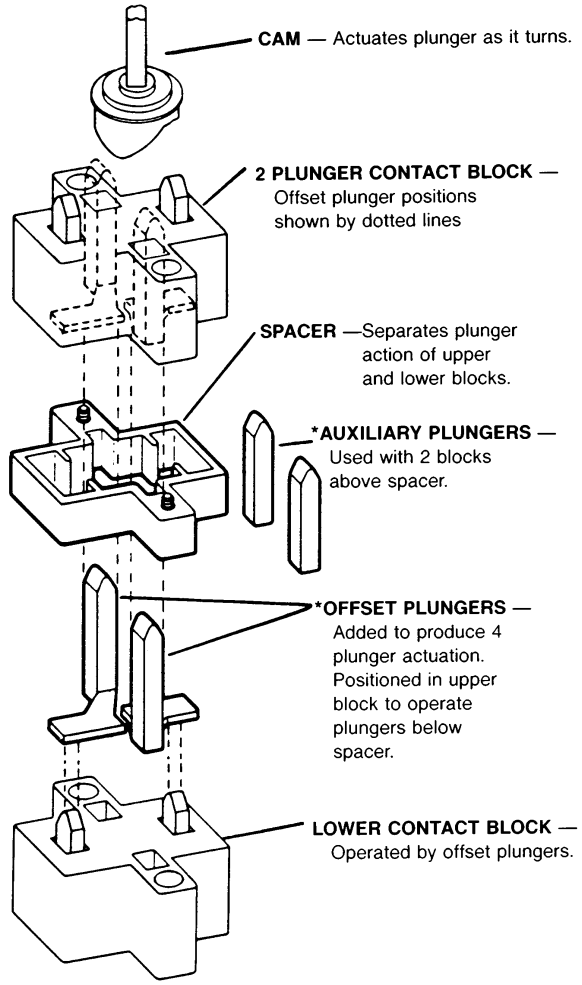
Four Plunger Adapter Kit

- Exclusive four plunger actuation for selector and selector-push units.
- Affords more circuit sequencing possibilities by using all four points on the cam.
- Any combination of heavy duty and electronic duty contact blocks (up to four) may be used per operator.

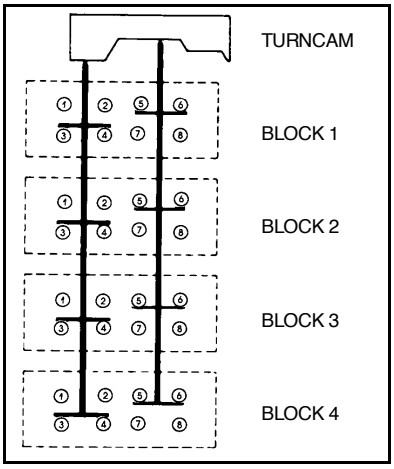
Catalog Listing
PTCA

* 4 Plunger Adapter Kit (Catalog Listing PTCA) includes two sets of auxiliary and offset plungers. One set is .200 inch longer than the other set in order to match the variation in 2-circuit and 4-circuit block depth.

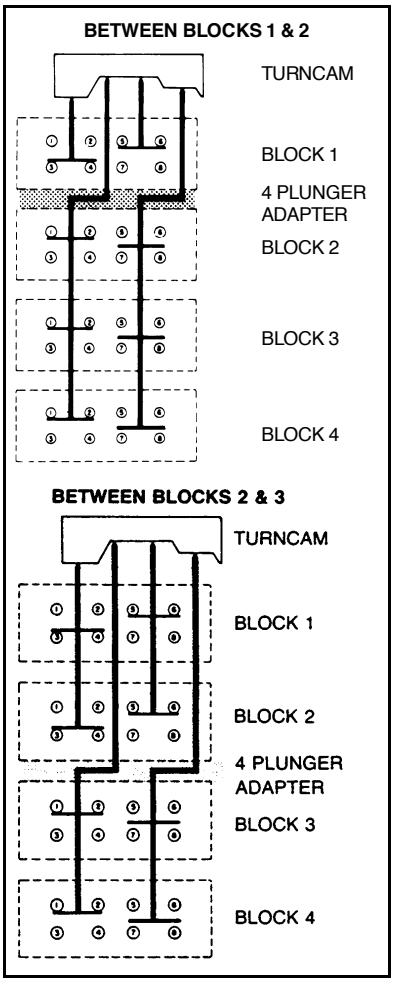


CIRCUIT SEQUENCING CONTROL COMPARISON

2 PLUNGER ACTUATION



4 PLUNGER ACTUATION



ELECTRICAL INTERRUPTING RATINGS (amperes)
The electrical ratings are 600 VAC, 250 VDC and 20 amperes continuous carry or 180 amperes for three seconds.

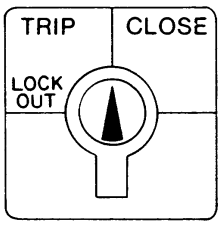
MECHANICAL MEMORY
A special cam and slip clutch (M210) can be specified to provide mechanical memory.

920/921 CMC ROTARY CAM-ACTUATED CONTACT BLOCKS

- Up to 12 positions available
- Controls up to 24 circuits
- Positive detent between positions
- Mechanical memory stages

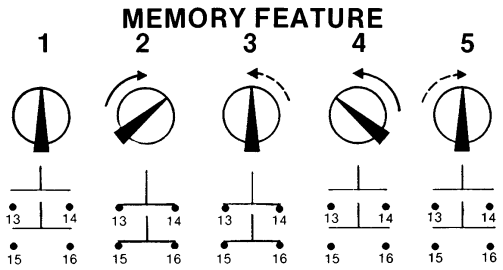
The 920/921 CMC series are highly versatile rotary cam-actuated contact blocks available with CMC selectors. These contact blocks are ideal for applications requiring a large number of contacts actuated simultaneously by one device. They are designed for control circuits in applications such as instrumentation and power generation.

Drawing A



ODD	EVEN	CIRCUIT	LOCK OUT	TRIP	SPRING RETURN NORMAL AFTER TRIP	SPRING RETURN NORMAL AFTER CLOSE	CLOSE
CONTACTS KNOB END		1					X
1	2	2	X	X			
3	4	3		X			X
5	6	4			X	X	
7	8	5			M-210		
		6					
		7				X	X
		8				X	X

Drawing B



Dotted arrows denote spring return to center.

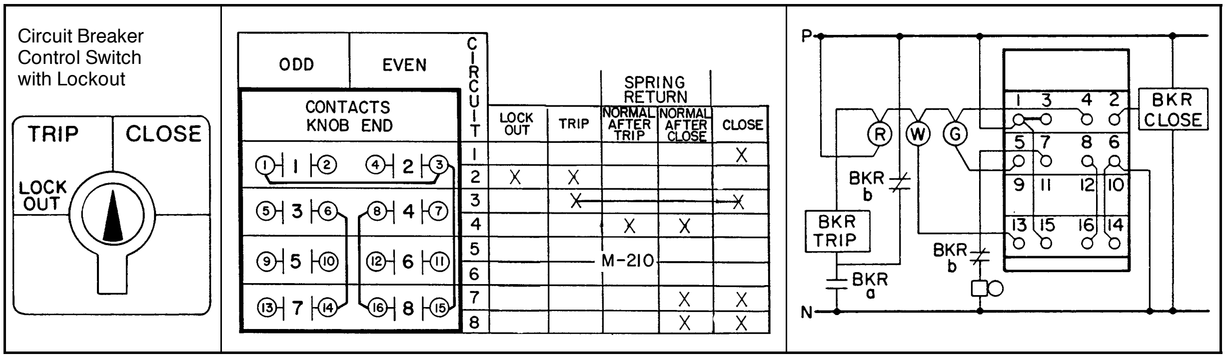
Drawing A represents a three position selector with spring return from both directions. Circuits 7 and 8 - contacts, 13-14 and 15-16 are the slip (mechanical memory) contacts. M210 is the slip clutch. Drawing B is a simplified explanation of how mechanical memory works.

1. In the center position step 1, contacts 13-14 and 15-16 are open. The switch (drawing A) is in the normal after TRIP position.
2. Step 2 shows the contact closures as the knob is rotated clockwise to the CLOSE position, (13-14 and 15-16 close).
3. Step 3 illustrates that the contacts remain closed after the selector knob spring-returns to the center position.
4. In step 4, the knob is rotated counterclockwise to the TRIP position, opening contacts 13-14 and 15-16.
5. This state is maintained after the knob spring-returns to center, step 5.

Multi-Light Oiltight Controls

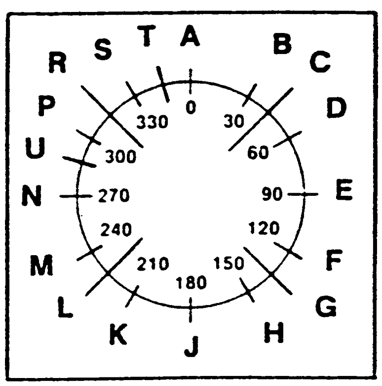
Rotary Contact Blocks

TYPICAL APPLICATION 920 CMC (LOCKOUT)



For identification ONLY
Do not build catalog listings from this information. See next page for ordering information.

	Number of Positions	Degrees Between Position	Selector Action	Lamp Service	Start Position Orientation	Switching Stage Type
Selector 920	__	_	_	_	_	____
	A Two Position	**A** 30°	**A** Maintained	01	**A** 0°	Four Digit Number Assigned by Freeport
	B Three Position	**B** 45°		02	**B** 30°	
	C Four Position	**C** 60°	**B** CW Spring Return	05	**C** 45°	
	D Five Position	**D** 90°	**C** CCW Spring Return	40	**D** 60°	
	E Six Position	**E** Various	**D** CW & CCW Spring Return	50	**E** 90°	
	F Seven Position		**E** CW & CCW Spring Return and Lockout	51	**F** 120°	
	G Eight Position		**F** CW Spring Return and Lockout	52	**G** 135°	
	H Nine Position			90	**H** 150°	
	J Ten Position				**J** 180°	
	K Eleven Position			03	**K** 210°	
	L Twelve Position			53	**L** 225°	
					M 240°	
				67	**N** 270°	
					P 300°	
				95	**R** 315°	
				96	**S** 330°	
					T 345°	
				97	**U** 285°	
				98		
Selector-Push 921						



POSITIONS

Selector - Push Units

CMC SELECTORS

- Suitable for use in NEMA 13 enclosures.
- Accepts 4 plunger adapter kit

Example: **911** **A** **G**

Operator

911 —Grey knob
914 —Black knob

Selector Action

2 Position	3 Position	4 Position
A – Pos. 1, 2 **E** – Pos. 2, 3 **H** – Pos. 3, 4 **L** – Pos. 4, 1	**B** – Pos. 1, 2, 3 **F** – Pos. 2, 3, 4 **J** – Pos. 3, 4, 1 **M** – Pos. 4, 1, 2	**C** – Pos. 1, 2, 3, 4 no stop **D** – Pos. 1, 2, 3, 4 stop between 1 and 4 **G** – Pos. 2, 3, 4, 1 stop between 2 and 1 **K** – Pos. 3, 4, 1, 2 stop between 3 and 2 **N** – Pos. 4, 1, 2, 3 stop between 3 and 4
U – Pos. 9, 12 o'clock **V** – Pos. 12, 3 o'clock **W** – Pos. 3, 6 o'clock **X** – Pos. 6, 9 o'clock	**P** – Pos. 9, 12, 3 o'clock **R** – Pos. 12, 3, 6 o'clock **S** – Pos. 3, 6, 9 o'clock **T** – Pos. 6, 9, 12 o'clock	**Y** – Pos. 9, 12, 3, 6 o'clock. No. stop. **Z** – Pos. 9, 12, 3, 6 o'clock. Stop between 6 and 9

Turn Cam Configuration

Insert the turn cam comfiguration code from the shaded area of the chart below.

1. Match your circuit requirements in one cam code column in the chart below.*

2. Develop the catalog listing of the unit, including the shaded letters of the cam code configuration selected in step 1 from the chart below.

3. Consider position number 1 as the furthest counter-clockwise device position. Order contact block(s) and adapter kit as indicated in the left hand column of the cam code selection chart.

"X" — Circuit Closure
"O" — Circuit Open

CAM CODE SELECTION CHART *

	Number of Positions:		2-Positions						3-Positions				4-Positions	
	Turn Cam:	Configuration:	B	J	G	G	G	R	L	K	G	A	R	L
		Orientation:	3	1	1	3	1	1	1	4	1	1	1	1
		Push Cam Code:	YA	TC	BB	FB	TB	FB	MA	ED	MC	MD	BC	VB
		Device Positions:	1 2	1 2	1 2	1 2	1 2	1 2	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3 4	1 2 3 4
Contact[1,2] block	Terminal	Condition												
PTC**C**	1-2	Free	O X	X O	O X	X X	O X	X X	X O O	X X O	O X X	X O O	X X X X	X O O O
		Depress	O O	O O	O X	X O	O X	O X	X O O	X X O	O O X	O O O	O X X X	O O O O
	3-4	Free	O O	O O	X O	O O	X O	O O	O O O	O O O	X O O	O O X	O O O O	O O O O
		Depress	X X	X X	X O	O X	X O	X O	O O X	O O X	X O O	O X X	X O O O	X O O O
	5-6	Free	X O	X O	X X	O X	X X	X X	O O X	O O X	X X O	O X X	X X X X	O O X O
		Depress	O O	X O	X O	O X	O O	X O	O O X	O O X	X O O	O X O	X X O X	O O O O
	7-8	Free	O X	O O	O O	X O	O O	O O	O O O	O O O	O O X	X O O	O O O O	O O O O
		Depress	O X	O X	O X	X O	X X	O X	X O O	X O O	O O X	X O O	O O X O	O O X O
4-Plunger Adapter Kit[3] PTC**A**			**For circuits below — Use 4 plunger adapter kit and at least 1 block from above**											
PTC**C**	1-2	Free	—	O X	X O	—	X O	X X	O X O	O X X	X O X	X X O	X X X X	O X O O
		Depress	—	O O	O O	—	O O	O O	O X O	O X X	O O O	X O O	X O X X	O O O O
	3-4	Free	X O	O O	O X	—	O X	O O	—	—	O X O	O O O	O O O O	O O O O
		Depress	X X	X X	X X	—	X X	X X	—	—	O X O	O O X	O X O O	O X O O
	5-6	Free	X X	O X	—	X O	X X	—	—	X O O	X X X	O O X	X X X X	O O O X
		Depress	O O	O X	—	O O	X O	—	—	X O O	O X O	O O X	X X X O	O O O O
	7-8	Free	O O	O O	—	O X	O O	—	O O O	O O O	—	O X O	O O O O	O O O O
		Depress	X O	X O	—	X X	O X	—	O X O	O X O	—	X X O	O O O X	O O O X

Notes:

[1] Order contact blocks separately from page 4. Only PTCC contact blocks are charted. All other contact block alternatives may be substituted for portions of PTCC circuitry.

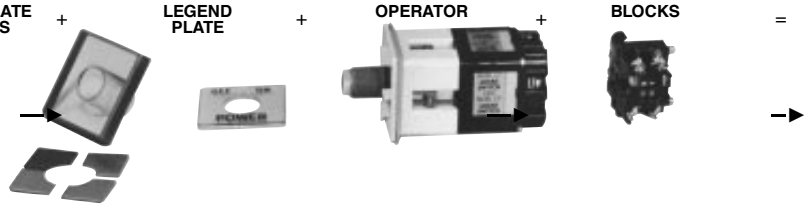
[2] Contact block PTCB, with its location arrow aligned with the operator, provides the circuitry equivalent to 1-2 and 7-8 of the PTCC block. When PTCB is reversed (turned 180°), so location arrows do not align with operator, the circuitry obtained is equivalent to 3-4 and 5-6 of the PTCC block. PTCD with arrows aligned, provides same circuit as 7-8 of PTCC block. When reversed (arrows not aligned), the circuit obtained is equivalent to 3-4 of PTCC block. PTCE with arrows aligned, provides same circuit as 1-2 of PTCC block. When reversed (arrows not aligned), the circuit obtained is equivalent to 5-6 of PTCC block.

[3] PTCA is explained on page 5.

[4] Use up to 4 contact blocks with maintained forms and up to 2 with spring return forms.

Selector-Push Units

COVER PLATE INSERTS + LEGEND PLATE + OPERATOR + BLOCKS = COMPLETE UNIT



A

Operator Function
A–Maintained **B**–Clockwise spring return from left (2 and 3 pos) **C**–Counterclockwise spring return from right (2 and 3 pos) **D**–Clockwise and counterclockwise spring return to center from left and right (3 pos) **F**–Uni-rotational clockwise (4 pos. only, no stop)

01

Lamp Terminals and Service		
67–Unlighted **4 Terminal** **95**–(2) 120 V transformers and (2) No. 755 lamps in quadrants A & B only. **96**–(2) 120 V transformers and (2) No. 755 lamps in quadrants C & D only. **97**–(2) line voltage jumpers in quadrants A & B. No lamps. **98**–(2) line voltage jumpers in quadrants C & D. No lamps. Line voltage jumper versions can use incandescent or LED lamps.	**5 Term.**	**8 Term.**
	01	**51** (4) 120 V trans. and (4) No. 755 lamps
	02	**52** (4) 240 V trans. and (4) No. 755 lamps
	05	**50** (4) 24 V resistors. (4) No. 756 lamps
	40	**90** (4) 48 V resistors. (4) No. 1819 lamps
	03	**53** (4) line voltage jumpers. No lamps.

LED Lamp Terminals and Service		
4 Terminal **38**–(2) 120 V transformers in quadrants A & B **97**–(2) line voltage jumpers in quadrants A & B. No LED. **98**–(2) line voltage jumpers in quadrants C & D. No LED. Order LEDs, color inserts and covers from pages 14-15.	**5 Term.**	**8 Term.**
	15	**55** (4) 120V transf.
	16	**56** (4) 240 V transf.
	03	**53** (4) line voltage jumpers. No LED.

1

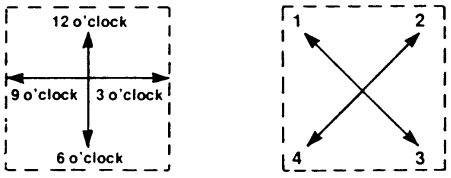
TurnCam Orientation
Insert the cam orientation code from the shaded area of the chart on the facing page.

BB

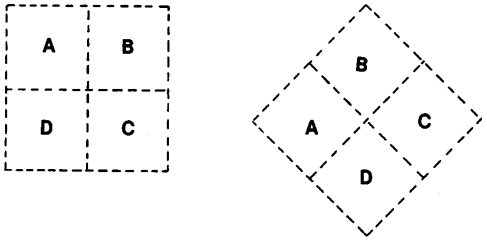
Push Cam Code
Insert the push cam code from the shaded area of the chart on the facing page.

Order cover plates, color inserts, and legend plates separately from page 12.

DEVICE POSITIONS



QUADRANT AREAS



*This chart lists only a few of the unlimited number of the switch versions available. Contact your nearest MICRO SWITCH Branch Office or Authorized Distributor for those not shown.

Definition:
Spring return is the direction the knob is turned by the internal spring force when the operator releases the knob. For example, on a two position clockwise spring return device, the knob is turned from position 2 to position 1 by the operator. When the operator releases the knob, it spring returns to position 2 in a clockwise direction.

Selector Units

CMC SELECTORS

- Suitable for use in NEMA 13 enclosures.
- Accepts 4 plunger adapter kit

Example:

910 **A** **E**

Operator

910 —Grey knob
913 —Black knob

Selector Action

2 Positions	3 Positions	4 Positions
A —Pos. 1, 2 **E** —Pos. 2, 3 **H** —Pos. 3, 4 **L** —Pos. 4, 1	**B** —Pos. 1, 2, 3 **F** —Pos. 2, 3, 4 **J** —Pos. 3, 4, 1 **M** —Pos. 4, 1, 2	**C** —Pos. 1, 2, 3, 4 no stop **D** —Pos. 1, 2, 3, 4 stop between 1 and 4 **G** —Pos. 2, 3, 4, 1 stop between 2 and 1 **K** —Pos. 3, 4, 1, 2 stop between 3 and 2 **N** —Pos. 4, 1, 2, 3 stop between 3 and 4
U —Pos. 9, 12 o'clock **V** —Pos. 12, 3 o'clock **W** —Pos. 3, 6 o'clock **X** —Pos. 6, 9 o'clock	**P** —Pos. 9, 12, 3 o'clock **R** —Pos. 12, 3, 6 o'clock **S** —Pos. 3, 6, 9 o'clock **T** —Pos. 6, 9, 12 o'clock	**Y** —Pos. 9, 12, 3, 6 o'clock. No. stop. **Z** —Pos. 9, 12, 3, 6 o'clock. Stop between 6 and 9

Cam

Insert cam code from chart below.

1. Match your circuit requirements in one cam code column in the chart below.*

2. Develop the catalog listing of the unit, including the shaded letters of the cam code configuration selected in step 1 from the chart below.

3. Consider position number 1 as the furthest counter-clockwise device position. Order contact block(s) and adapter kit as indicated in the left hand column of the cam code selection chart.

CAM CODE SELECTION CHART *

"X" — Circuit Closure
"O" — Circuit Open

		2-Pos.		3-Position				4-Position			
	Cam:	**E**	**E[5]**	**D**	**G**	**F**	**H**	**H**	**A**	**F**	**G**
Turn Cam:	**Orientation:**	**1**	**2**	**1**	**3**	**1**	**4**	**1**	**2**	**2**	**1**
Contact[1] Block	**Device Positions:**	1 2	1 2	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
	Terminals										
PTC**C**	1-2 (NC)	X O	O X	X O O	X X O	O X O	O X O	X O O O	O O X X	X O X O	O X X X
	3-4 (NO)	O X	X O	O O X	O O X	X O O	O O X	O X O O	O X O O	O O O X	X O O O
	5-6 (NC)	X O	O X	O O X	O X X	O X O	O O O	O O X O	X X O O	X O X O	X X O X
	7-8 (NO)	O X	X O	X O O	X O O	O O X	X O O	O O O X	O O O X	O X O O	O O X O
PTC**B**	1-2 (NC)	X O	O X	X O O	X X O	O X O	O X O	X O O O	O O X X	X O X O	O X X X
	3-4 (NO)	O X	X O	X O O	X O O	O O X	X O O	O O O X	O O O X	O X O O	O O X O
Rev. PTC**B**	3-4 (NO)	O X	X O	O O X	O O X	X O O	O O X	O X O O	O X O O	O O O X	X O O O
	1-2 (NC)	X O	O X	O O X	O X X	O X O	O O O	O O X O	X X O O	O X O X	X X O X
4-Plunger Adapter Kit PTC**A**[2]		**For circuits below — Use 4 plunger adapter kit and at least 1 block from above**									
PTC**C**	1-2 (NC)			O X O	X X X	X O X			X O O X	O X O X	X O X X
	3-4 (NO)			O O O	O O O	O X O			O O X O	X O O O	O X O O
	5-6 (NC)			O O O	X O X	X O X			O X X O	O X O X	X X X O
	7-8 (NO)			O X O	O X O	O O O			X O O O	O O X O	O O O X
PTC**B**	1-2 (NC)			O X O	X X X	X O X			X O O X	O X O X	X O X X
	3-4 (NO)			O X O	O X O	O O O			X O O O	O O X O	O O O X
Rev. PTC**B**	3-4 (NO)				O O O	O X O			O O X O	X O O O	O X O O
	1-2 (NC)				X O X	X O X			O X X O	O X O X	X X X O

Notes:

[1] Order contact blocks separately from page 4. Alternative contact blocks are shown also. When alternative contact blocks are used, their sequencing is the same as their portion of contact block PTCC.

[2] Adapter kit PTCA requires contact blocks *both* before and after the adapter spacer. Up to two blocks may be added *both* before and after the adapter. PTCA is explained on page 5.

[3] Contact block PTCB may be mounted with its location arrow and that of the operator aligned or reversed; i.e., the block may be turned 180° so location arrows do not match.

[4] Use up to 4 contact blocks with maintained forms and up to 2 with spring return forms.

[5] For use with 2 position clockwise spring return selector only.