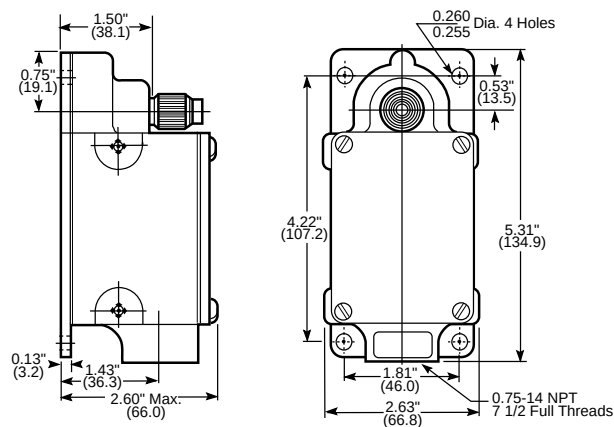
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE

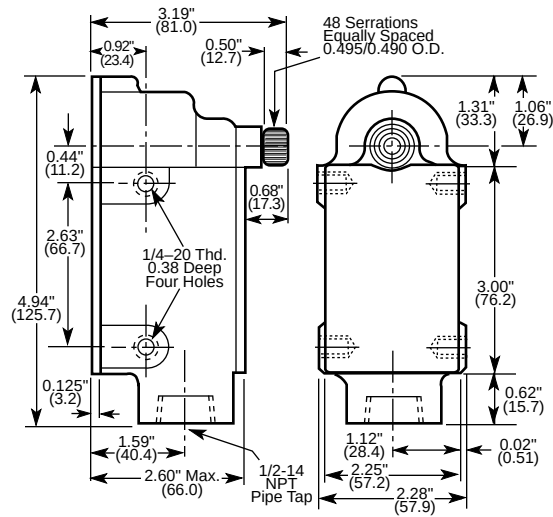


LONG MOUNTING PLATE

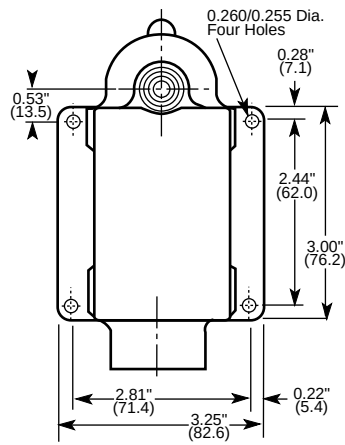


Dimensions: inches/(mm)

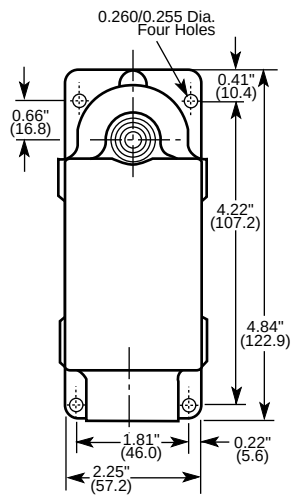
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

Limit Switches

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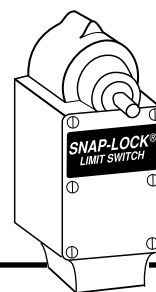
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Single Pole
Harsh Environment/
Navy Marine

Limit Switches

Butt/
Sliding
Contacts



Limit Switches

NAVY meets MIL-C-2212F

Construction — Completely fabricated from non-corrosive materials, its bronze housing and high quality stainless steel shaft insure against external damage to the switch from salt spray corrosive elements. Sealing against leakage is achieved through the use of high quality gaskets on machined surfaces and “O” ring protection, plus close tolerance between the shaft and bushing.

Durability — All internal components are of high grade stainless steel or copper alloy, chrome plated when required, to protect against bearing surface wear and to provide millions of operations.

Both the EA780 and EA790 series switches have heavy duty electrical contacts. The EA780 switches have sliding, double break type contacts built to meet the high shock requirements outlined in MIL-S-901.

EA790 switches have heavy duty, double break butt type contacts.

Contacts — EA780 switches contain sliding contact arrangement which wipe clean with each operation.

EA790 switches contain butt style contacts.

Both series available with operation direction CW, CCW or CW/CCW.

Levers — A variety of corrosion resistant levers are available to meet specific actuating requirements.

NOTE: Levers must be ordered as separate items. See Operating Levers Section.

EA780 Single Pole 1 N.O. - 1 N.C. / Sliding Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA780-10000	EA780-40000	EA780-70000	CW	18°	14°	30°	90°	-	-	15	A	1
EA780-10001	EA780-40001	EA780-70001	CCW	18°	14°	30°	90°	-	-	15	B	1
EA780-10100	EA780-40100	EA780-70100	CW/CCW	18°	14°	30°	90°	-	-	15	C	1
MAINTAINED CONTACTS & LEVER POSITION												
EA780-16000	EA780-46000	EA780-76000	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		
MAINTAINED CONTACT-LEVER RETURNED												
EA780-16700	EA780-46700	EA780-76700	CW	30°	26°	45°	90°	30°	-	12	D	3
			CCW	16°	30°	45°	90°	26°	-	13.5		

See Operating Levers Section

EA780/EA790

EA790 Single Pole 1 N.O. - 1 N.C. / Butt Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA790-10000	EA790-40000	EA790-70000	CW	18°	14°	30°	90°	-	-	15	A	1
EA790-10001	EA790-40001	EA790-70001	CCW	18°	14°	30°	90°	-	-	15	B	1
EA790-10100	EA790-40100	EA790-70100	CW/CCW	18°	14°	30°	90°	-	-	15	C	1
MAINTAINED CONTACT & LEVER POSITION												
EA790-16000	EA790-46000	EA790-76000	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		
MAINTAINED CONTACT-LEVER RETURNED												
EA790-16700	EA790-46700	EA790-76700	CW	30°	26°	45°	90°	30°	-	12	D	3
			CCW	16°	30°	45°	90°	26°	-	13.5		
SHORT TRAVEL												
EA790-10900	EA790-40900	EA790-70900	CW/CCW	13°	10°	30°	90°	-	-	15	C	1
NEUTRAL POSITION - ALL CONTACTS OPEN												
EA790-15700	EA790-45700	EA790-75700	CW	31°	12°	45°	90°	-	-	15	E	1
			CCW	31°	22°	45°	90°	-	-	19.5		
NEUTRAL POSITION - ALL CONTACTS CLOSED												
EA790-15800	EA790-45800	EA790-75800	CW	31°	12°	45°	90°	-	-	15	F	1
			CCW	31°	22°	45°	90°	-	-	15		

Limit Switches

Common Switch Characteristics

SINGLE POLE, HARSH ENVIRONMENT NAVY MARINE, BUTT/SLIDING CONTACTS		
	EA780	EA790
NEMA Enclosure Type	1, 4, 4X, 6, 6P, 13	
Housing Material	Bronze	
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	4 lbs. approx.	
Lever Adjustment	7°30' Increments thru 360°	
Contacts	Sliding, Silver Alloy Form Z	Butt, Silver Alloy Form Z
Special Switch Features	MIL-C-22122F Watertight (3 ft. for 60 min.) and Submersible (15ft. for 30 min.) per MIL STD-108E Vibration requirements per MIL-STD-167B, Type 1 High Shock per MIL-S-901, grade A, Class 1, type A	

*Some high temperature (0°C to 150°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

EA780

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

75-100% Power Factor

EA790

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

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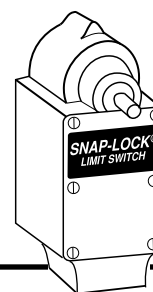
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Single Pole
Harsh Environment/
Navy Marine

Limit Switches

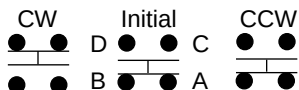
Butt/
Sliding
Contacts



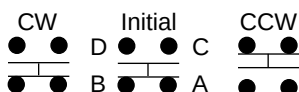
Limit Switches

Contact Configurations

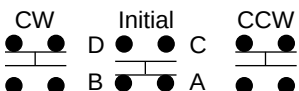
CIRCUIT A



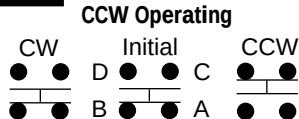
CIRCUIT B



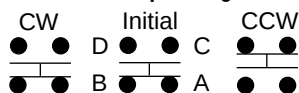
CIRCUIT C



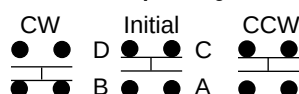
CIRCUIT D



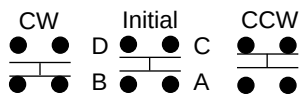
CCW Operating



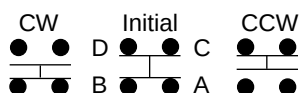
CW Operating



CIRCUIT E

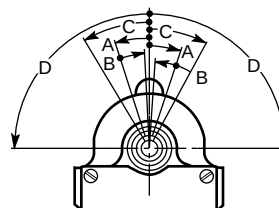


CIRCUIT F



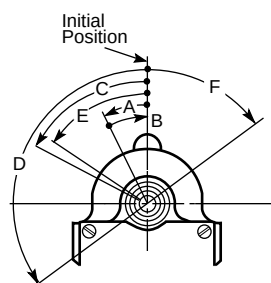
Operational Data Drawings

DRAWING #1

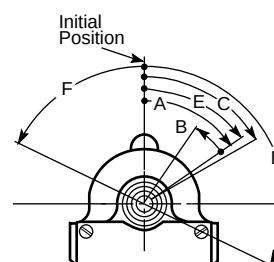


DRAWING #2

CCW Operating



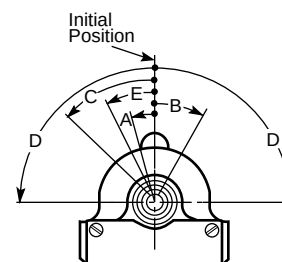
CW Operating



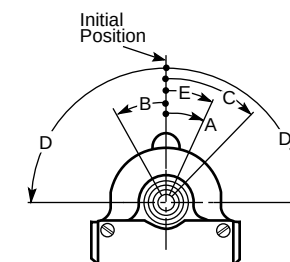
To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

DRAWING #3

CCW Operating

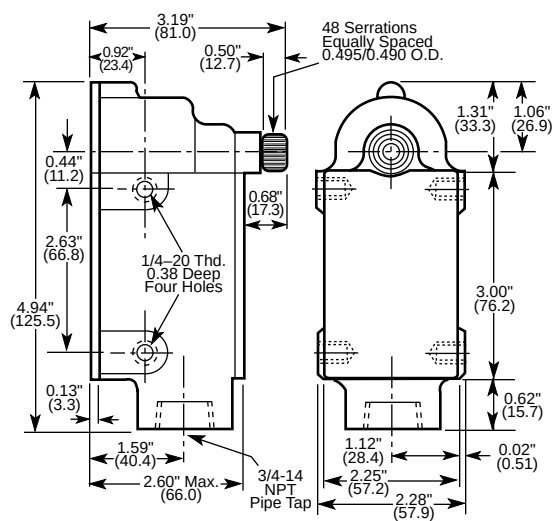


CW Operating

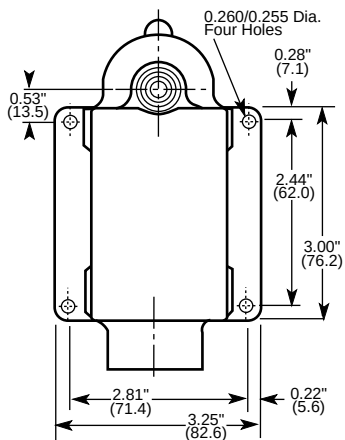


To change switch operation from CW operating to CCW operating, operate switch through angle E.

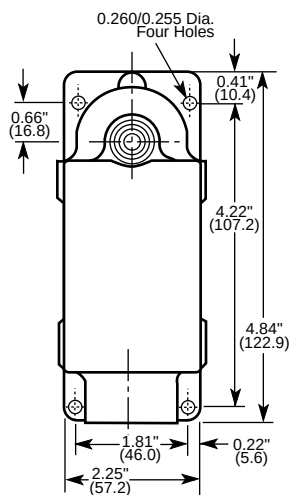
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

Limit Switches

NAMCO

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Mayfield Village, OH 44143

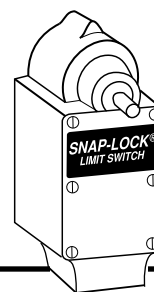
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For technical assistance, call 1-800-NAMTECH

Double Pole
Mild Environment/
Navy Marine

Limit Switches

Sliding Contacts



Limit Switches

Construction

The aluminum housing with epoxy paint and high quality stainless steel shaft provides a high degree of corrosion resistance. Sealing against leakage is achieved through the use of high quality gaskets on machined surfaces and "O" ring protection, plus close tolerance between the shaft and bushing.

Durability

All internal components are of high grade stainless steel or copper alloy, chrome plated when required, to protect against bearing surface wear and to provide millions of operations.

Contacts

The EA730 switches are available with sliding contact arrangement 2 N.O.- 2 N.C. Operation direction available in CW, CCW or CW/CCW.

Levers

A variety of corrosion resistant levers is available to meet specific actuating requirements.

EA730 Double Pole 2 N.O. - 2 N.C. / Sliding Contacts

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL / CAM ACTION											
EA730-20000	EA730-50000	EA730-80000	CW	16°	14°	30°	90°	-	-	20	A
EA730-20001	EA730-50001	EA730-80001	CCW	16°	14°	30°	90°	-	-	20	B
EA730-20100	EA730-50100	EA730-80100	CW/CCW	16°	14°	30°	90°	-	-	20	C

Common Switch Characteristics

DOUBLE POLE, MILD ENVIRONMENT/NAVY MARINE, SLIDING CONTACTS	
NEMA Enclosure Type	1, 4, 6, 6P, 13
Housing Material	Aluminum
Ambient Temperature Range*	-20°C to +90°C
Shipping Weight	4 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Sliding, Silver Alloy, Form Z
Special Switch Features	MIL-C-2212F Watertight (3 ft. for 60 min.) & submersible (15 ft. for 30 min.) per MIL-STD-108E Vibration requirements per MIL-STD-167B, type 1 High shock per MIL-S-901, grade A, class 1, type A

*Some high temperature (+20°C to 180°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

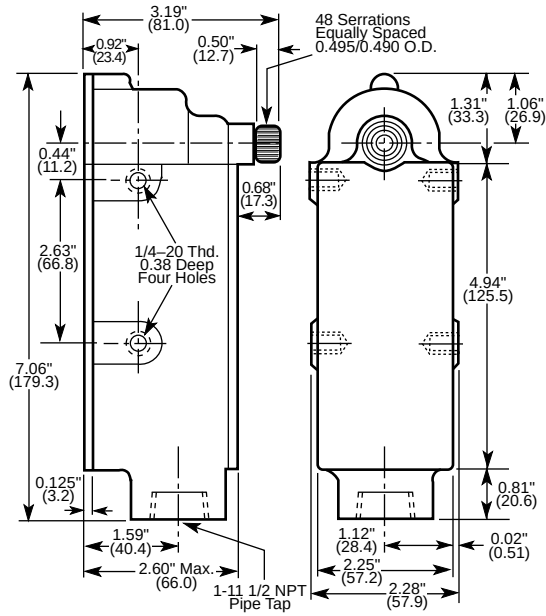
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

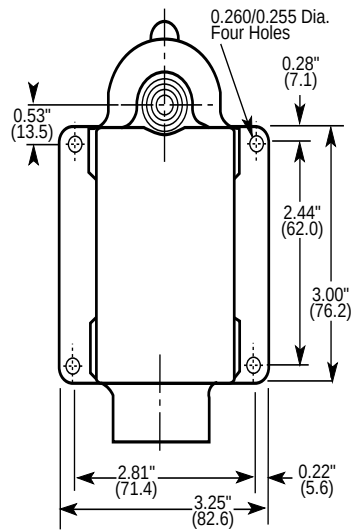
75-100% Power Factor

See Operating Levers Section

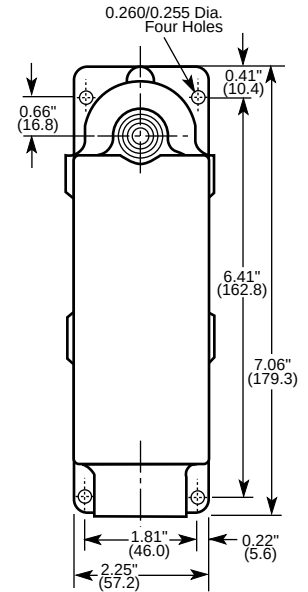
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE

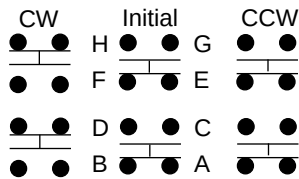


LONG MOUNTING PLATE

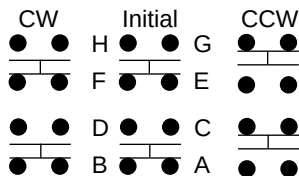


Contact Configurations

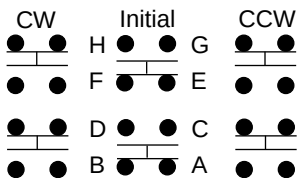
CIRCUIT A



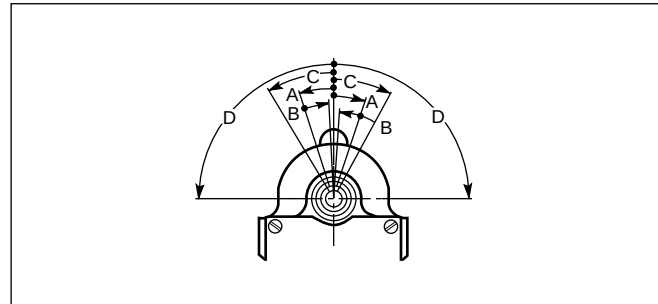
CIRCUIT B



CIRCUIT C



Operational Data Drawings



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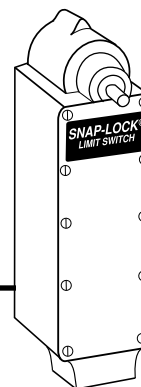
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Double Pole
Harsh Environment/
Navy Marine

Limit Switches

Butt/
Sliding
Contacts



Limit Switches

NAVY meets MIL-C-2212F Current

Construction - Completely fabricated from non-corrosive materials, its bronze housing and high quality stainless steel shaft insure against external damage to the switch from salt spray corrosive elements. Sealing against leakage is achieved through the use of high quality gaskets on machined surfaces and "O" ring protection, plus close tolerance between the shaft and bushing.

Durability - All internal components are of high grade stainless steel or copper alloy, chrome plated when required, to protect against bearing surface wear and to provide millions of operations.

Both the EA780 and EA790 series switches have heavy duty electrical contacts. The EA780 switches have sliding, double-break type contacts built to meet the high shock requirements outlined in MIL-S-901.

EA790 switches have heavy duty, double-break, butt type contacts.

Contacts - EA780 switches contain sliding contact arrangements which wipe clean with each operation.

EA790 switches contain butt-style contacts.

Both series available with operation direction CW, CCW or CW/CCW.

Levers - A variety of corrosion resistant levers are available to meet specific actuating requirements.

NOTE: Levers must be ordered as separate items. See Operating Levers Section.

EA780 Double Pole 2 N.O. - 2 N.C. / Sliding Contacts / Cam Action

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA780-20000	EA780-50000	EA780-80000	CW	18°	14°	30°	90°	-	-	27	A	1
EA780-20001	EA780-50001	EA780-80001	CCW	18°	14°	30°	90°	-	-	27	B	1
EA780-20100	EA780-50100	EA780-80100	CW/CCW	18°	14°	30°	90°	-	-	27	C	1
MAINTAINED CONTACT & LEVER POSITION												
—	EA780-56000	—	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		
MAINTAINED CONTACT-LEVER RETURNED												
EA780-26700	EA780-56700	EA780-86700	CW	30°	26°	45°	90°	30°	-	15	D	3
			CCW	16°	30°	45°	90°	26°	-	16.5		

See Operating Levers Section

EA790 Double Pole 2 N.O. - 2 N.C. / Butt Contacts / Cam Action

EA780/EA790

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.	Data Drawing
STANDARD TRAVEL												
EA790-20000	EA790-50000	EA790-80000	CW	18°	14°	30°	90°	-	-	27	A	1
EA790-20001	EA790-50001	EA790-80001	CCW	18°	14°	30°	90°	-	-	27	B	1
EA790-20100	EA790-50100	EA790-80100	CW/CCW	18°	14°	30°	90°	-	-	27	C	1
MAINTAINED CONTACT & LEVER POSITION												
EA790-26000	EA790-56000	EA790-86000	CW	55°	22°	60°	116°	55°	64°	6	D	2
			CCW	25°	25°	60°	124°	54°	56°	9		
MAINTAINED CONTACT-LEVER RETURNED												
EA790-26700	EA790-56700	EA790-86700	CW	30°	26°	45°	90°	30°	-	15	D	3
			CCW	16°	30°	45°	90°	26°	-	16.5		
SHORT TRAVEL												
EA790-20900	EA790-50900	EA790-80900	CW/CCW	13°	10°	30°	90°	-	-	27	C	1
NEUTRAL POSITION ALL CONTACTS OPEN												
EA790-25102	EA790-55102	EA790-85102	CW	31°	12°	45°	90°	-	-	16.5	E	1
			CCW	31°	22°	45°	90°	-	-	16.5		
NEUTRAL POSITION ALL CONTACTS CLOSED												
EA790-25104	EA790-55104	EA790-85104	CW	31°	12°	45°	90°	-	-	16.5	F	1
			CCW	31°	22°	45°	90°	-	-	16.5		

Limit Switches

Common Switch Characteristics

DOUBLE POLE, HARSH ENVIRONMENT/NAVY MARINE, BUTT/SLIDING CONTACTS		
	EA780	EA790
NEMA Enclosure Type	1, 4, 4X, 6, 6P, 13	
Housing Material	Bronze	
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	4 lbs. approx.	
Lever Adjustment	7°30' Increments thru 360°	
Contacts	Sliding, Silver Alloy Form Z	Butt, Silver Alloy Form Z
Special Switch Features	MIL-C-2212F Watertight (3 ft. for 60 min.) and Submersible (15ft. for 30 min.) per MIL STD-108E Vibration requirements per MIL-STD-167B, Type 1 High Shock per MIL-S-901, grade A, Class 1, type A	

*Some high temperature (0°C to 150°C) and low temperature (-40°C to +90°C) versions available. Contact factory.

EA780

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	10.0	2.5
250	7.5	.75
480	5.0	-
600	2.5	-

75-100% Power Factor

EA790

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

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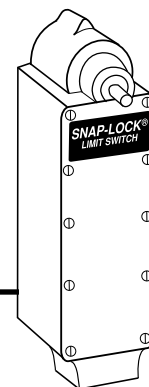
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Double Pole
Harsh Environment/
Navy Marine

Limit Switches

Butt/
Sliding
Contacts



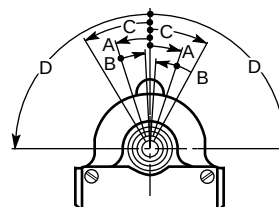
Limit Switches

Contact Configurations

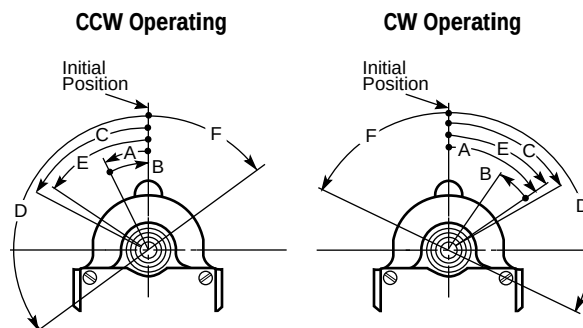
CIRCUIT A		
CW	Initial	CCW
CIRCUIT B		
CW	Initial	CCW
CIRCUIT C		
CW	Initial	CCW
CIRCUIT D		
CCW Operating		
CW	Initial	CCW
CW Operating		
CW	Initial	CCW
CIRCUIT E		
CW	Initial	CCW
CIRCUIT F		
CW	Initial	CCW

Operational Data Drawings

DRAWING #1

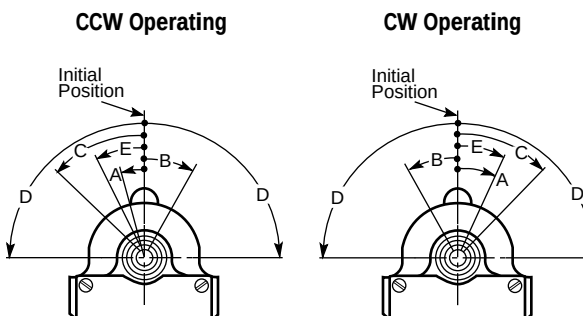


DRAWING #2



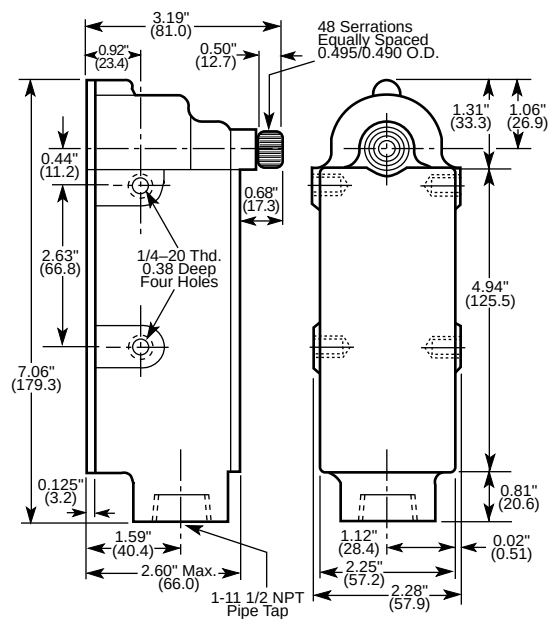
To change switch operation from CW operating to CCW operating, operate switch through angle E. Remove lever and reset at initial position.

DRAWING #3

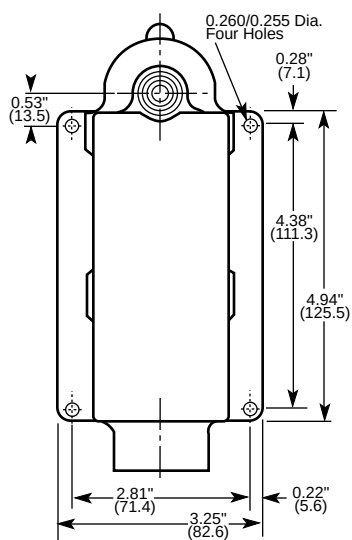


To change switch operation from CW operating to CCW operating, operate switch through angle E.

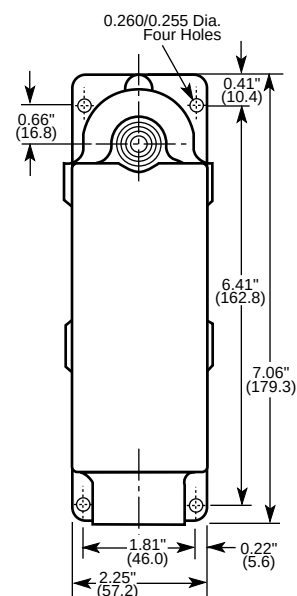
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



LONG MOUNTING PLATE



Dimensions: inches/(mm)

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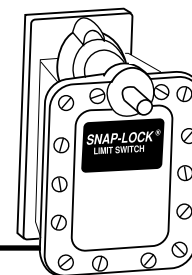
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Single Pole
Severe Environment

Limit Switches

Butt
Contacts



Limit Switches

Severe Environment Limit Switches are available on the three standard series of Snap-Lock switches. Regularly furnished with wide or long mounting.

EA990 Single Pole 1 N.O. - 1 N.C. / Standard / Butt Contacts

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL/ ROCKER TYPE											
CW											
—	EA990-00125	EA990-00115	CW	10°	8°	13°	38°	-	-	14	A
CW / REVERSE SHAFT											
—	EA990-00535	—	CW	10°	8°	13°	38°	-	-	14	A
CCW											
—	EA990-20055	EA990-20035	CCW	10°	8°	13°	38°	-	-	14	B
MAINTAINED CONTACT AND LEVER POSITION											
—	EA990-30025	EA990-30045	Maintain	10°	8°	13°	38°	-	-	5	-

Common Switch Characteristics

SINGLE POLE, SEVERE ENVIRONMENT, BUTT CONTACTS	
Housing Material	Zinc
Ambient Temperature Range	-20°C to +90°C
Shipping Weight	3.7 lbs. approx.
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Butt, Silver Alloy, Form Z

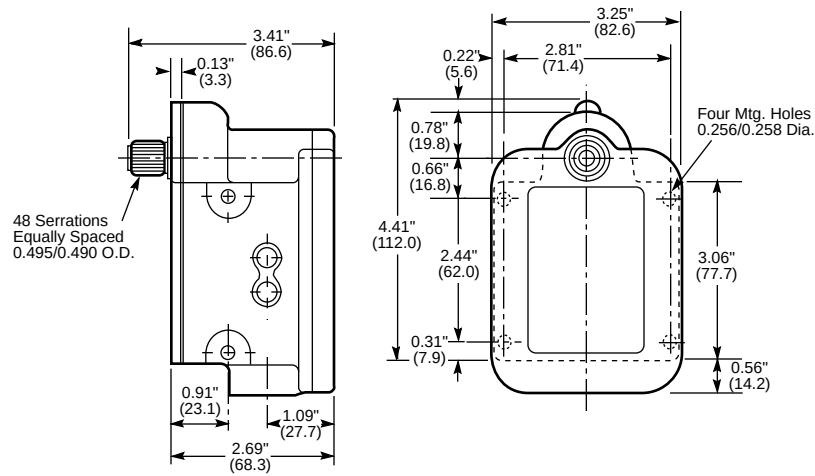
Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

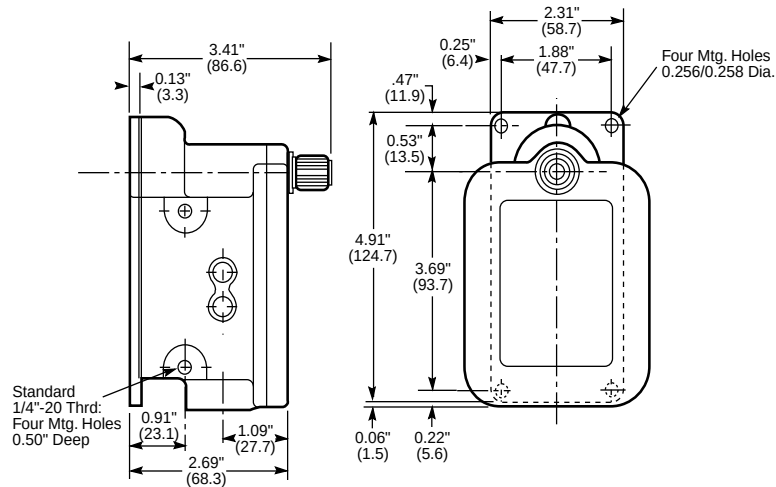
75-100% Power Factor

See Operating Levers Section

WIDE MOUNTING PLATE



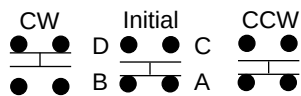
LONG MOUNTING PLATE



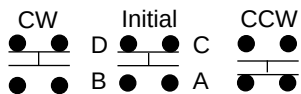
Dimensions: inches/(mm)

Contact Configurations

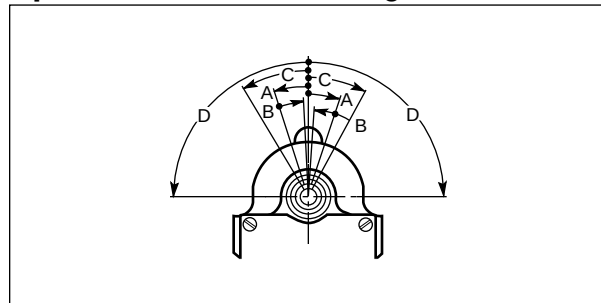
CIRCUIT A



CIRCUIT B



Operational Data Drawings



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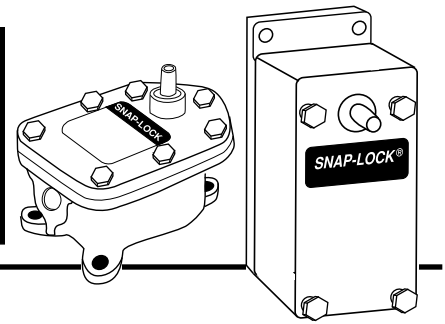
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Single, Double and
Triple Pole
Hazardous Location

Limit
Switches

Butt
Contacts



Limit Switches

- NEMA Rated for Hazardous Location
- 1 NO-1 NC, 2 NO-2 NC, 3 NO-3 NC
- Bronze, Aluminum or Cast Iron Housing
- Generous Overtravel-EA800 Series
- Heavy Duty Cam Operated-EA800 Series
- Heavy Duty Rocker Type-EA880 Series
- Flexibility of Motion, CW and CCW
- Ample Wiring Space

Service Conditions - The Series EA800/EA880 hazardous location limit switches operate dependably where gases, vapors, and dusts are potential explosion hazards. The switch bodies resist corrosion.

Rugged Construction - Approved spark-proof bronze, aluminum, or cast-iron housings can withstand internal and external gas explosions. Silver alloy butt contact arrangement is standard. Wiring space is ample for up to size 12 wire.

Proven Performance - Cycle life is in the millions, when operated at rated current, voltage, and temperature. Standard switches have maximum ambient temperature ratings of 90°C continuous. Switches can be specially ordered with either -40°C or + 150°C capabilities.

Levers Available - A variety of levers for hazardous location limit switches can be ordered from Namco Controls Series EL.

NOTE: Only non-sparking levers should be used in hazardous locations.

Not all models are UL approved.

EA800 Single Pole 1 N.O. - 1 N.C. / Butt Contacts / Cam Action

Bronze Housing	Aluminum Housing	Cast Iron Housing	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA800-10040	EA800-10050	-	CW	18°	14°	30°	90°	-	-	15	A
EA800-10041	EA800-10051	-	CCW	18°	14°	30°	90°	-	-	15	B
EA800-10140	EA800-10150	-	CW/CCW	18°	14°	30°	90°	-	-	15	C

EA800 Double Pole 2 N.O. - 2 N.C. / Butt Contacts / Cam Action

Bronze Housing	Aluminum Housing	Cast Iron Housing	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA800-20040	EA800-20050	-	CW	18°	14°	30°	90°	-	-	27	D
EA800-20041	EA800-20051	-	CCW	18°	14°	30°	90°	-	-	27	E
EA800-20140	EA800-20150	-	CW/CCW	18°	14°	30°	90°	-	-	27	F

EA800 Triple Pole 3 N.O. - 3 N.C. / Butt Contacts / Cam Action

Bronze Housing	Aluminum Housing	Cast Iron Housing	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E Min. Travel to Maintain	Angle F Overall Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL											
EA800-30040	EA800-30050	-	CW	18°	14°	30°	90°	-	-	33	G
EA800-30041	EA800-30051	-	CCW	18°	14°	30°	90°	-	-	33	H
EA800-30140	EA800-30150	-	CW/CCW	18°	14°	30°	90°	-	-	33	I

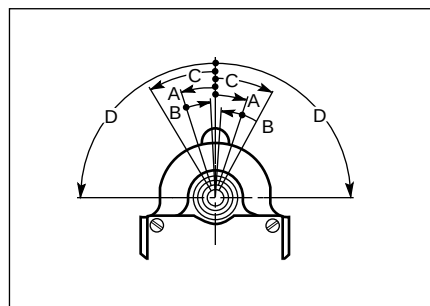
See Operating Levers Section

EA880 Single Pole 1 N.O. - 1 N.C. / Butt Contacts / Rocker Type

Aluminum Housing	Description	Temperature Range	Dir. Of Operation	NEMA Type 4	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Torque (inch lbs)	Contact Config.
STANDARD TRAVEL										
EA880-11100	Standard	-20C to +90C	CW	No	10°	8°	13°	38°	13	A
EA880-11500	Watertight	-20C to +90C	CW	Yes	10°	8°	13°	38°	13	A
EA880-11700	Watertight	-40C to +90C	CW	Yes	10°	8°	13°	38°	13	A
EA880-12100	Standard	-20C to +90C	CCW	No	10°	8°	13°	38°	13	J
EA880-12500	Watertight	-20C to +90C	CCW	Yes	10°	8°	13°	38°	13	J
EA880-12700	Watertight	-40C to +90C	CCW	Yes	10°	8°	13°	38°	13	J
MAINTAINED										
EA880-13100	Standard	-20C to +90C	CW/CCW	No	10°	-	-	38°	5	-
EA880-13500	Watertight	-20C to +90C	CW/CCW	Yes	10°	-	-	38°	5	-
EA880-13700	Watertight	-40C to +90C	CW/CCW	Yes	10°	-	-	38°	5	-
NEUTRAL POSITION										
EA880-17100	Standard	-20C to +90C	CW/CCW	No	7°	6°	7°30'	33°	22	K
EA880-17500	Watertight	-20C to +90C	CW/CCW	No	7°	6°	7°30'	33°	22	K
EA880-17700	Watertight	-40C to +90C	CW/CCW	No	7°	6°	7°30'	33°	22	K

Bronze Housing	Description	Temperature Range	Dir. Of Operation	NEMA Type 4	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Torque (inch lbs)	Contact Config.
MAINTAINED										
EA880-13200	Standard	-20C to +90C	CW/CCW	No	10°	-	-	38°	5	-
EA880-13600	Watertight	-20C to +90C	CW/CCW	Yes	10°	-	-	38°	5	-

Operational Data Drawing



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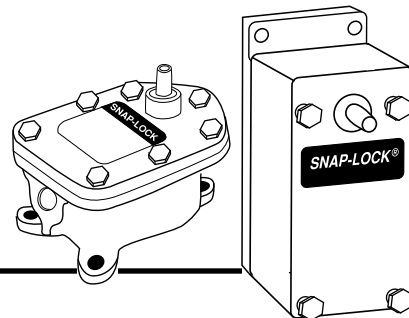
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Single, Double and
Triple Pole
Hazardous Location

Limit Switches

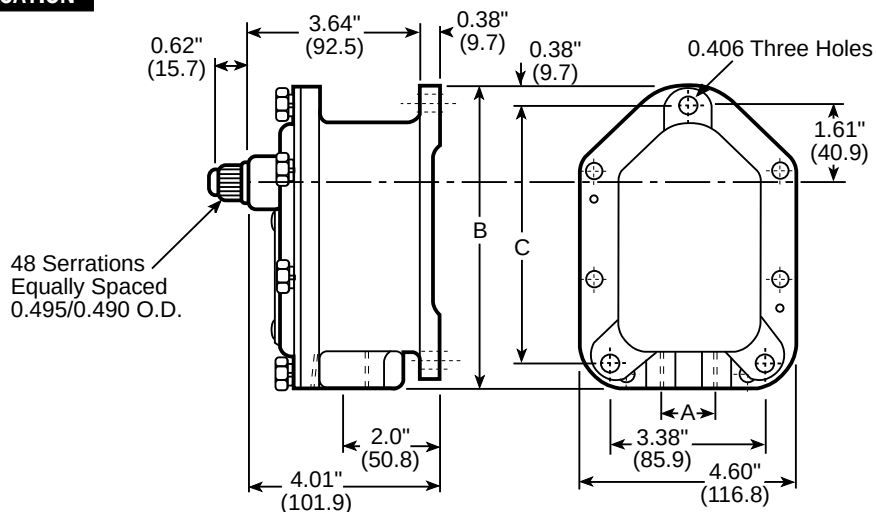
Butt Contacts



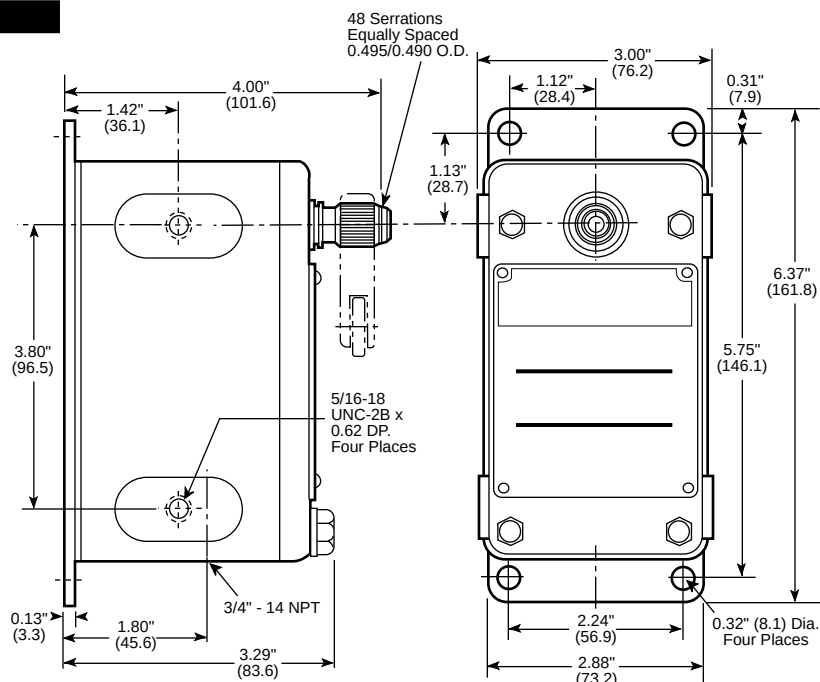
Limit Switches

EA800/880 Series Drawings

EA800 HAZARDOUS LOCATION



EA880 ROCKER



Not to Scale

Dimensions: inches/(mm)

Switch Type	Conduit Opening NPT A	Total Height B	Mounting Height C
EA800-1	3/4"-14	6.47" (164.3)	5.42" (137.7)
EA800-2	1"-11 1/2	8.50" (215.9)	7.58" (192.5)
EA800-3	1 1/4"-11 1/2	10.56" (268.2)	9.67" (245.6)

Contact Configurations

CIRCUIT A 	CIRCUIT B 	CIRCUIT C
CIRCUIT D 	CIRCUIT E 	CIRCUIT F
CIRCUIT G 	CIRCUIT H 	CIRCUIT I
CIRCUIT J 	CIRCUIT K 	

Common Switch Characteristics

SINGLE, DOUBLE & TRIPLE POLE, HAZARDOUS LOCATION, BUTT CONTACTS		
	EA800	EA880
NEMA Enclosure Type	4, 4X, 6, 6P, 7 Class I, Group C & D, 9 Class II, Group E, F & G	7 Class I, Group C & D, 9 Class II, Group E, F & G (Some 4, see p/n chart)
Housing Material	Bronze/Aluminum/ Cast Iron (See p/n chart)	Bronze/Aluminum
Ambient Temperature Range*	-20°C to +90°C	
Shipping Weight	EA800-1: Al-6 lbs. Brz-12 lbs. EA800-2: Al-7 lbs. Brz-16 lbs. EA800-3: Al-8 lbs. Brz-19 lbs.	Aluminum: 5 lbs. Bronze: 8 lbs.
Lever Adjustment	7°30' Increments thru 360°	
Contacts	Butt, Silver Alloy, Form Z	

*Some high and low temperature versions available. For EA880, see p/n chart. For EA800, contact factory.

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

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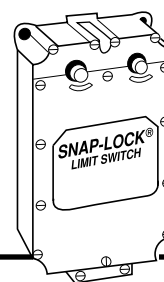
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Multi Station

Limit Switches

Butt Contacts



Limit Switches

The Multiple Station Switch now makes it possible to incorporate from two to four EA700 Namco Series Snap-Lock Limit Switches into a single assembly. Here's a unit that can be adapted to most any application where individual limit switches are mounted side by side. This single assembly reduces installation time, cuts wiring costs and presents a more compact

appearance than individually mounted switches. Furthermore, you can now perform an almost unlimited number of switching functions within a single enclosure by combining the Single Action type switches.

EA760 1 N.O. - 1 N.C. / Butt Contacts / Cam Action

Part Number	Station 1	Station 2	Station 3	Station 4	Conduit Diameter**	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Contact Configuration	Conduit Location	Torque (inch/lbs)
STANDARD TRAVEL / 2 STATION												
EA760-10000*	CW	CW	-	-	1.50"-11.50 N.P.T.	18°	14°	30°	90°	B	Bottom	33
EA760-10001*	CCW	CCW	-	-	1.50"-11.50 N.P.T.	18°	14°	30°	90°	B	Bottom	33
EA760-10005	CCW	CW	-	-	0.75"	13°	10°	30°	90°	A	Left	16.5
STANDARD TRAVEL / 4 STATION												
EA760-00265	CW	CW	CW	CCW	1.00"	18°	14°	30°	90°	A	Left	15
EA760-00445	CCW	CW	CCW	CCW	1"-11.50 NPT	13°	10°	30°	90°	A	L & R	16.5
EA760-00455	CW	CW	CCW	CW	1"-11.50 NPT	13°	10°	30°	90°	A	L & R	16.5
EA760-30002	CW	CW	CCW	CCW	1.716"	18°	14°	30°	90°	A	Left	15
EA760-30003	CW	CW	CCW	CCW	1.38"	18°	14°	30°	90°	A	Left	15
EA760-30004	CW	CW	CCW	CCW	1.38"	18°	14°	30°	90°	A	Right	15
EA760-30006	CW	CW	CCW	CCW	1"-11.50 NPT	13°	10°	30°	90°	A	L & R	16.5

* All switch stations are single pole except EA760-10000 and EA760-10001, which are 3 pole.

** Non-threaded, smooth-hole type, except "N.P.T."

Common Switch Characteristics

MULTI-STATION, SINGLE POLE, STANDARD ENVIRONMENT, BUTT CONTACTS	
NEMA Enclosure Type	1
Housing Material	Aluminum
Ambient Temperature Range***	-20°C to +90°C
Lever Adjustment	7°30' Increments Thru 360°
Contacts	Butt, Silver Alloy, Form Z

*** EA760-10000 and -10001 rated +20°C to +180°C

EA760-00445, EA760-00455 and EA760-30006 rated 0°C to +150°C

Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

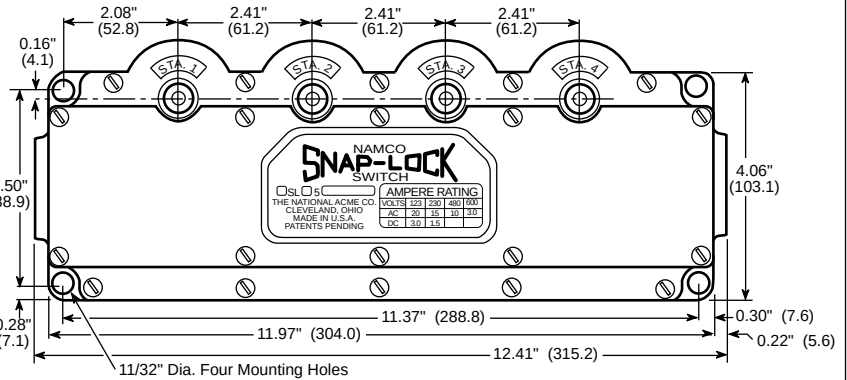
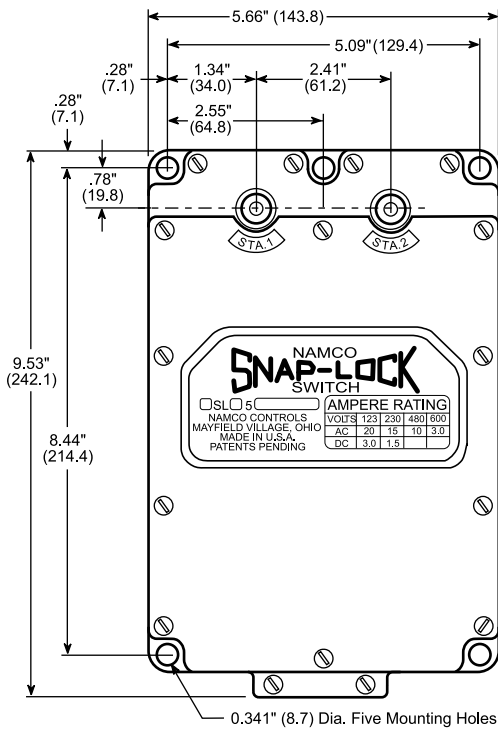
75-100% Power Factor

See Operating Levers Section

TWO STATION - THREE POLE

FOUR STATION - SINGLE POLE

See table on opposite page for location, diameter, and type.



Dimensions: inches/(mm)

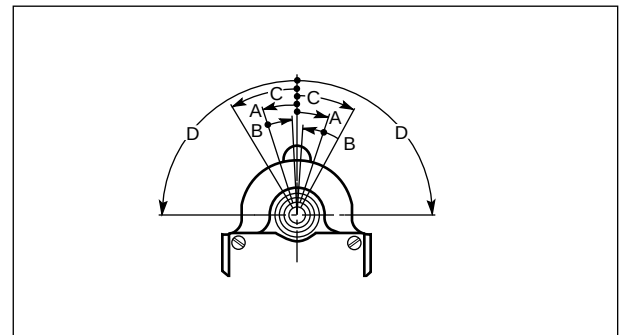
Limit Switches

Contact Configurations

Contact configuration A			
Clockwise Stations		Counter Clockwise Stations	
D ● ● C	D ● ● C	D ● ● C	D ● ● C
B ● ● A	B ● ● A	B ● ● A	B ● ● A
CW	Initial	Initial	CCW
Polarity must be the same on each pole			

Contact configuration B			
Counter Clockwise Stations		Clockwise Stations	
M ● ● L	M ● ● L	M ● ● L	M ● ● L
K ● ● J	K ● ● J	K ● ● J	K ● ● J
H ● ● G	H ● ● G	H ● ● G	H ● ● G
F ● ● E	F ● ● E	F ● ● E	F ● ● E
D ● ● C	D ● ● C	D ● ● C	D ● ● C
B ● ● A	B ● ● A	B ● ● A	B ● ● A
Initial	CCW	CW	Initial
Polarity must be the same on each pole			

Operational Data Drawing



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**EA190 —
Crank Interlock Switch**

Crank Interlock Switches provide an interlock between the boat davit hand crank and gear box. Specify either left or right hand. Switch cannot be converted in the field.

**EA190 —
Brake Interlock Switch**

The Brake Interlock Switch provides an interlock for braking of the boat davit and is available in either left or right hand models. Please specify by correct part number since these cannot be modified in the field.

**EA190 —
Trackway Limit Switch**

The Trackway Switch limits the up or down travel of the boat davit and, like the other switches, is offered in right or left hand units and normally open or closed contact arrangements. Specify whether left hand or right hand is required and whether normally open or normally closed contacts are required.

EA190

Model Number	Lever Location	Arrangement	Trip Travel
CRANK INTERLOCK SWITCH			
EA190-00055	Left hand	-	20°
EA190-00065	Right hand	-	20°
BRAKE INTERLOCK SWITCH			
EA190-00035	Left hand	-	20°
EA190-00045	Right hand	-	20°
TRACKWAY LIMIT SWITCH			
EA190-00015	Left hand	N.C.	6°
EA190-00025	Right hand	N.C.	6°
EA190-00016	Left hand	N.O.	6°
EA190-00026	Right hand	N.O.	6°

Common Switch Characteristics**SINGLE POLE, SPECIAL NAVY MARINE, SLIDING CONTACTS**

Ambient Temperature Range	-50°C min.
Enclosure	Watertight (3 ft. for 2 hrs.) per MIL-STD-108E

Crank Interlock

MIL-C-2212
Navy "A" High Shock
Continuous Current Carrying - 15 amps @ 440 VAC or 230 VDC
Insulation Class B

Brake Interlock

MIL-C-2212, MIL-C-2214
Navy "A" High Shock
Continuous Current Carrying - 15 amps @ 440 VAC or 230 VDC
Insulation Class B

Trackway

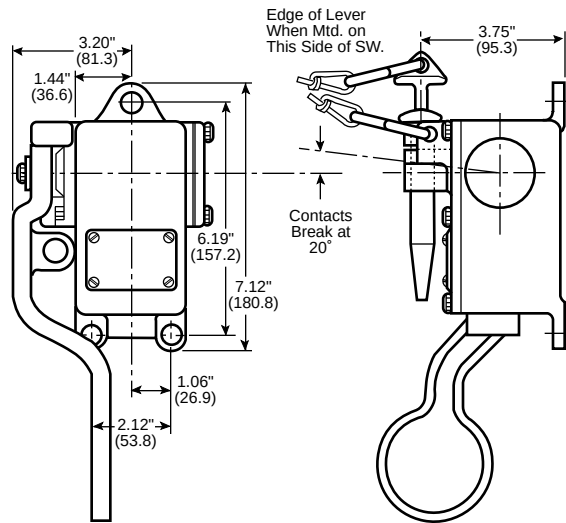
MIL-C-2174, MIL-C-2212
Continuous Current Carrying - 20 amps @ 440 VAC or
5 amps @ 230 VDC
Non-Magnetic/Fungistatic Materials
Lever Adjustment - 10° increments thru 360°

See Operating Levers Section

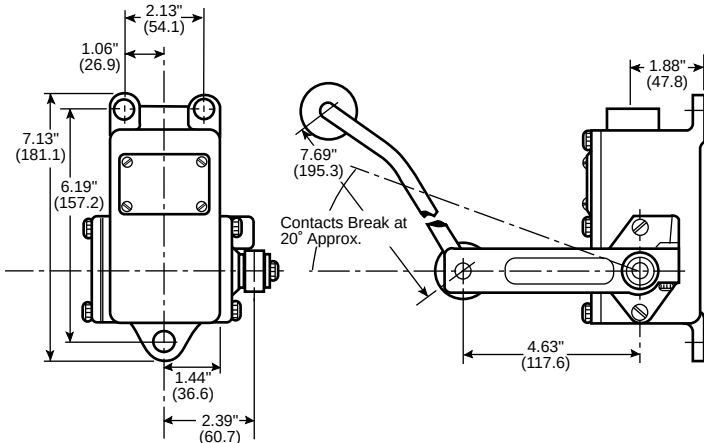
Dimensions and Mounting

EA190

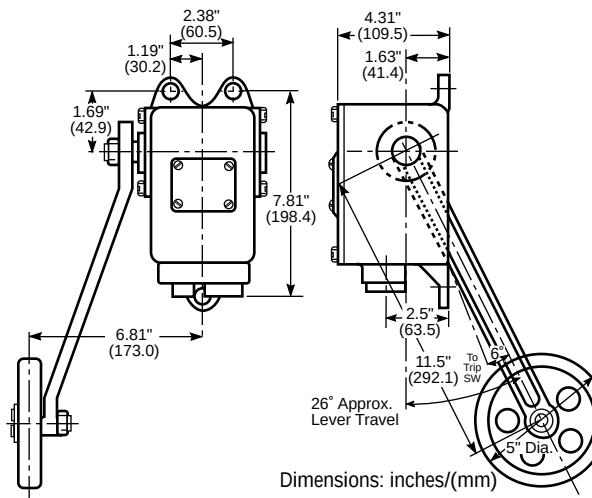
CRANK INTERLOCK SWITCH



BRAKE INTERLOCK SWITCH

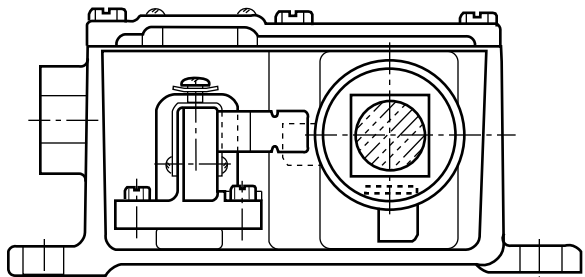
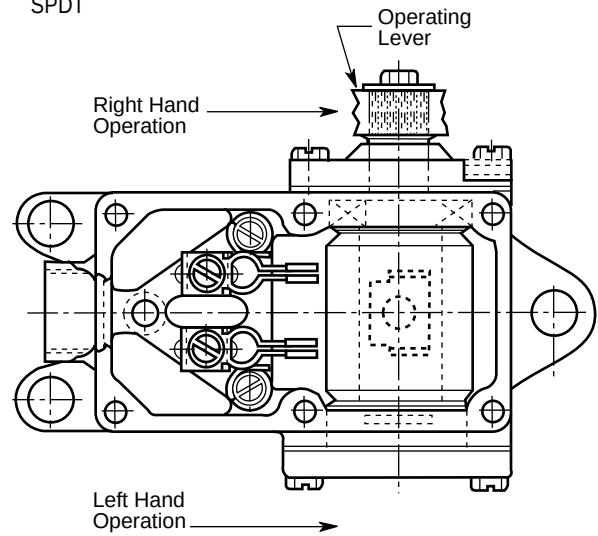


TRACKWAY LIMIT SWITCH



Operational Data Drawing

Contacts:
Knife-Disconnect
SPDT



Limit Switches

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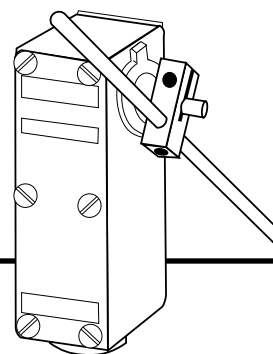
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Super
Sensitive

Limit Switches

Butt
Contacts



Limit Switches

Designed for sensing small, lightweight objects. Rotary units are gravity return and have 360° total travel either clockwise or counterclockwise. Trip torques range from 1.5 to 7 inch-ounces. Oscillating units are spring return versions with 15 inch-ounce trip torque.

Outputs include SPDT (1 NO and 1 NC) and DPDT (2 NO and 2 NC). Output indicator lights are optional.

Ideal for fill detection on vibratory feeder bowls, small parts sensing or counting, gauging devices, time delay mechanisms, safety interlock switch applications, liquid level control and governors.

EA150 1 N.O. - 1 N.C. & 2 N.O. - 2 N.C / Super Sensitive / Butt Contacts

Model Number	Description	Dir. of Operation	Travel to Make or Break Contacts	Torque Inch Oz	Over Travel	Total Travel
OSCILLATING TYPE (INCLUDES 1/8" X 10" STEEL ROD UNLESS NOTED OTHERWISE)						
EA150-10013	Standard Unit 1 N.O. 1 N.C.	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10313	Standard Unit with L.E.D. Top Cover	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10173	Standard Unit with 1/8" x 10" Fiber Rod	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10083	Standard Unit with 1/4" x 9" Steel Rod	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10093	Same as EA150-10083 with L.E.D. Top Cover	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10143	Standard Unit 2 N.O. - 2 N.C.	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
EA150-10343	Standard Unit 2 N.O. - 2 N.C. w/ L.E.D. Top Cover	CW/CCW	Adjustable (4° - 90°)	15	Adj. to 86°	180°
ROTARY TYPE (INCLUDES 1/4" X 9" STEEL ROD UNLESS NOTED OTHERWISE)						
EA150-30014	Standard Unit 1 N.O. - 1N.C.	CW/CCW	4°	5	180°	360°
EA150-30303	Standard Unit with L.E.D. Top Cover	CW/CCW	4°	5	180°	360°
EA150-30283	Standard Unit with 1/4" x 12" Fiber Rod	CW/CCW	4°	5	180°	360°
EA150-30223	Standard Unit with 1/8" x 10" Steel Rod	CW/CCW	4°	5	180°	360°
EA150-30233	Same as EA150-30223 w/ L.E.D. Top Cover	CW/CCW	4°	5	180°	360°
EA150-30396	Standard Unit with LH shaft extension	CW/CCW	4°	5	180°	360°
EA150-30143	Standard Unit 2 N.O. - 2N.C.	CW/CCW	4°	5	180°	360°
EA150-30145	Standard Unit 2 N.O. - 2N.C. w/ L.E.D. Top Cover	CW/CCW	4°	5	180°	360°
EA150-30500	Low Torque, 1 N.O. - 1N.C., 1/4" clamp w/o Rod	CW/CCW	4°	1.5°	180°	360°
EA150-30274	Standard Unit, 1 N.O. - 1 N.C., Double-ended Shaft	CW/CCW	4°	5°	180°	360°
EA150-30275	Standard Unit, 1 N.O. - 1 N.C., Double-ended Shaft w/o Rod and Clamp	CW/CCW	4°	5°	180°	360°

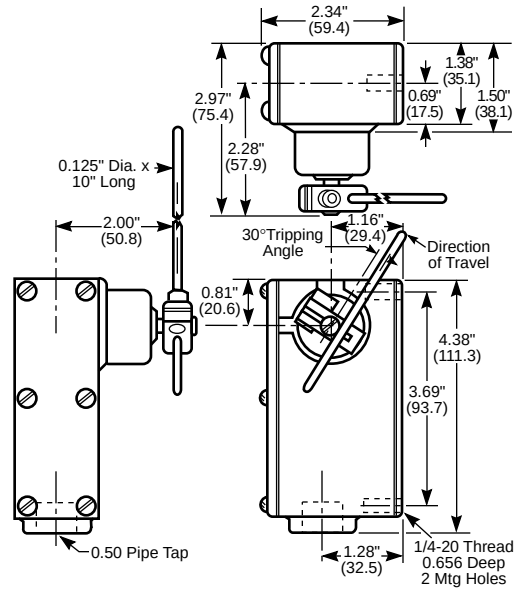
Spare Lever Clamp Kits*

EL140-18900	1/4" x 9" Steel Rod
EL140-18901	1/8" x 10" Steel Rod
EL140-18902	1/4" x 12" Fiber Rod
EL140-18903	1/8" x 10" Fiber Rod

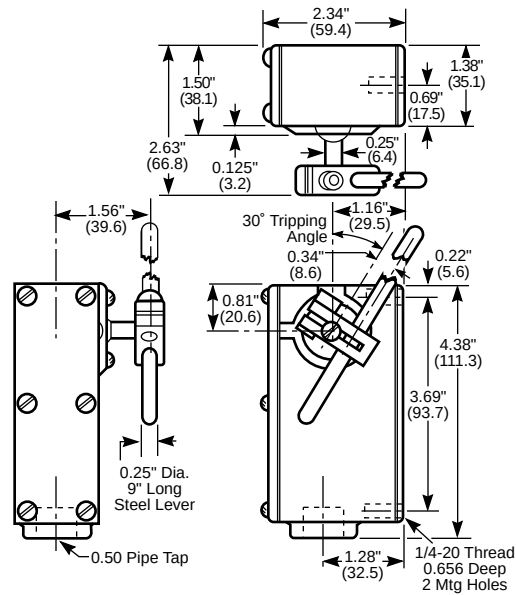
*contains Rod, Lever Clamp, Lockwasher, Set Screw and Cap Screw

See Operating Levers Section

OSCILLATING



ROTARY



Dimensions: inches/(mm)



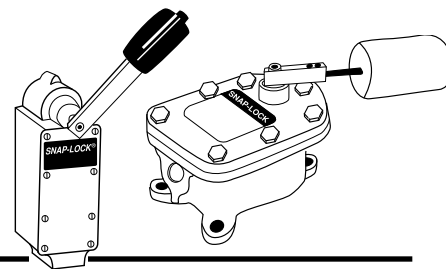
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Belt
Misalignment

Limit Switches



Limit Switches

Switches for use on conveyor systems. Standard as well as Hazardous Location versions. One step maintained, two step and two step maintained versions available. Generous overtravel, Snap Action contacts action, Form Z Contact arrangement.

EA700 Cam Action 2 N.O. - 2 N.C.

Standard Mounting Model No.	Wide Mounting Model No.	Long Mounting Model No.	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E 2nd Trip Travel	Angle F 2nd Reset Travel	Torque (inch lbs)
ONE STEP-MAINTAINED LEVER AND CONTACTS										
EA700-20137	EA700-50137	EA700-80137	CW/CCW	18°	14°	30°	90°	-	-	27
TWO STEP-MAINTAINED LEVER AND CONTACTS										
EA700-28437	EA700-58437	EA700-88437	CW/CCW	12°	10°	45°	90°	22°	10°	-
TWO STEP-SPRING RETURN										
EA700-20176	EA700-50176	EA700-80176	CW/CCW	12°	10°	45°	90°	22°	10°	-

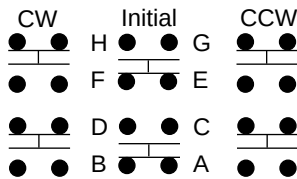
EA800 Cam Action 2 N.O. - 2 N.C.

Bronze Housing	Aluminum Housing	Cast Iron Housing	Dir. Of Operation	Angle A Trip Travel	Angle B Reset Travel	Angle C Recom. Travel	Angle D Total Travel	Angle E 2nd Trip Travel	Angle F 2nd Reset Travel	Torque (inch lbs)
ONE-STEP MAINTAINED LEVER AND CONTACTS										
-	EA800-20157	-	CW/CCW	18°	14°	30°	90°	-	-	27
TWO STEP-SPRING RETURN										
EA800-28440	EA800-28450	-	CW/CCW	12°	10°	45°	90°	22°	10°	-

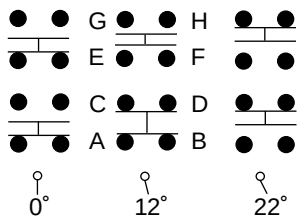
See Operating Levers Section

Contact Configurations

ONE-STEP SWITCH



TWO-STEP SWITCH / BI-DIRECTIONAL OPERATION



Common Switch Characteristics

DOUBLE POLE, STANDARD/HAZARDOUS LOCATION ENVIRONMENT, BUTT CONTACTS

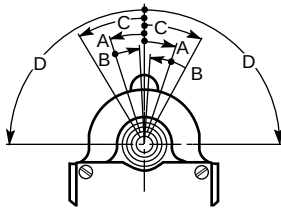
	EA700	EA800
NEMA Enclosure Type	1, 4, 13	4, 4X, 6, 6P, 7 Class I, Group C & D, 9 Class II, Group E, F & G
Housing Material	Zinc	Bronze/Aluminum/ Cast Iron
Ambient Temperature Range*	-20°C to +90°C	
Lever Adjustment	7°30' Increments thru 360°	
Contacts	Butt, Silver Alloy, Form Z	

*Some high temperature (0° to 150°C) and low temperature (-40° to +90°C) versions available. Contact factory.

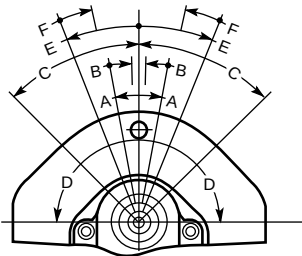
Limit Switches

Operational Data Drawing

ONE-STEP SWITCH



TWO-STEP SWITCH



Continuous Current Rating - Amperes

VOLTAGE	AC	DC
125	20.0	5.0
250	15.0	1.5
480	10.0	-
600	5.0	-

75-100% Power Factor

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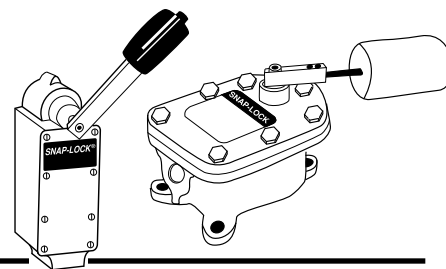
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Belt
Misalignment

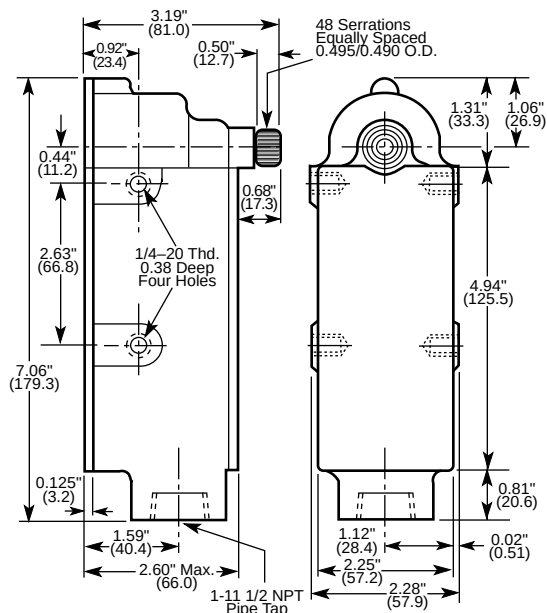
Limit Switches



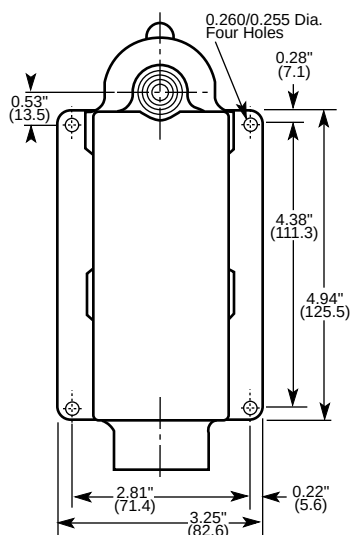
Limit Switches

EA700 Series Drawings

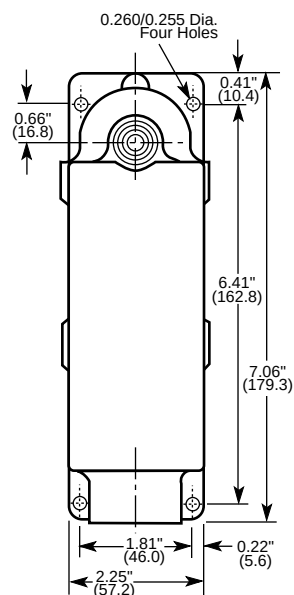
STANDARD MOUNTING PLATE



WIDE MOUNTING PLATE



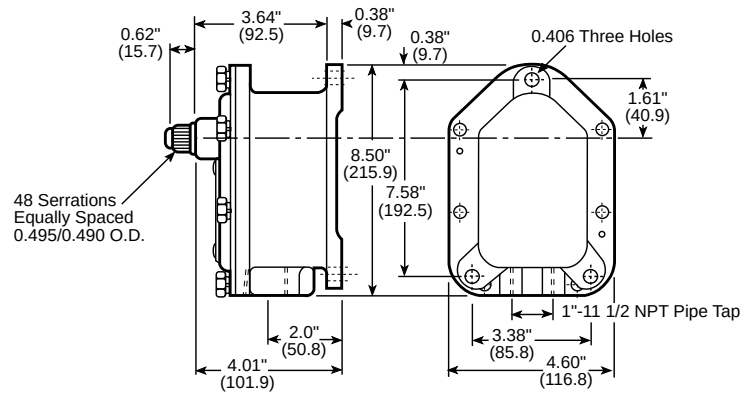
LONG MOUNTING PLATE



Dimensions: inches/(mm)

EA800 Series Drawings

STANDARD MOUNTING PLATE



Dimensions: inches/(mm)

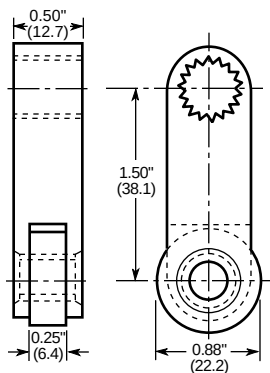
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Standard Operating Lever
EL010-53420 (D-1260)
(for .500 Dia. Shaft Switches)

For Series:

**EA040, EA060, EA080,
EA130, EA140, EA170,
EA700, EA710, EA730,
EA760, EA770, EA780,
EA790, EA800, EA880,
EA990**

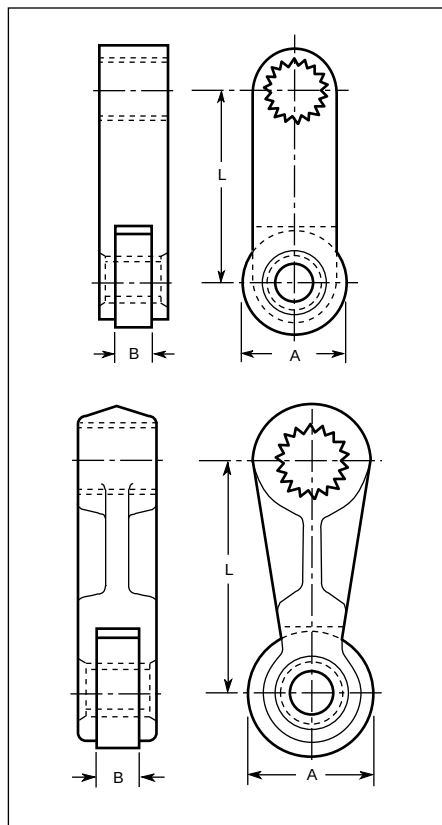
Select the operating lever for your application with regards to dimensions and materials required.

Requests for operating levers not shown should include lever style and all pertinent information as to limit switch number, dimensions, materials, etc.

Depending upon your application, levers are available in cold rolled steel, stainless steel, or bronze. Rollers are available in steel, nylon, Beryl. Cop., stainless steel or steel ball bearings. Please consult materials column of the lever of your choice.

This style and size operating lever is considered standard for the majority of snap-lock switch installations. The EL010-53420 (D1260) lever is steel with a nylon roller and a stainless steel roller pin. Like all snap-lock levers, the serrated mounting hole matches the serrated lever shaft of the switches to provide fixed adjustment of the lever in 7.5° increments.

For Series EA040, 060, 080,
130, 140, 170, 700, 710,
730, 760, 770, 780, 790,
800, 880, 990



Style R - Regular Straight Type

EL Series

Ordering Numbers					Material	
Part Number	Reference	L	A	B	Lever	Roller
EL060-50320	D1260BA	3/4	3/4	1/4	C.R.S.	C.R.S.
EL060-51319	—	1	3/4	1/4	C.R.S.	Bryl. Cop.
EL060-52321	D1260GQ	1-1/4	3/4	1/4	C.R.S.	C.R.S.
EL060-53923	D1260BH	1-1/2	1-1/4	1/4	C.R.S.	C.R.S.
EL010-53338	DS1260	1-1/2	3/4	1/4	Steel	C.R.S.
EL060-53300	—	1-1/2	3/4	1/4	Brass	Bryl. Cop.
EL010-53336	—	1-1/2	3/4	1/4	Steel	S.S.
EL010-53337	—	1-1/2	3/4	1/4	Steel	Bryl. Cop.
EL060-53401	D1260RF	1-1/2	7/8	9/32	Brass	Nylon
EL060-53402	—	1-1/2	7/8	9/32	Brass	Bryl. Cop.
EL010-53420	D1260	1-1/2	7/8	9/32	Steel	Nylon
EL010-53429	D1260Y	1-1/2	7/8	9/32	Steel	B.B.
EL060-53536	D1260Z	1-1/2	1	1/4	C.R.S.	C.R.S.
EL060-53926	D1260CL	1-1/2	1-3/8	1/4	C.R.S.	C.R.S.
EL060-55327	D1260E	2	3/4	1/4	C.R.S.	C.R.S.
EL060-55300	—	2	3/4	1/4	C.R.S.	Bryl. Cop.
EL060-55520	D1260AC	2	1	1/4	C.R.S.	C.R.S.
EL060-55601	—	2	1	1/4	C.R.S.	Bryl. Cop.
EL060-55530	D1260RT	2	1	1/4	Brass	Bryl. Cop.
EL060-55927	D1260GT	2	1-1/2	1/4	C.R.S.	C.R.S.
EL060-50321	D1260BC	2-1/8	3/4	1/4	C.R.S.	C.R.S.
EL060-50501	D1260B	2-1/8	1	1/4	C.R.S.	C.R.S.
EL060-50334	D1260M	2-1/4	3/4	1/4	C.R.S.	C.R.S.
EL060-59300	D1260KC	2-3/8	3/4	1/4	C.R.S.	C.R.S.
EL010-56427	D1260K	2-1/2	7/8	9/32	Steel	Nylon
EL010-56334	DS1260K	2-1/2	3/4	1/4	Steel	C.R.S.
EL010-55421	D1260DF	2-1/2	1	1/4	C.R.S.	C.R.S.
EL060-56500	D1260RR	2-1/2	1	1/4	Brass	Bryl. Cop.
EL060-56920	D1260CP	2-1/2	1-1/2	1/4	C.R.S.	C.R.S.
EL060-50322	D1260BD	2-3/4	3/4	1/4	C.R.S.	C.R.S.
EL060-57300	—	2-3/4	3/4	1/4	C.R.S.	Bryl. Cop.
EL010-58300	—	3	3/4	1/4	Steel	Bryl. Cop.
EL010-58337	DS1260L	3	3/4	1/4	Steel	C.R.S.
EL060-58305	—	3	3/4	1/4	Brass	Bryl. Cop.
EL010-58400	—	3	7/8	9/32	Steel	Bryl. Cop.
EL010-58423	D1260L	3	7/8	9/32	Steel	Nylon
EL010-58451	—	3	7/8	9/32	Steel	C.R.S.
EL060-58401	—	3	7/8	9/32	Brass	Nylon
EL060-58403	D1260VQ	3	7/8	9/32	S.S.	Bryl. Cop.
EL010-58521	D1260CJ	3	1	1/4	Steel	C.R.S.
EL010-58522	—	3	1	1/4	C.R.S.	Bryl. Cop.
EL010-58923	D1260CN	3	1-1/4	1/4	Steel	C.R.S.
EL060-58923	—	3	1-1/4	1/4	Brass	Steel
EL010-58900	D1260VR	3	1-1/2	1/4	Steel	Nylon
EL010-58920	D1260AE	3	1-1/2	1/4	Steel	C.R.S.
EL060-58320	D1260BB	3-1/2	3/4	1/4	C.R.S.	C.R.S.
EL060-58431	D1260AP	3-1/2	1	1/4	C.R.S.	C.R.S.
EL060-58932	—	3-1/2	3/4	1/4	Brass	Bryl. Cop.
EL060-58930	—	3-1/2	1-1/2	1/4	Brass	Bryl. Cop.
EL060-58326	D1260C	4	3/4	1/4	C.R.S.	C.R.S.
EL060-58304	D1260WD	4	3/4	1/4	C.R.S.	Bryl. Cop.
EL060-50523	D1260BL	4	1	1/4	C.R.S.	C.R.S.
EL060-58925	—	4	1-1/4	1/4	Brass	Bryl. Cop.
EL060-58920	D1260AB	4	1-1/2	1/4	C.R.S.	C.R.S.
EL060-58901	—	4	1-1/2	9/32	C.R.S.	Nylon
EL060-50335	D1260N	5	3/4	1/4	C.R.S.	C.R.S.
EL060-50925	D1260BW	5	1-1/2	1/4	C.R.S.	C.R.S.
EL060-50305	D1260CQ	6	3/4	1/4	C.R.S.	C.R.S.
EL060-50338	—	6	3/4	1/4	C.R.S.	Bryl. Cop.
EL060-50930	D1260JE	6	1-1/4	1/4	C.R.S.	C.R.S.
EL060-50703	D1260KD	6	3	1/4	C.R.S.	C.R.S.

All dimensions are in inches.

NAMCO

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Mayfield Village, OH 44143

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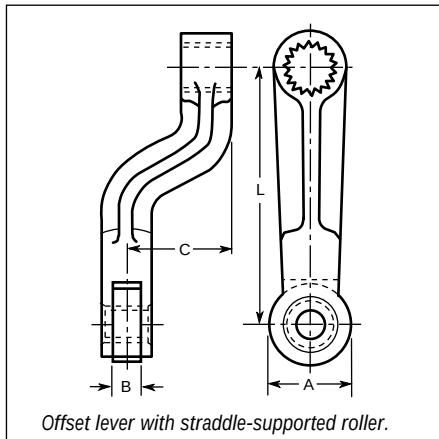
Limit Switches

Miscellaneous Types

Operating Levers

Limit Switches

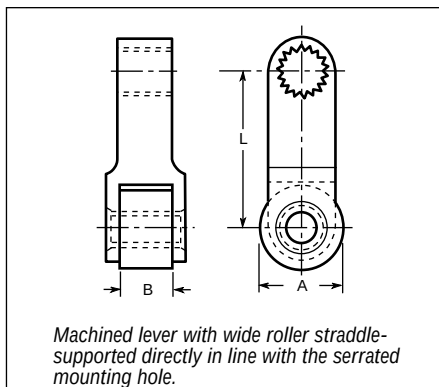
For Series EA040, 060, 080, 130,
140, 170, 700, 710, 730, 760,
770, 780, 790, 800, 880, 990 Only



Style RLO - Regular Lever Offset Type

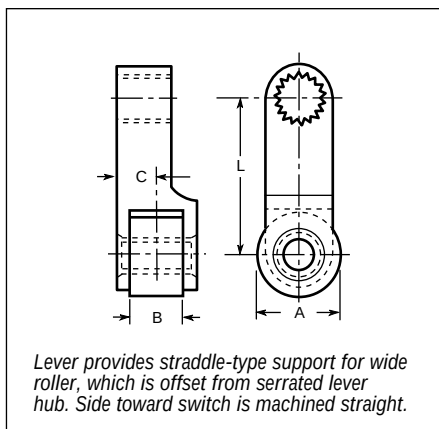
Ordering Numbers						Material	
Part Number	Reference	L	A	B	C	Lever	Roller
*EL020-53326	D1260GX	1-1/2	3/4	1/4	1-1/4	Mang. Br.	Steel
*EL020-53325	D1260GU	1-1/2	3/4	1/4	1-3/16	Mang. Br.	Steel
EL020-55327	D1260HZ	2	3/4	1/4	1-1/8	Mang. Br.	Steel
*EL020-55300	D1260JD	2	3/4	1/4	1-1/2	Mang. Br.	Steel
EL020-56320	D1260BT	2-1/2	3/4	1/4	1	Mang. Br.	Steel
*EL020-56321	D1260DW	2-1/2	3/4	1/4	2-1/4	Mang. Br.	Steel
EL020-56421	D1260DG	2-1/2	1	1/4	1	Mang. Br.	Steel
EL020-58922	D1260FT	3	1-1/4	1/4	1-1/4	Mang. Br.	Steel
EL020-58923	—	3	1-1/4	1/4	1-1/4	Mang. Br.	S.S.
EL020-59900	D1260AY	5-1/2	1-1/2	1/4	1-3/4	C.R.S.	Steel

*On Series EA040/060/080/170, Lever will not clear top of switch when mounted with Roller facing the rear.



Style RW - Wide Roller Regular Type

Ordering Numbers					Material	
Part Number	Reference	L	A	B	Lever	Roller
EL070-53501	D1260AJ	1-1/2	1	1/2	C.R.S.	Bryl. Cop.
EL070-50507	D1260CY	1-5/8	1	1/2	C.R.S.	Bryl. Cop.
EL070-56921	D1260DY	2-1/2	1-1/4	1/2	C.R.S.	Steel
EL060-00024	D1260AL	3	1-1/2	1/2	C.R.S.	Steel
EL070-50921	D1260BE	4	1-1/4	1/2	C.R.S.	Steel



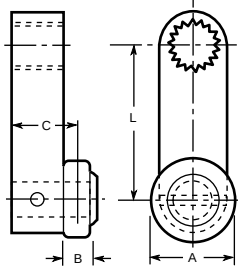
Style RWO - Wide Roller Offset Type

Ordering Numbers						Material	
Part Number	Reference	L	A	B	C	Lever	Roller
EL080-53329	D1260R	1-1/2	3/4	1/2	3/8	Mang. Br.	Steel
EL080-53932	D1260P	1-1/2	1-1/2	1/2	3/8	C.R.S.	Steel
EL080-55323	D1260FR	2	3/4	1/2	3/8	C.R.S.	Steel
EL080-54905	D1260DD	2	1-1/2	1/2	3/8	C.R.S.	C.R.S.
EL080-56301	D1260AH	2-1/2	3/4	1/2	3/8	C.R.S.	Steel
EL080-56305	—	2-1/2	3/4	1/2	3/8	C.R.S.	Bryl. Cop.
EL080-58322	D1260GN	3	3/4	1/2	3/8	C.R.S.	Steel
EL080-58901	D1260DE	3	1-1/2	1/2	3/8	C.R.S.	Steel
EL080-58906	D1260DZ	3-1/2	1-1/2	1/2	3/8	C.R.S.	Steel
EL080-58909	D1260HA	4	1-1/2	1/2	3/8	C.R.S.	Steel
EL080-50924	D1260BS	6	1-1/2	1/2	3/8	C.R.S.	Steel

For Series EA040, 060, 080, 130,
140, 170, 700, 710, 730, 760,
770, 780, 790, 800, 880, 990 Only

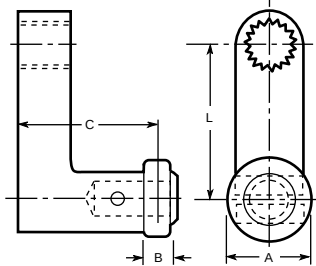
EL Series

Style S - Side Roller Type



Side supported roller offset on front side
of lever machined with straight sides

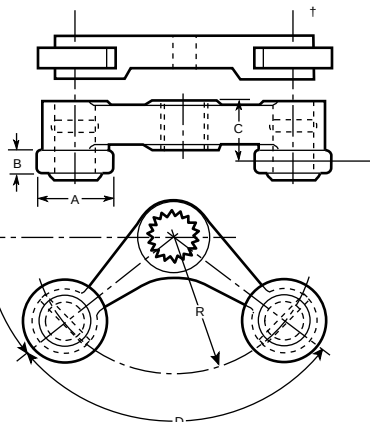
Ordering Numbers						Material	
Part Number	Reference	L	A	B	C	Lever	Roller
EL150-53303	—	1-1/2	3/4	3/4	7/8	C.R.S.	Bryl. Cop.
EL150-53301	D1260A	1-1/2	3/4	1/4	5/8	C.R.S.	Steel
EL150-53300	D1260DU	1-1/2	3/4	3/4	7/8	C.R.S.	Steel
EL150-53901	D1260HV	1-1/2	1-1/4	1/4	5/8	C.R.S.	Steel
EL150-55300	—	2	3/4	1/2	3/4	C.R.S.	Bryl. Cop.
EL150-55303	D1260DT	2	3/4	1/4	5/8	C.R.S.	Steel
EL150-55301	D1260JJ	2	3/4	1/2	3/4	C.R.S.	C.R.S.
EL150-56300	D1260DX	2-1/2	3/4	1/4	5/8	C.R.S.	C.R.S.
EL150-56500	—	2-1/2	1	1/2	3/4	C.R.S.	S.S.
EL150-57300	D1260DO	2-3/4	3/4	1/4	5/8	C.R.S.	C.R.S.
EL150-58901	—	4	1-1/4	1/4	5/8	Bronze	Nylon
EL150-58902	—	4	1-1/4	1/4	5/8	Bronze	Steel



Right angle offset lever has side-
supported roller mounted on end.

Style SLO - Side Roller Lever Offset Type

Ordering Numbers						Material	
Part Number	Reference	L	A	B	C	Lever	Roller
EL090-53324	D1260GZ	1-1/2	3/4	1/4	1	Bronze	Steel
EL090-53336	—	1-1/2	3/4	1/4	1-3/8	Bronze	Nylon
EL090-53321	D1260CT	1-1/2	3/4	1/4	1-3/8	Bronze	Steel
EL090-53322	—	1-1/2	3/4	1/4	1-3/8	Bronze	Bryl. Cop.
EL090-53328	D1260GV	1-1/2	3/4	1/4	2	Bronze	Steel



Angle type rocker arm has both side-
supported rollers mounted on same side.

Style TS - Two Roller Same Side

Ordering Numbers							Material		
Part Number	Reference	R	A	B	C	D	E	Lever	Roller
EL040-50327	D1260CM	1-3/8	3/4	1/4	5/8	107°34'	36°	Bronze	Steel
EL040-50328	D1260JQ	1-3/8	3/4	1/2	3/4	107°34'	36°	Bronze	Steel
†EL040-58904	D1260JH	3	1-1/2	1/2	3/4	150°	15°	Bronze	Steel
†EL040-58905	—	3	1-1/2	1/2	3/4	150°	15°	Bronze	Bryl. Cop.

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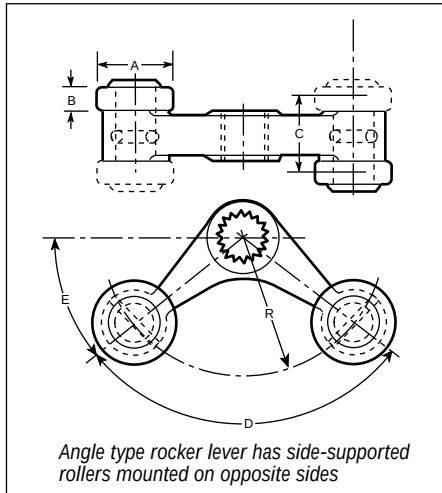
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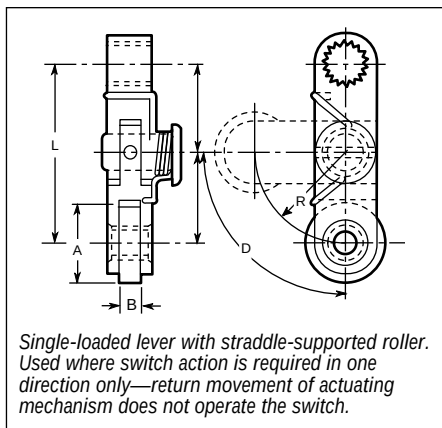
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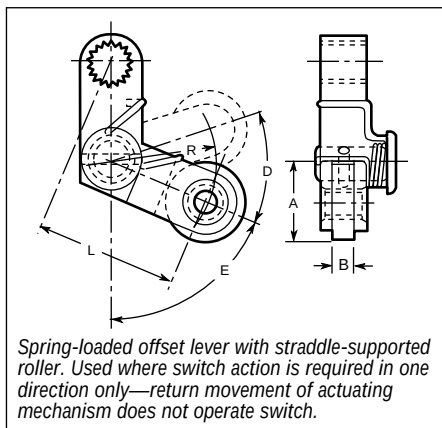
Style TSO - Two Roller Opposite Side

Ordering Numbers								Material	
Part Number	Reference	R	A	B	C	D	E	Lever	Roller
EL030-50301	D1260AA	1-3/8	3/4	1/4	3/4	107°34'	36°13'	Bronze	Steel
EL030-50302	D1260DH	1-3/8	3/4	1/2	1	107°34'	36°13'	Bronze	Steel
EL030-52322	D1260DQ	1-1/2	3/4	3/4	1-1/4	90°	45°	Bronze	Steel



Style KR - Knee Action Straight Type

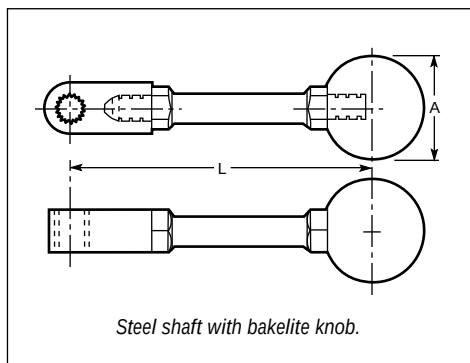
Ordering Numbers							Material	
Part Number	Reference	R	A	B	D	L	Lever	Roller
EL100-55401	D1260JM	1	7/8	1/4	90°	2	Steel	Steel
EL100-55402	—	1	7/8	1/4	90°	2	Steel	Bryl. Cop.
EL100-55403	—	1	7/8	1/4	90°	2	Steel	S.S.



Style KRO - Knee Action Offset Type

Ordering Numbers								Material	
Part Number	Reference	R	A	B	D	E	L	Lever	Roller
EL110-50401	D1260JV	1-1/8	7/8	1/4	41°30'	67°30'	1-7/8	Steel	Steel

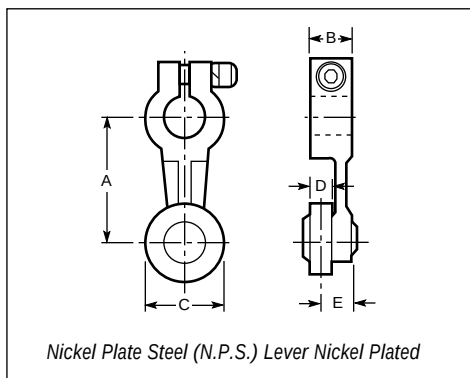
For Series EA040, 060, 080, 130,
140, 170, 700, 710, 730, 760,
770, 780, 790, 800, 880, 990 Only



Style M - Manual Type

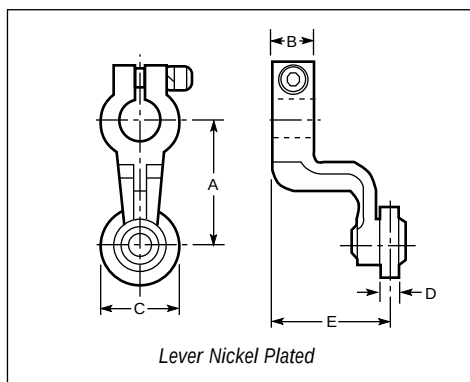
Ordering Numbers				Material	
Part Number	Reference	L	A	Lever	Knob
EL050-58900	D1260EP-3	3	1-3/8	Steel	Bakelite
EL050-59901	D1260EP-1	4-1/16	1-3/8	Steel	Bakelite
EL050-59900	D1260EP	6-5/16	1-3/8	Steel	Bakelite

For Series EA700, 710, 730, 760,
770, 780, 790, 800, 880, 990 Only



Straight

Ordering Numbers							Material	
Part Number	Reference	A	B	C	D	E	Lever	Roller
EL010-62401	SL-160	1-1/2	1/2	7/8	9/32	25/64	Zinc	Steel
EL010-63414	SL-160K	1-1/2	1/2	7/8	9/32	25/64	Zinc	S.S.
EL010-63415	SL-160N	1-1/2	1/2	7/8	9/32	25/64	Zinc	Nylon



Offset

Ordering Numbers							Material	
Part Number	Reference	A	B	C	D	E	Lever	Roller
EL020-63412	SL-160C	1-1/2	1/2	7/8	9/32	1-7/16	Zinc	Steel
EL020-63414	SL-160L	1-1/2	1/2	7/8	9/32	1-7/16	Zinc	Nylon
EL020-63415	SL-160S	1-1/2	1/2	7/8	9/32	1-7/16	Zinc	S.S.

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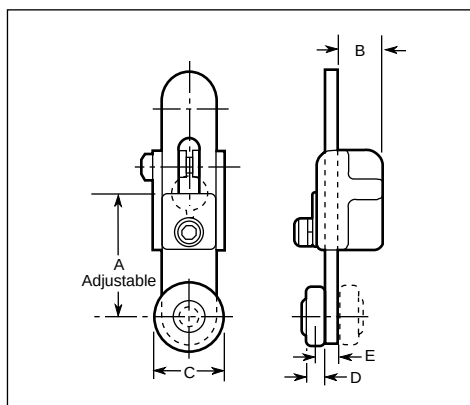
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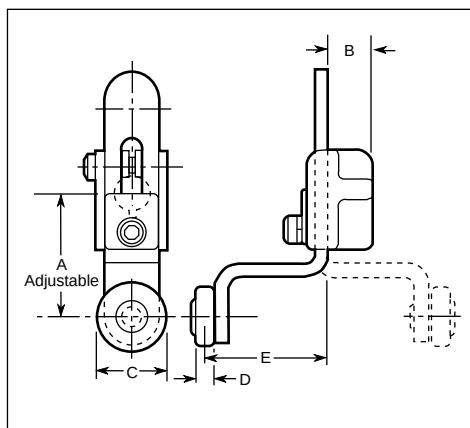
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For Series EA700, 710, 730, 760,
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Adjustable Straight

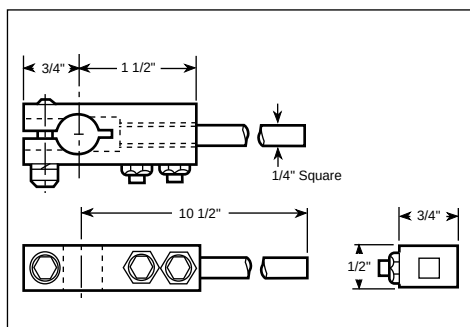
Ordering Numbers							Material	
Part Number	Reference	A	B	C	D	E	Lever	Roller
EL120-60400	SL-170A	1-3/4-3	21/32	7/8	9/32	11/32	Steel	Steel
EL120-60600	SL-170C	1-7/8-3	21/32	2	9/32	11/32	Steel	Steel
EL120-69415	SL-170K	1-3/4-3	21/32	7/8	9/32	11/32	Steel	Nylon
EL120-69421	SL-170R	3-3/4-5	21/32	7/8	9/32	11/32	Steel	Steel
EL120-60601	—	3-3/4-5	21/32	2	9/32	11/32	Steel	Steel



Adjustable Offset

Ordering Numbers							Material	
Part Number	Reference	A	B	C	D	E	Lever	Roller
EL130-64410	SL-170	1-3/4-3	21/32	7/8	9/32	1-25/32	Steel	Steel
EL130-69410	SL-170D	1-3/4-3	21/32	7/8	9/32	1-25/32	Steel	Nylon
EL130-69412	SL-170F	1-3/4-3	21/32	7/8	9/32	2-3/8	Steel	Steel
EL130-69413	SL-170G	1-3/4-3	21/32	7/8	9/32	3-1/2	Steel	Steel
EL130-69414	SL-170J	1-3/4-3	21/32	7/8	9/32	15/16	Steel	Steel
*EL130-69411	SL-170E	1-3/4-3	21/32	7/8	9/32	1-9/32	Steel	Steel
EL130-20401	—	1-3/4-3	21/32	7/8	17/64	3-1/2	Steel	Nylon

*Roller mounted on opposite side

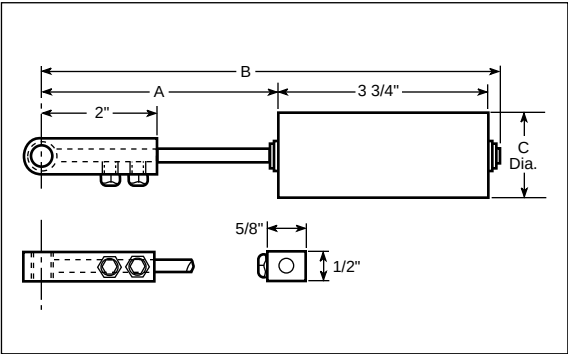


Rod Lever

Ordering Numbers			
Part Number	Reference	Dimensions	Material
EL140-69917	SL170M-1	Other rod lengths available to suit requirements	Steel Rod

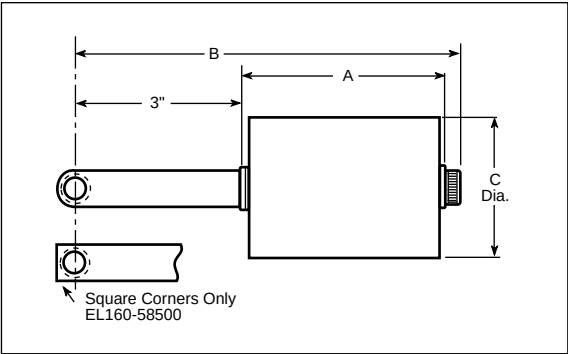
EL Series

For Series EA040, 060, 080, 130,
140, 170, 700, 710, 730, 760, 770,
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Style VR - Belt Mis-Alignment Lever-Adjustable

Ordering Number	"A"	"B"	"C"	Material	
	(Adjustable)	Max.	Dia.	Lever	Roller
EL140-58500	4.45/3.82"	8.38"	1.50"	Steel	Delrin
EL140-58600	4.45/3.82"	8.38"	2.50"	Steel	Delrin



Style YR - Belt Mis-Alignment Lever

Ordering Number	"A"	"B"	"C"	Material	
		Max.	Dia.	Lever	Roller
EL160-58500	2.24"	5.64"	1.25"	Steel	Nylon
EL160-58600	3.50"	6.90"	2.50"	Steel	Nylon

Limit Switches

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Proper Application of Limit Switches General Information

Limit switches are used to convert a mechanical motion into an electrical control signal. The mechanical motion is usually in the form of a cam, a machine component or an object moving toward a predetermined position. The cam engages the limit switch lever or plunger and this in turn makes or breaks an electrical contact inside the switch. This electrical control signal is then used to limit position or reverse the machine travel, or to initiate another operating sequence. It can also be used for counting, sorting or as a safety device.

Typical limit switch applications are in the control circuits of solenoids, control relays and motor starters which control the motion of machine tools, conveyors, hoists, elevators and practically every type of motor driven machine.

Experience has shown that most limit switch failures are the fault of the installation. In some cases an installation that is not perfect cannot be avoided, but in the majority of cases, proper application of the limit switch would have prevented failure. For application assistance, call 1-800-NAMTECH.

Definition of Limit Switch Terms

Actuator - Mechanism of the switch or switch enclosure which operates the contacts, i.e. lever arm, plunger, wobble stick.

Break - To open an electrical circuit.

Cam - Machine part or component that applies force to switch actuator causing actuator to move as intended. See also "Dog."

Cam Track - Distance from switch mounting surface to a specified point on actuator.

Differential Travel - Distance or angle from the operating position to the reset position.

Direct-Acting Contacts - Contacts are moved directly by the operating shaft. In general should only be used where movement of actuator must break welded contacts, as in a crane safety limit switch.

Dog - Machine part or component that applies force to switch actuator causing actuator to move as intended. See also "Cam."

Double Break - Contacts open circuit at two points.

Double Pole Double Throw (DPDT) - Switches which make and break two separate circuits. This circuit provides a normally open and normally closed contact for each pole.

Free Position - Position of switch actuator when no external force (other than gravity) is applied on the actuator. See also "Initial Position" and "Normal Position."

Initial Position - Position of switch actuator when no external force (other than gravity) is applied on the actuator. See also "Free Position" and "Normal Position."

Maintained Contact Switch - Designed for applications requiring sustained contact after actuator has been released, but with provision for resetting.

Make - To close or establish an electrical circuit.

Momentary Contact Switch - A switch which returns from the operated condition to normal condition when actuating force is removed. See also "Spring Return."

Neutral Position Limit Switch - Lever arm type switch with two sets of contacts, one of which operates when the shaft is rotated clockwise and the other of which operates when the shaft is rotated counter-clockwise.

Normal Position - Position of switch actuator when no external force (other than gravity) is applied to actuator. See also "Free Position" and "Initial Position."

Normally Closed Contact (N.C.) - Contacts that move to the closed position when no external force is on the actuator.

Normally Open Contacts (N.O.) - Contacts that move to the open position when no external force is on the actuator.

Operating Force - Amount of force applied to the actuator to cause contact operation.

Operating Position - Position of the actuator at which the contacts move to the operated position. See also "Trip Position."

Overtravel - Movement of the actuator beyond the operating position.

Pilot Duty Rating - Rating of contacts when making and breaking inductive loads such as coil and solenoids.

Pole - Parts necessary to control one conductor of a circuit.

Precision Snap Acting Switch - An electromechanical switch having predetermined and accurately controlled characteristics and having a spring loaded, quick make-and-break contact action.

Pretravel - Distance or angle through which the actuator moves from the normal position to the operating position.

Reset Position - Position of actuator at which contacts return to the normal position. See also "Releasing Position."

Releasing Position - Position of actuator at which contacts return to the normal position. See also "Reset Position."

Repeat Accuracy - Ability of a switch to repeat its characteristics precisely from one operation to the next operation. See also "Repeatability."

Repeatability - Ability of a switch to repeat its characteristics precisely from one operation to the next operation. See also "Repeat Accuracy."

Single Pole Double Throw (SPDT) - Switches which make and break one circuit. Circuit provides one normally open and one normally closed contact.

Slow Make-and-Break Contacts - The speed of contact transfer is directly dependent on the speed of the operating shaft.

Snap Action - Rapid motion of the contacts from one position to another position or their return. This action is relatively independent of the rate of travel of the actuator.

Snap Back - Sudden return of actuator to normal position.

Spring Return Switch - A switch which returns from operated condition to normal condition when actuating force is removed. See also "Momentary Contact Switch."

Trip Position - Position of the actuator at which the contacts move to the operated position. See also "Operating Position."

Total Travel - Distance from actuator-free position to over-travel limit position.

Actuator Design

For maximum limit switch life, the force applied to the lever arm by a cam should be perpendicular to the lever arm. This means that the cam angle and lever arm angle should be the same.

A good recommended cam angle and lever arm angle at moderate cam speeds (up to 90 fpm) is 45°, see Figure 1-1. Here lever acceleration is less and deceleration is also less at the lower cam edge.

The arrangement shown in Figure 1-2 is satisfactory only at cam speeds below 50 fpm. At higher speeds, the impact due to high lever acceleration causes excess roller bounce. Rapid deceleration occurs at the lower cam edge.

The cam trailing edge on overriding cams must also be considered for maximum switch life, see Figure 1-3. Lever arm snap back causes shock loads which reduce switch life. Also, with reversing cams the trailing edge becomes a leading edge on the return stroke.

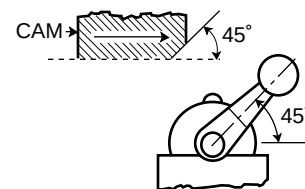


Figure 1.1

*Recommended for moderate cam speeds - up to 90 fpm
Non-overriding cams*

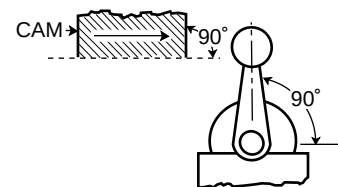


Figure 1.2

*Satisfactory only for low cam speeds - 50 fpm or less
Non-overriding cams*

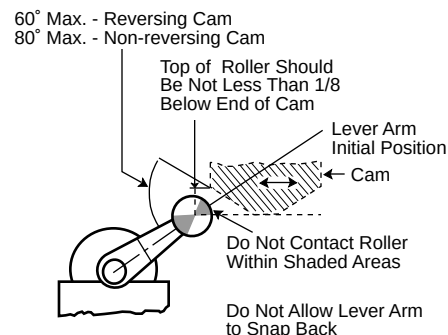


Figure 1.3

For overriding cams - up to 90 fpm

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Electrical Ratings

RATINGS —

Many control applications involve high inductive loads such as starter, contactor and relay coils; solenoids and clutches. In order to apply a control device correctly, the inductive rating must be known. Ratings are generally listed in three ways:

1. Resistive or non-inductive.
2. Inductive (pilot duty).
3. Continuous.

Resistive or non-inductive ratings - This rating indicates the resistive load only that the contacts make or break. Resistive ratings are generally based on a 75% minimum power factor for AC.

Inductive (pilot duty) ratings - The inductive rating indicates the non-motor inductive load, such as the contactors, relays and other remotely controlled devices that the contacts can make or break. These ratings usually are based on a 35% power factor for AC.

Continuous rating - Continuous rating indicates the load that the contacts can carry continuously without making or breaking the circuit.

The inductive rating is always less than the resistive or continuous rating. When contacts break an inductive circuit, the inductance in the load tends to keep the current flowing in the same direction. The result is an arc across the contacts which causes heating and burning of the contacts. Because of the extra heat generated, the allowable inductive current must be less than the resistive current for equal contact life.

Quick make and quick break (snap-action) contacts reduce the arcing time and allow higher inductive ratings than with slow make-or-break contacts. AC inductive coil loads have a momentary inrush current of approximately 10 times the sealed current. Contacts must be able to break or interrupt the inrush current in an emergency.

Excessive load - If the load exceeds the ratings of the limit switch being used, a control relay (CR) or contactor with proper ratings can be used as in Figure 1-4.

The DC current ratings of a device can be increased by placing contacts in series. This effectively increases the contact gap allowing a higher current rating. In general, the following ratings can be applied:

2 contacts in series — DC rating x 2.5

3 contacts in series — DC rating x 5

Current should never exceed the maximum continuous current rating of the device.

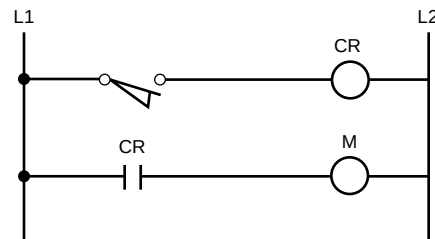


Figure 1.4

Contact Resistance

RESISTANCE OF SNAP SWITCHES

Snap switch resistance is the total electrical resistance that a snap switch adds to the circuit and consists of:

Conducting Path. Includes all terminals, inserts, stationary contact material resistance, movable contact material resistance, movable blade assembly, and any other parts in the conducting circuit.

Constriction Resistance of all joints, discontinuities, or interfaces. This is the resistance caused by limited mating surfaces through which the load must pass. If the movable and stationary contact tips are viewed through a microscope, it can be seen that they only touch at a very few points. Thus, increased resistance is presented to the current. If the current is high enough, the points of constriction are softened and enlarged through thermal effects and the resistance decreases.

Film resistance. It is well known that silver accumulates a surface resistance due to chemical reaction with its environment. The most common reaction is with sulfur and oxygen which creates a sulfide and an oxide of silver. Such a surface is known to have some resistance which can be read with a low voltage instrument such as an ohmmeter. These surfaces, however, have the characteristic of being self-clearing. When current is passed through such a surface, it creates heat which, in turn, reduces the compound to pure silver again and restores the contact to a low ohmic value. This has long been the characteristic which has made silver such a good selection for contact materials.

Standard contacts can be gold plated to reduce switch resistance, but may not provide sufficient increase in reliability to warrant the added cost. For example, if the contact material underneath is exposed at any point due to excessive current or normal mechanical wear, a contaminating film may develop and will eventually creep over the plated portion. Long-term reliability is then no better than with standard contacts.

Particle resistance. Contamination in the form of foreign material can also produce resistance. Carefully controlled production processes are used to prevent contamination during assembly of snap switches.

Namco limit switches are designed for use with industrial control equipment where voltages are relatively high — normally 120 volts or higher — and current levels are high — normally .25 amperes or higher. An increase in switch resistance may appear to be more critical in high energy circuits because it represents a greater percentage of total circuit impedance; however, the arcing produced breaks down or burns away the contaminants, reducing the actual resistance seen by the load.

Switch resistance in dry circuit (low voltage, low current) applications is more of a problem, but the resistance has to be quite high to significantly affect operation. For example, a solid state circuit operating at 20 volts and 1 ma has a circuit resistance of 20 divided by (1×10^{-3}) or 20,000 ohms. A Snap-Lock switch with 10 ohms resistance would have little effect. The problem arises with film or particle resistance which can be quite high or even present an open circuit. Use of snap switches with dry circuits is not recommended because these voltages and currents are not high enough to reduce the silver sulfide or silver oxide to pure silver or to burn away other contaminants present.

An ohmmeter test on Snap-Lock switches is unreliable because the most common voltage source in an ohmmeter is a 1.5 volt battery and to snap switch contacts being tested, this is just another dry circuit load. Several ohmmeter readings of the same contacts may vary from a few hundredths of an ohm to several ohms, yet the contacts will work perfectly with a nominal coil load.

Recommendations for Application and Testing of Limit Switch Contacts

Standard Namco limit switches are normally recommended for use with industrial control devices, not dry circuits. If lower voltages are present, the current drawn through the contacts should be on order of .25 amperes in order to maintain proper continuity.

To test continuity in the field, a six volt, .25 ampere pilot light is recommended.

Do not use an ohmmeter to test continuity.

An ohmmeter is a reliable test only if the snap switch is to be used with a dry circuit and, as stated above, this is normally not recommended.

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Wiring and Mounting

- Unless specifically designed for such service, limit switches **SHOULD NOT BE** submerged in or splashed with oils, coolants or other liquids. **CONSULT FACTORY.**
- Limit switches **MUST NOT BE** used in locations where temperature or atmospheric conditions are beyond those for which they have been specifically designed.
- Power from different sources **MUST NOT BE** connected to the contact of one limit switch unless specifically designed for such service.
- Limit switches **MUST BE** used within their contact ratings. Refer to switch label on cover for electrical ratings and the appropriate limit switch bulletin for acceptable environmental conditions in which the switch has been designed to function properly.
- Limit switches **SHOULD BE** mounted rigidly and in readily accessible locations, with suitable clearances to permit easy service and replacement when necessary. Cover plates **SHOULD** face the maintenance access point.
- Limit switches **SHOULD BE** placed in locations where machining chips do not accumulate under normal operating conditions to avoid chip interference with the lever operation.
- Opposite polarities **MUST NOT BE** connected to the contacts of one limit switch unless the limit switch is specifically designed for such service.

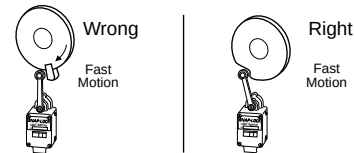
Limit Switch Selection

Selection of the proper electro-mechanical limit switch for an application generally breaks down into two major decisions, choosing the proper actuator (lever) and choosing the proper enclosure. There are other considerations, such as what operating sequences are available, temperature rating and electrical rating. These vary from switch type to switch type.

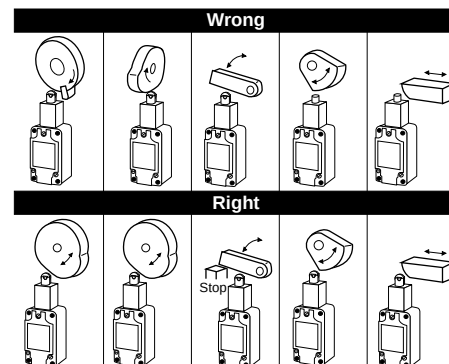
Selection of Limit Switch Actuator — Selection of a suitable actuator depends on the shape, speed, direction and total travel of the cam or part being used to trip the limit switch and the accuracy desired. See Operating Levers Section for levers offered fitting Namco limit switches.

Actuator Consideration

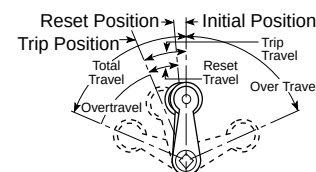
- Where relatively slow motions operate the limit switch, a snap-acting or snap-lock design **SHOULD BE** used.
- Where relatively fast motions are involved, cam arrangement **SHOULD BE** such that the actuator does not receive a severe impact.
- Where relatively fast motions are involved, cams **MUST BE** designed such that the limit switch will be held operated long enough to operate relays, valves, etc.



- For limit switches with pushrod actuators, the actuating force **SHOULD BE** applied as nearly as possible in line with the pushrod axis.

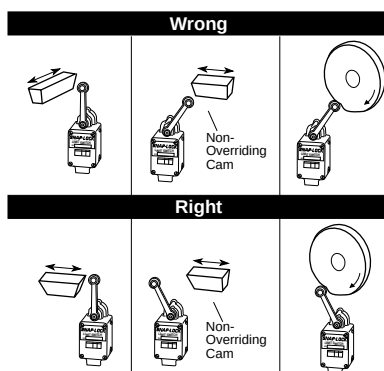


- Limit switches **MUST NOT BE** operated beyond the manufacturer's recommended travel. Operating positions and lever travel terminology are illustrated in drawing below. For specifications of a specific switch, refer to the switch bulletin.



NOTE: When loosening or tightening the pipe plug or set screw used to clamp the actuating lever in the desired position, care must be exercised to restrain the shaft/lever assembly so as not to transmit the applied torque to the switch itself.

- Cam or dog arrangements **SHOULD BE** such that the actuator is not suddenly released to snap back freely unless specifically designed for such service.
- For limit switches with lever actuators, the actuating force **SHOULD BE** applied as nearly perpendicular to the lever as practical and perpendicular to the shaft axis in which the lever rotates.



- A limit switch actuator **MUST BE** allowed to move far enough for positive operation of the contacts.
- Limit switches **MUST BE** mounted in locations which will prevent false operation by normal movements of operator or machine components.
- Limit switches are designed for proper performance with the actuators with which they are supplied. Supplementary actuators **SHOULD NOT BE** used unless the limit switches are specifically designed for them.
- Operating mechanisms for limit switches **MUST BE** so designed that, under any operating or emergency conditions, the limit switch is not operated beyond its overtravel limit position. A limit switch **MUST NOT BE** used as a mechanical stop.

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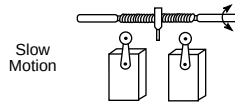
For technical assistance, call 1-800-NAMTECH

Cam Design

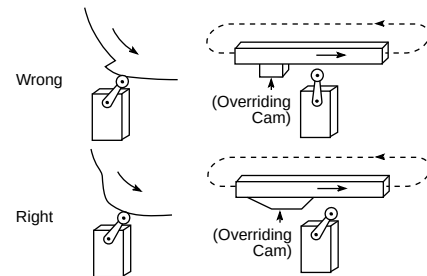
The most important consideration in the proper application of limit switches is external cam design. The majority of limit switch failures can be traced to poor cam design. Excessive overtravel and/or excessive snap back of the operating lever arm are the most common abuses. Good cam design will greatly increase the life of a limit switch.

Listed below are general rules for the proper design and application of limit switch cams published by NEMA in Standards Publication ICS2-225.

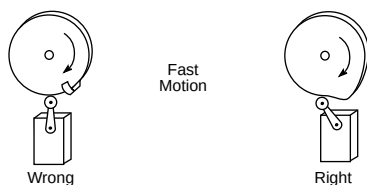
ICS2-225.83 - Where relatively slow motions operate the limit switch, it should generally be snap acting.



ICS2-225.85 - Cam or dog arrangements should be such that the actuator is not suddenly released to snap back freely.



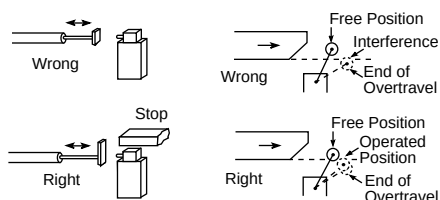
ICS2-225.84 - Where relatively fast motions are involved, cam arrangements should be such that the actuator does not receive a severe impact



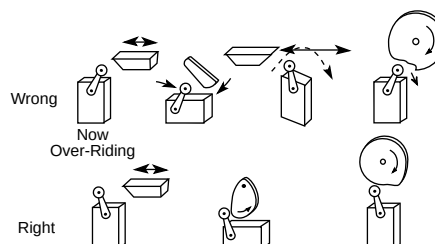
ICS2-225.86 - Where relatively fast motions are involved, cams should be designed such that the limit switch will be held operated long enough to operate relays, valves, etc.



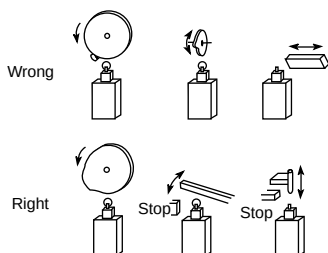
ICS2-225.88 - Operating mechanisms for limit switches should be so designed that under any operating or emergency conditions, the limit switch is not operated beyond its overtravel limit position. A limit switch should not be used as a mechanical stop.



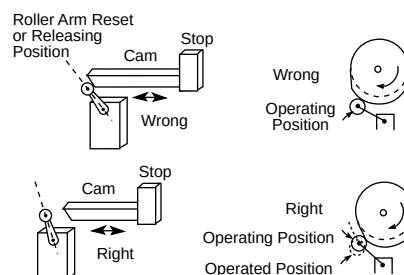
ICS2-225.90 - For limit switches with lever actuators, the actuating force should be applied as nearly perpendicular to the lever as practical, and perpendicular to the shaft axis about which the lever rotates.



ICS2-225.89 - For limit switches with pushrod actuators, the actuating force should be applied as nearly as possible in line with the push rod axis.



ICS2-225.91 - A limit switch actuator must be allowed to move far enough for positive operation of the contacts.



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UL Listing of Namco Switches

The following is a list of all switches which are listed with Underwriters Laboratories:

File: E12967 Special Use Switches

Switch Marking: Underwriters Laboratory Inc. Recognized Snap Switch

Listed Switches: EA700-10000, -10001, -10100, -40000, -40001, -40100, -70000, -70001, -70100, -20000, -20001, -20100, -50000, -50001, 50100, -80000, -80001, -80100, -30000, -30001, -30100, -60000, -60001, -60100, -90000, -90001, -90100

File: E23331, Snap Switches for Use in Hazardous Locations

Switch Marking: Listed 921M

Listed Switches: EA800-10040, -10050, -10060, -10944, -10954, -10964, -20040, -20050, -20060, -20944, -20954, -20964, -30040, -30050, -30060, -30944, -30954, -30964

File: E59180, Industrial Control Equipment, Auxiliary Devices

Switch Marking: Listed Industrial Control EQ145M

Listed Switches: EA040-11105, EA040-21105, EA060-11105, EA060-21105, EA080-11105, EA080-21105

File: E62691, Industrial Control Equipment, Auxiliary Devices for use in Hazardous Locations

Switch Marking: Listed Industrial Control EQ for Haz Loc 727U

Listed Switches: EA880-11100, -11200, -11500, -11600, -12100, -12200, -12500, -12600, -13100, -13200, -13500, -13600

As presently produced, the EA170 and EA180 switches are not listed.

ICS 6-110.01 Definitions

Acid-resistant - Acid-resistant means so constructed that it will not be injured readily by exposure to acid fumes.
NEMA Standard 12-8-1972.

Dripproof - Dripproof means so constructed or protected that falling dirt or drops of liquid will not interfere with the successful operation of the apparatus under specified test conditions. See ICS 6-110.52.
NEMA Standard 7-16-1969.

Driptight - Driptight means so constructed or protected as to exclude falling dirt or drops of liquid under specified test conditions. See ICS 6-110.52.
NEMA Standard 7-16-1969.

Dusttight - Dusttight means so constructed as to meet the requirements of a specified dusttightness test. See ICS 6-110.54.
NEMA Standard 7-16-1969.

External Mounting - External mounting means enclosure mounting provisions external to the apparatus cavity.
NEMA Standard 7-16-1969.

Flush Mounting - Flush mounting means so designed as to have a minimal front projection when set into and secured to a flat surface.
NEMA Standard 7-16-1969.

Knockout - A knockout is a portion of the wall of a box or cabinet so fashioned that it may be removed readily by a hammer, screwdriver, and pliers at the time of installation in order to provide a hole for the attachment of a raceway cable or fitting.
NEMA Standard 7-16-1969.

Hazardous Locations - Hazardous locations are those areas which may contain hazardous materials in sufficient quantity to create an explosion. See Article 50 of the *National Electrical Code*.
NEMA Standard 7-16-1969.

Nonventilated - Nonventilated means so constructed as to provide no intentional circulation of external air through the enclosure.
NEMA Standard 7-16-1969.

Outdoor - Outdoor means suitable for installation where exposed to the weather.
NEMA Standard 7-16-1969.

Proof (Used as a Suffix) - Proof (used as a suffix) means so constructed, protected or treated that successful operation of the apparatus is not interfered with when subjected to the specified material or condition.
NEMA Standard 7-16-1969.

Rainproof - Rainproof means so constructed, protected or treated as to prevent rain under specified test conditions from interfering with successful operation of the apparatus. See ICS 6-110.53.
NEMA Standard 7-16-1969.

Raintight - Raintight means so constructed or protected as to exclude rain under specified test conditions. See ICS 6-110.53
NEMA Standard 7-16-1969.

Resistant (Used as a Suffix) - Resistant (used as a suffix) means so constructed, protected, or treated that the apparatus will not be damaged when subjected to the specified material or conditions for a specified time.
NEMA Standard 7-16-1969.

Sleetproof - Sleetproof means so constructed or protected that the accumulation of sleet (ice) under specified test conditions will not interfere with the successful operation of the apparatus including external operating mechanism(s). See ICS 6-110.55.
NEMA Standard 7-16-1969.

Sleet-resistant - Sleet-resistant means so constructed that the accumulation and melting of sleet (ice) under specified test conditions will not damage the apparatus. See ICS 6-110.55.
NEMA Standard 7-16-1969.

Submersible - Submersible means so constructed as to exclude water when submerged in water under specified test conditions of pressure and time.
NEMA Standard 7-16-1969.

Tight (Used as a Suffix) - Tight (used as a suffix) means so constructed that the enclosure will exclude the specified material under specified conditions.
NEMA Standard 7-16-1969.

Watertight - Watertight means so constructed as to exclude water applied in the form of a hose stream under specified test conditions. See ICS 6-110.56.
NEMA Standard 7-16-1969.

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