

D

C

B

A

NOTE:

A. MATERIAL AND FINISH:

TOP HOUSING, COVER – NYLON AND PC/ABS
BOTTOM HOUSING, PIVOT PINS – STEEL, ZINC PLATED
CAM, TRIGGER – STEEL, SEALED
GEARS – ACETAL
PINS, SCREWS – STEEL, ZINC PLATED
PIN, SPRINGS – STAINLESS STEEL PASSIVATED
-SOME COMPONENTS ARE NOT HALOGEN FREE.

B. ELECTRICAL SPECIFICATION:

OPERATING VOLTAGE: -12V MODELS: 10.8 TO 13.2 VDC
-24V MODELS: 21.6 TO 26.4 VDC
TYPICAL OPERATING CURRENT: -12V MODELS: LESS THAN 200 mA AT 12VDC
-24V MODELS: LESS THAN 100 mA AT 24VDC
PEAK/STALL OPERATING CURRENT:-12V MODELS: 1A MAX AT 12VDC
-24V MODELS: 0.3A MAX AT 24VDC

CAUTION! NO STALL PROTECTION IS PROVIDED IN LATCH. USE APPROPRIATE CIRCUIT PROTECTION.
TYPICAL LATCH TRANSIT TIME TO RELEASE: 800 MILLISECONDS , 1.5 SECOND MAX.
OPERATING TEMPERATURE RANGE: -20C TO 60C NON-ICING, NON-CONDENSING ENVIRONMENT
OPERATING HUMIDITY: 85% MAX.
NOT INTENDED FOR DIRECT EXPOSURE TO OUTDOOR ELEMENTS.

C. ELECTRICAL CONNECTIONS AND HOOKUP:

A BASIC SWITCH CONTROL ELECTRICAL HOOKUP DIAGRAM IS PROVIDED FOR REFERENCE.
CONSULT WITH A SOUTHCO REPRESENTATIVE FOR ADDITIONAL ELECTRICAL HOOKUP INFORMATION.
-CONNECT POWER, AND GROUND TO AN APPROPRIATE DC POWER SUPPLY.
-RECOMMENDED DC POWER SUPPLY:-FOR 12V MODELS 1 AMP MINIMUM IS RECOMMENDED.
-FOR 24V MODELS 0.5 AMP MINIMUM IS RECOMMENDED.

-POWER MUST BE AVAILABLE TO OPERATE THE LATCH AND MUST REMAIN AVAILABLE DURING THE FULL RELEASE TRANSIT TIME OF THE LATCH.

CAUTION! LATCH CAN BE DAMAGED IF WIRED INCORRECTLY, OR IF IMPROPER VOLTAGE IS APPLIED!

LATCH CONNECTOR PIN ASSIGNMENT:

PIN1: POWER PIN3: NONE OR OPTIONAL DOOR STATUS SIGNAL
PIN2: GROUND PIN4: LATCH STATUS SIGNAL

D. ELECTRICAL OPERATION:

TO RELEASE OR TRIGGER THE LATCH: PROVIDE POWER TO CONNECTOR PIN 1.
- CONNECT GROUND AND POWER, LATCH WILL TRIGGER UPON POWER UP.
- PROVIDE POWER FOR A MINIMUM OF 1.1 SECOND.
- POWER CAN REMAIN ON INDEFINITELY WITHOUT RE-TRIGGERING WITH CAM IN OPEN POSITION.
- POWER MUST BE REMOVED TO CLOSE THE LATCH.

NOTE:

-THE DOOR MUST BE FREE TO OPEN WHEN THE LATCH IS COMMANDED TO OPEN.
THE LATCH WILL CONTINUE TO TRY TO OPEN FOR AS LONG AS POWER IS SUPPLIED WHEN THE CAM IS IN THE CLOSED POSITION. IT IS RECOMMENDED TO LIMIT THE POWER ON TIME.
IF POWER FAILS, OR IS REMOVED DURING TRANSIT THE LATCH MAY BE LEFT IN AN INDETERMINANT STATE.

E. POSITION FEEDBACK SWITCHES:

-“LATCH STATUS” LATCH CONNECTOR PIN 4 PROVIDES AN OPEN CIRCUIT WHEN LATCH IS FULLY SECURED, OR SWITCH CLOSURE TO GROUND PER THE LATCH STATUS TABLE.
RECOMMENDED MAX SWITCH CURRENT: 1A MAX AT 12 OR 24 VDC
SWITCH RATING: 3A AT 125 VAC
-OPTIONAL “DOOR STATUS” LATCH CONNECTOR PIN 3 PROVIDES AN OPEN CIRCUIT OR SWITCH CLOSURE TO GROUND PER THE DOOR STATUS TABLE WHEN USED WITH A MAGNETIC STRIKER ON THE DOOR. SEE NOTE I FOR STRIKERS.
RECOMMENDED MAX DOOR SWITCH CURRENT: 400mA MAX AT 12 OR 24 VDC.

WARNING! SWITCH CIRCUITS ARE NOT FUSED OR ELECTRICALLY PROTECTED. USE APPROPRIATE EXTERNAL CIRCUIT PROTECTION. CORRECTLY WIRE SWITCH PER ELECTRICAL HOOKUP DIAGRAM AND DO NOT SHORT CIRCUIT. A SHORT CIRCUIT CAN DAMAGE LATCH AND MAY POSE AN ELECTRICAL FIRE HAZARD.

F. LATCH CONNECTOR

MANUFACTURER: MOLEX, SERIES: MICRO-FIT 3.0
-3.0MM PITCH MICRO-FIT HEADER, DUAL ROW, 4 POSITIONS, MOLEX P/N:43045-0400 OR EQUIVALENT.
MATE CONNECTOR/WIRE HARNESS REQUIRED (NOT SUPPLIED)
-CONNECTOR: RECEPTACLE HOUSING, DUAL ROW, 4 POSITION 3MM : MOLEX:P/N 43025-0400
-CONTACTS: FEMALE CRIMP TERMINAL (SOCKET) MOLEX P/N 43030-0007
OPTIONAL MATE WIRE HARNESSES ARE AVAILABE. SEE J-EA-W24-XO3 OR CONTACT SOUTHCO FOR DETAILS.

G. MOUNTING:

-MOUNT THE LATCH SECURELY USING TWO (2) SCREWS (SCREWS NOT PROVIDED).
-MOUNTING HOLES ARE AVAILABLE WITH 1/4-20 UNC THREAD, M6x1 THREAD OR Ø7.0 THRU HOLE
-MAXIMUM ALLOWABLE TORQUE ON THREADED MOUNTING SCREWS IS 560N.cm [50 in.lbs]

H. MECHANICAL OPERATION

THE LATCH IS PROVIDED WITH A MECHANICAL TRIGGER TO RELEASE THE LATCH.
THE MAXIMUM TRAVEL OF THE TRIGGER IS SHOWN ON SHEET 2 AND 3. THE TRIGGER MOVES THROUGH ITS FULL TRAVEL DURING ELECTRICAL OPERATION OF THE LATCH.

CAUTION! IT IS IMPORTANT TO NOT OBSTRUCT THE MOTION OF THE TRIGGER DURING ELECTRICAL OPERATION TO PREVENT LONG TERM DAMAGE TO THE ELECTRICAL COMPONENTS IN THE LATCH.
ALSO, ENSURE THAT THE TRIGGER IS FREE TO RETURN TO THE FULLY LOCKED STATE.

FOR REMOTE ACTUATOR CABLE INSTALLATION, INSERT BALL END CABLE THROUGH HOLE IN BRACKET ON LATCH AND THROUGH SLOT IN TRIGGER BEFORE SECURING CABLE JACKET TO LATCH. SECURE JACKET PROPERLY TO PREVENT DAMAGE TO LATCH. CONTACT SOUTHCO FOR AVAILABLE MECHANICAL OVERRIDE CABLES AND ACTUATORS.

I. STRIKER BOLT ASSEMBLIES SOLD SEPARATELY. CONTACT SOUTHCO FOR ADDITIONAL INFORMATION.
-STRIKER BOLT PART NUMBER: R4-90-121-10, REFER TO CUSTOMER DRAWING

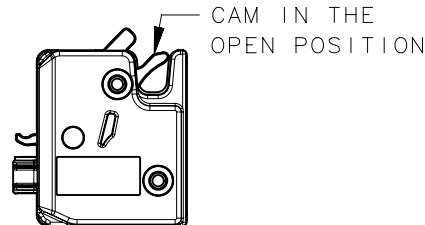
J-R4-90-121-10 FOR ADDITIONAL INFORMATION
-STRIKER PART NUMBER: R4-90-800-10, REFER TO CUSTOMER DRAWING
J-R4-90-804-10 FOR ADDITIONAL INFORMATION

-DOOR SENSOR STRIKER PART NUMBER: R4-90-804-10, REFER TO CUSTOMER DRAWING
J-R4-90-804-10 FOR ADDITIONAL INFORMATION. REQUIRED FOR DOOR POSITION STATUS OPTION.

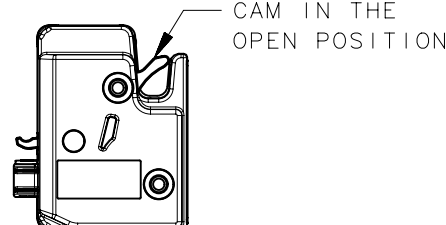
J. CAM TORSION SPRING AVERAGE KICK OUT FORCE UPON UNLOCKING FROM CLOSED POSITION: 3.0N.
AVERAGE CLOSING EFFORT REQUIRED TO CLOSE LATCH FROM OPEN POSITION: 6.5N.

K. PACKAGED IN INDIVIDUAL BOXES OR ADD -1 TO PART NUMBER FOR BULK PACKAGING
EXAMPLE: R4-EM-81-230 INDIVIDUAL
R4-EM-81-230-1 BULK

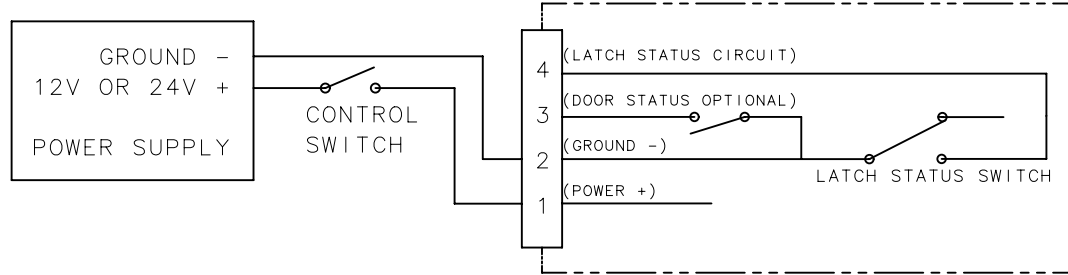
L. FOR SOUTHCO TYPE 5 CABLE ASSEMBLIES, THE VARIABLE “TLC” = 9.0mm. SEE J-AC-C DRAWING FOR DETAILS.



STANDARD HOUSING
(SEE SHEET 2 OF 3 FOR DETAILED INFORMATION)



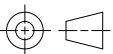
EXTENDED HOUSING
(SEE SHEET 3 OF 3 FOR DETAILED INFORMATION)
R4-EM BASIC LATCH



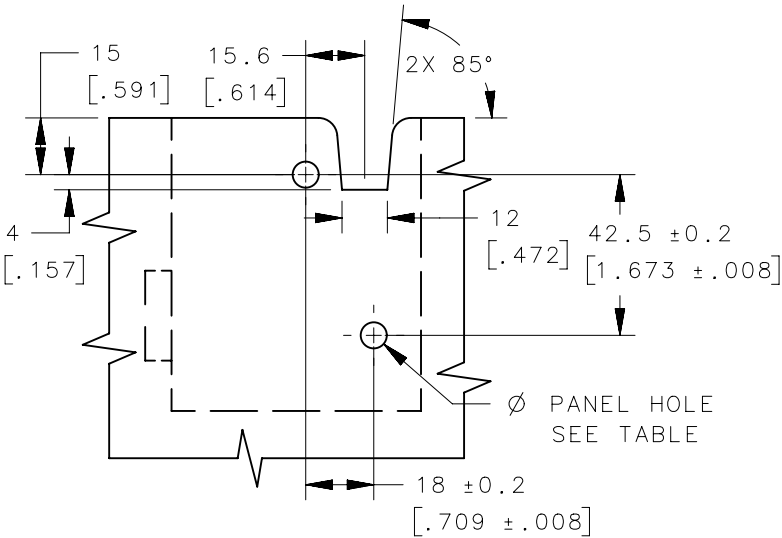
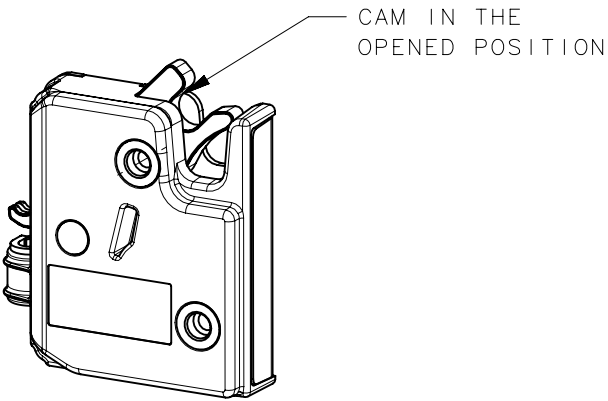
LATCH STATUS CIRCUIT
CONDITIONS FOR PIN 4

TRIGGER POSITION	CAM POSITION	CAM POSITION	
		CAM OPEN	CAM CLOSED
LOCKED		N/A	OPEN CIRCUIT
UNLOCKED		CLOSED CIRCUIT GROUND	CLOSED CIRCUIT GROUND

DOOR STATUS CIRCUIT (PIN 3)	DOOR STATUS	
	DOOR OPEN	DOOR CLOSED
	OPEN CIRCUIT	CLOSED CIRCUIT GROUND

	THIRD ANGLE PROJECTION		southco® CONNECT • CREATE • INNOVATE			
	MILLIMETERS [IN]					
	TOLERANCES UNLESS OTHERWISE NOTED		DESCRIPTION			
SURFACE AREA	ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.		R4-EM 8 SERIES ELECTROMECHANICAL ROTARY LOCK			
VOLUME						
PROPRIETARY ITEM EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.	PER ASME Y14.5M-1994		SIZE A3	SYSTEM NX	DWG NO. J-R4-EM-8-1	
			DRAWN BY DJK/GGG	DATE 25JUN2013	SCALE NTS	SHEET 1 of 3

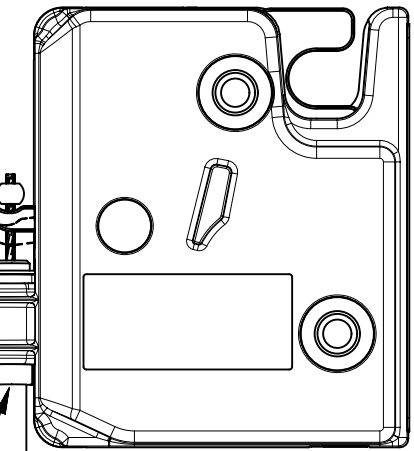
REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
F	01MAR2017	DJK/KAM	PRN: P2017-0495



PANEL PREPARATION

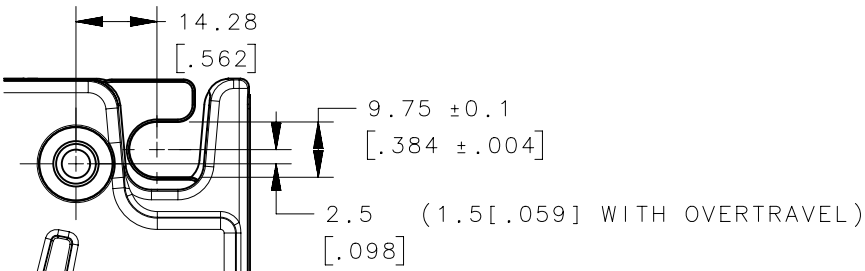
2.5 - 5
[.098 - .197]
TRIGGER
TRAVEL

10 MIN
[.393]
BARE CABLE



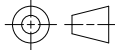
TRIGGER TRAVEL
(SEE NOTE H)
CABLE SOLD SEPARATE
SEE CABLE DRAWING
J-AC-C (CABLE AND
CONDUIT OPTIONS 4
OR 5)
SEE NOTE L

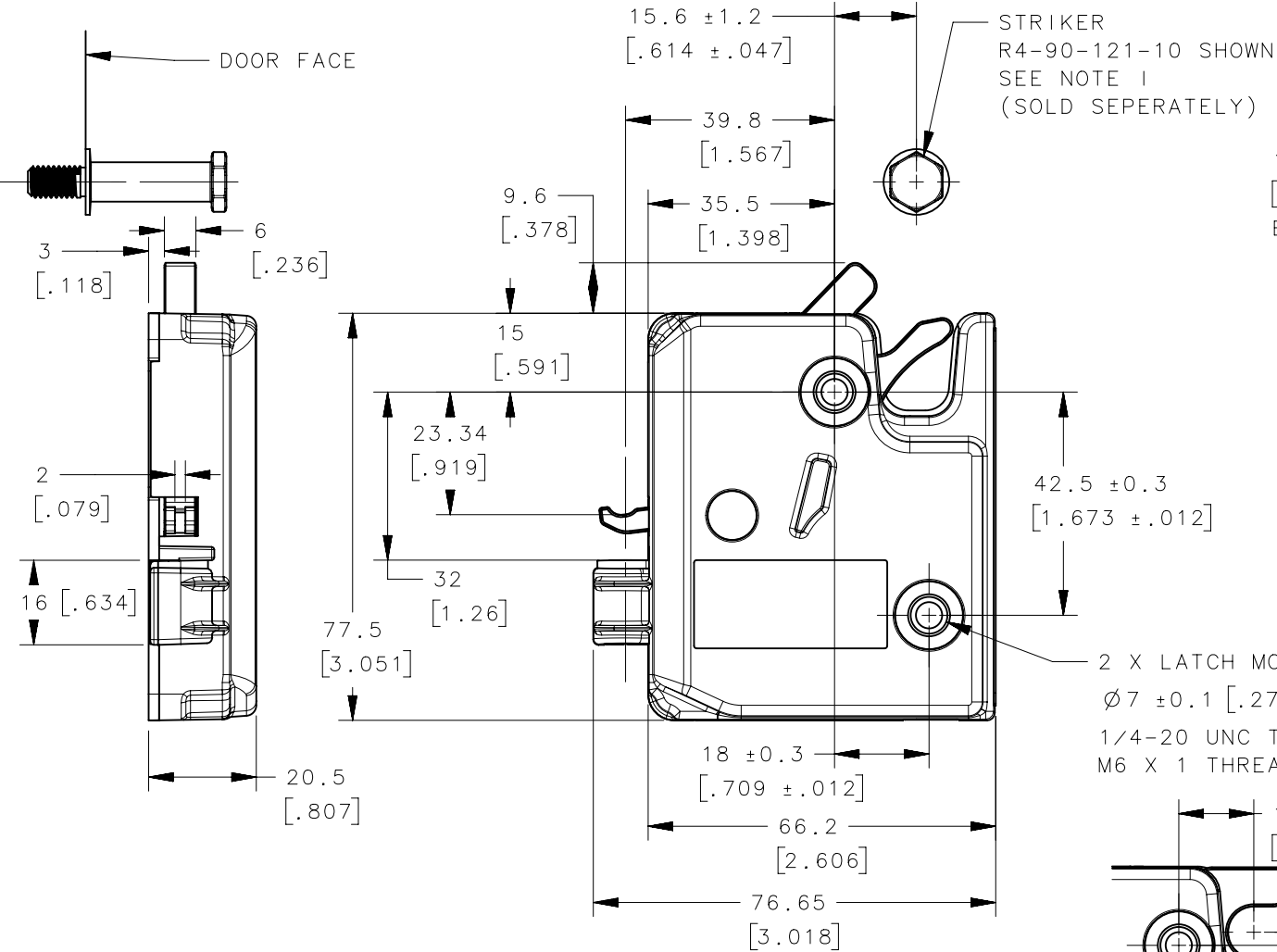
2 X LATCH MOUNTING HOLES
Ø7 ±0.1 [.276 ±.004] THRU HOLE
1/4-20 UNC THREADED, OR
M6 X 1 THREADED



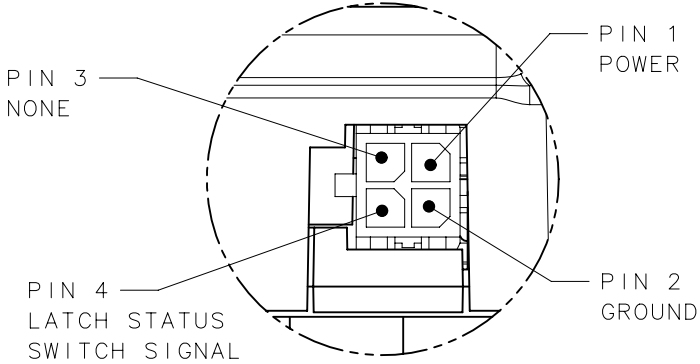
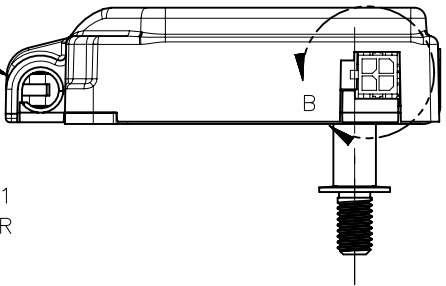
CAM IN THE CLOSED POSITION

NOTE: DOOR STATUS OPTION NOT AVAILABLE ON STANDARD HOUSING MODELS.

STANDARD HOUSING LATCH ASSEMBLY PART NUMBER					
PART NUMBER	MOUNTING HOLE STYLE	RECOMMENDED MINIMUM PANEL HOLE	OPTIONAL DOOR STATUS SIGNAL	VOLTAGE	
R4-EM-81-230	1/4-20 THREADED	Ø 7.2 [.283]	NONE	24 VOLT	
R4-EM-82-230	M6 THREADED	Ø 6.9 [.272]			
R4-EM-83-230	7MM THRU HOLE	Ø 7.6 [.300]			
R4-EM-81-330	1/4-20 THREADED	Ø 7.2 [.283]		12 VOLT	
R4-EM-82-330	M6 THREADED	Ø 6.9 [.272]			
R4-EM-83-330	7MM THRU HOLE	Ø 7.6 [.300]			
	THIRD ANGLE PROJECTION	 southco® CONNECT • CREATE • INNOVATE			
	MILLIMETERS [IN]				
	TOLERANCES UNLESS OTHERWISE NOTED				
SURFACE AREA	ALL DIMENSIONS WITHOUT TOLERANCES ARE FOR REFERENCE ONLY.	DESCRIPTION R4-EM 8 SERIES STANDARD HOUSING			
VOLUME		SIZE A3	SYSTEM NX	DWG NO. J-R4-EM-8-1	
PROPRIETARY ITEM EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.		PER ASME Y14.5M-1994	DRAWN BY DJK/GGG	DATE 25JUN2013	SCALE 0.75:1



INTEGRATED CABLE
MOUNTING BRACKET
SEE NOTE H



DETAIL B
SCALE 2:1

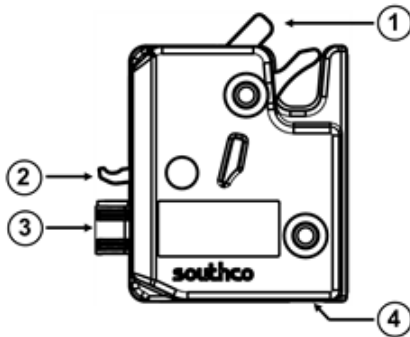
R4-EM 8-Series Latch Operating Instructions

Package Contents

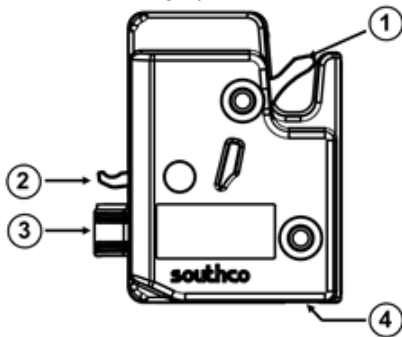
- R4-EM 8-Series Latch
- Operating Instructions

8-Series Latch

Standard Housing



Extended Housing Option



1. cam (shown in open position)
2. mechanical trigger
3. integrated cable mounting bracket
4. latch connector

Features

- extended housing option
- latch and optional door status
- minimal power draw
- integrated latch connector
- mechanical override with integrated cable mounting bracket

Electrical Specifications

	12VDC version	24VDC version
Operating voltage	12VDC $\pm$ 10%	24VDC $\pm$ 10%
Operating current (typ)	< 200mA at 12VDC	< 100mA at 24VDC
Operating current (peak/stall)	1A max at 12VDC	300mA max at 24VDC
Transit time to release	800msec (typ), 1.5sec (max)	
Recommended latch status switch current	1A max	
Recommended door status switch current	0.4A max	

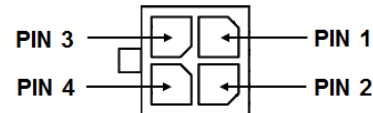
⚠ WARNING: No stall protection is provided in latch. Use appropriate circuit protection.

⚠ WARNING: Latch and door switches are not fused or electrically protected. Use appropriate external circuit protection. A short circuit can damage latch and may pose an electrical fire hazard.

Mounting and Installation

Refer to Southco trade drawing J-R4-EM-8-1 for mounting and installation details.

Connector Pinout



pin	standard housing	extended housing (w/o door status option)	extended housing (w/ door status option)
1	VCC	VCC	VCC
2	GND	GND	GND
3	no connect	no connect	door status switch output
4	latch status switch signal	latch status switch signal	latch status switch output

Releasing the Latch

To release the latch, provide power for a **minimum** of 1.5 seconds. The latch will release immediately.

Power can remain 'on' indefinitely as long as the cam is in the open position. If the cam is moved to the 'closed' position, then the latch will automatically release.

⚠ WARNING: The cam and mechanical trigger must not be obstructed when operating the latch, otherwise damage to the latch could occur.

Closing the Latch

To close the latch, be sure power is removed, then close the cam.

The mechanical trigger must be allowed to return to its fully locked state.

Latch Status Switch Output

The latch switch output provides the status of the latch by monitoring the position of the cam and mechanical trigger, as shown below.

trigger position	cam open	cam closed
locked	n/a	open circuit
unlocked	short to GND	short to GND

Door Status Switch Output (Optional)

(only available with extended housing option)

The door status switch output provides the status of the door when used with a magnetic striker on the door. The switch will respond by opening and closing when brought into proximity with the striker while opening or closing the door, respectively.

The door status switch output will be open circuit when the door is open.

The door status switch output will be shorted to GND when the door is closed.

Refer to Southco drawing J-R4-EM-8-1 for a list of separately sold strikers.

Mechanical Trigger

The mechanical trigger can be used to release the latch without providing power to it.

Refer to Southco drawing J-R4-EM-8-1 for additional details on available mechanical trigger cable options and assembly.

SOUTHCO PERFORMANCE GUIDELINES

THE PERFORMANCE GUIDELINES SHOWN ON THIS PAGE ARE SUPPLIED AS A GENERAL GUIDE ONLY, AS CONDITIONS VARY WITH EACH APPLICATION AND METHOD OF INSTALLATION. STRENGTH DATA GIVEN IS FOR FAILURE OF THE PRODUCT OR FOR SUFFICIENT DEFORMATION TO MAKE THE PRODUCT INOPERABLE. NO SAFETY FACTOR HAS BEEN APPLIED. IT'S RECOMMENDED THAT THE USER REQUEST A PRODUCT SAMPLE FOR TESTING TO DETERMINE THE SUITABILITY OF THE PRODUCT FOR THE PURPOSE INTENDED AND THE USER'S PARTICULAR APPLICATION.

REVISION HISTORY			
REV	DATE	BY	DESCRIPTION
B	22SEP2014	DJK/GGG	PRN: P2014-1873

PERFORMANCE VALUES FOR R4-EM-8X-X30 AND R4-EM-8X6-X30
SEE J-R4-EM-8-1

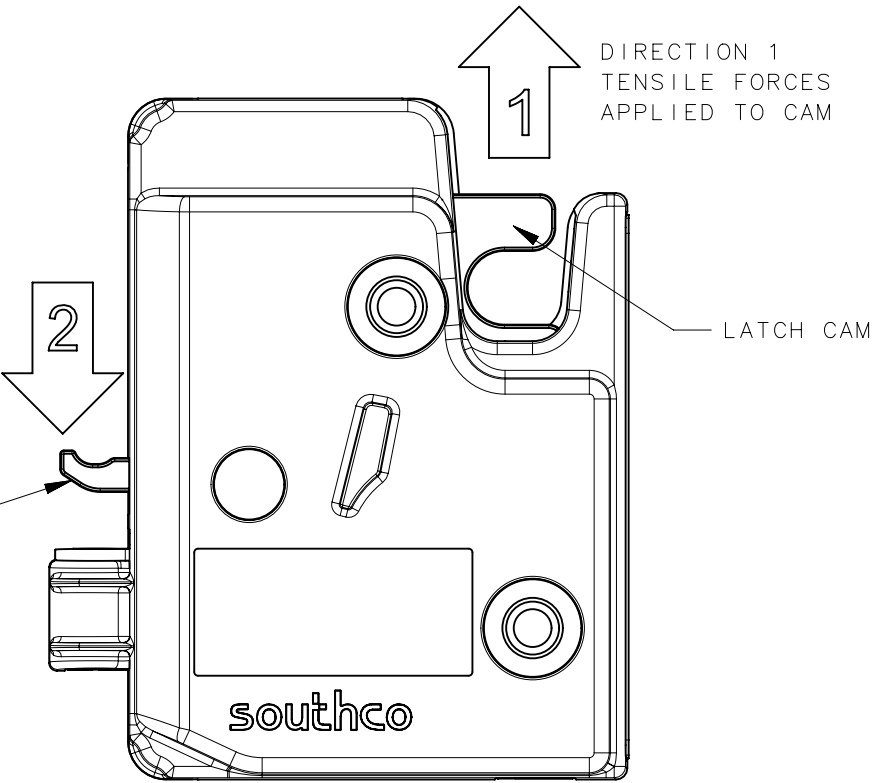
1. TESTING PERFORMED ON R4-EM-8X-XX0 AND R4-EM-8X6-XX0.
2. TENSILE FORCES (DIRECTION 1) ARE APPLIED AT THE NOMINAL LATERAL POSITION (ZERO MISALIGNMENT).
3. CYCLE LIFE WITH 44 N (10 lbf) TENSILE FORCE (DIRECTION 1) ON CAM : 100,000 CYCLES
CYCLE TEMPERATURE PROFILE: 80,000 AT AMBIENT TEMP, 10,000 AT -20C, 10,000 AT +60C
4. MAXIMUM TENSILE FORCE (DIRECTION 1) ON THE CAM THAT THE LATCH CAN RELEASE (OPEN) ELECTRICALLY ONE TIME:
225 N (50 lbf) MINIMUM FOR 12VOLT MODELS
550 N (124 lbf) MINIMUM FOR 24VOLT MODELS
5. AVERAGE ULTIMATE TENSILE LOAD (DIRECTION 1) ON THE CAM BEFORE LATCH CAM FAILURE: 5300 N (1191 lbf).
6. AVERAGE ULTIMATE TENSILE LOAD (DIRECTION 1)WHEN USED WITH SOUTHCO STRIKER BOLT R4-90-121-10: 5200 N (1169 lbf)
7. AVERAGE TENSILE FORCE (DIRECTION 2) REQUIRED ON THE MECHANICAL OVERRIDE TRIGGER TO OPERATE (OPEN) THE LATCH MANUALLY WITH A TENSILE FORCE ON THE CAM:

AVERAGE FORCE TO OPERATE LATCH WITH MECHANICAL OVERRIDE VS. LATCH CAM LOAD					
FORCE 1 (N) ON CAM	100 N (22.48 lbf)	200 N (44.96 lbf)	300 N (67.44 lbf)	400 N (89.92 lbf)	500 N (112.40 lbf)
FORCE 2 (N) ON MECHANICAL OVERRIDE	11.8 N (2.65 lbf)	17.7 N (3.98 lbf)	23.1 N (5.19 lbf)	29.5 N (6.63 lbf)	33.3 N (7.49 lbf)

8. OPERATING TEMPERATURE RANGE -20 TO 60°C.

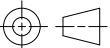
DIRECTION 2
FORCES REQUIRED
TO OPERATE LATCH
MANUALLY

MECHANICAL
OVERRIDE TRIGGER



R4-EM-8X6-X30 SHOWN

REF: trR4-16556, trR4-19223
trR4-17650, trR4-18904

	THIRD ANGLE PROJECTION		southco® CONNECT • CREATE • INNOVATE					
	MILLIMETERS [IN]							
SURFACE AREA	TOLERANCES UNLESS OTHERWISE NOTED UP TO 0.5 ±0.05 OVER 0.5 UP TO 6 ±0.1 OVER 6 UP TO 30 ±0.2 OVER 30 ±0.3 ANGLES ±1°		DESCRIPTION R4-EM 8 SERIES ELECTROMECHANICAL ROTARY LATCH					
VOLUME								
PROPRIETARY ITEM			SIZE A3	SYSTEM NX	DWG NO. TD-R4-EM-8-1-J			
EXCEPT FOR USES EXPRESSLY GRANTED IN WRITING, INFORMATION DISCLOSED HEREON IS CONFIDENTIAL AND ALL RIGHTS, PATENT AND OTHERWISE, ARE RESERVED BY SOUTHCO, INC.			DRAWN BY DJK/GGG		DATE 27JAN2014	SCALE 1:1	SHEET 1 OF 1	
			PER ASME Y14.5M-1994					