

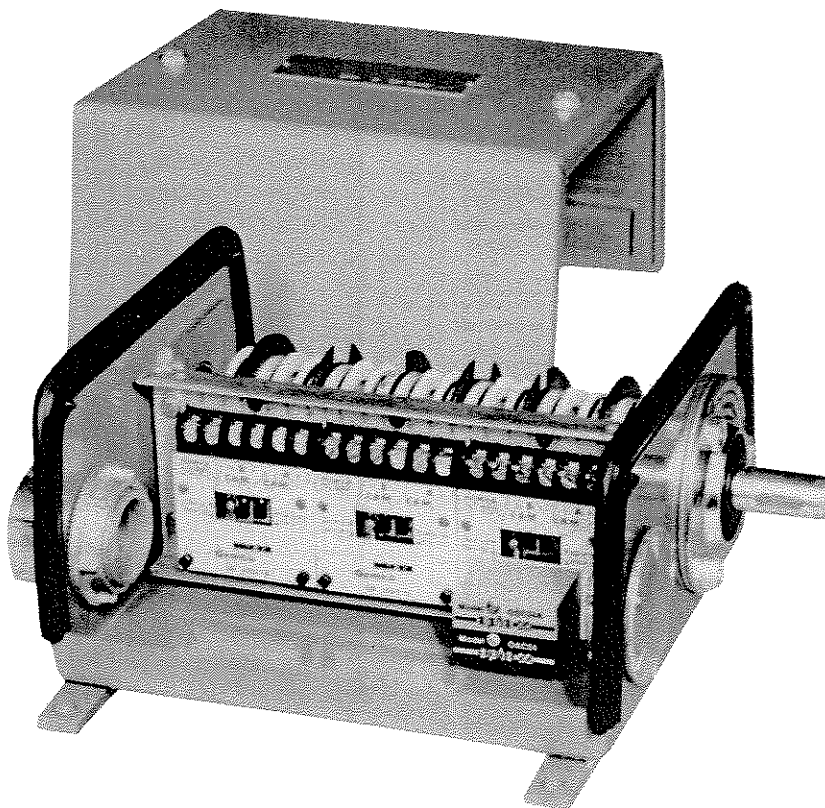
**AMETEK<sup>®</sup>**

Series 1983  
**Gemco<sup>™</sup>**  
 Opto-Cam

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**Features:**

- 3 INCH DIAMETER MICRO-ADJUST CAMS PROVIDE PRECISE SETTING FOR REPETITIVE SEQUENTIAL OPERATIONS
- SPEEDS FROM 1 TO 3600 RPM IN EITHER DIRECTION
- 2-40 CIRCUIT ROTATING CAM LIMIT SWITCH ASSEMBLIES...NEMA 1, 4, 7 & 12 ENCLOSURES
- DIRECT INPUT TO PROGRAMMABLE CONTROLLERS
- AC AND DC OUTPUTS WITH 3 AMP PLUG-IN OPTO 22 OUTPUTS
- 3 INDICATOR LIGHTS ON ALL SWITCHES
- *NO INPUT DC POWER SUPPLY REQUIRED*
- RUGGED CONSTRUCTION FOR INDUSTRIAL ENVIRONMENTS
- IDEAL WHERE HIGH SPEED PRECISION SEQUENTIAL OPERATIONS ARE REQUIRED
- 3 INCH MICRO-ADJUST CAMS FOR PRECISION SETTINGS FROM 1° TO 359°
- INDUSTRIAL DUTY RATED FOR 500,000,000 CYCLES



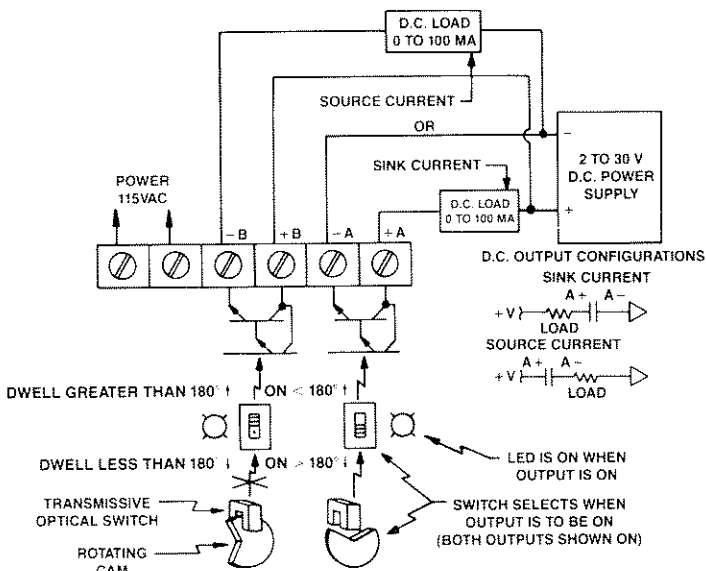
# Optical Coupler Rotating Cam Limit Switch

## L1 LOW POWER SWITCH OPTICAL COUPLER SWITCH SD-3107-C

The Low Power Optical Coupler Switch SD-3107-C is a two pole optically isolated solid state switch, photo coupled to micro-adjust cams. The two Darlington output switches are each rated 1-30 VDC, 100ma resistive only.

### NO INPUT D.C. POWER SUPPLY REQUIRED

- Power Source: 100 - 130 VAC input
- Load Rating: 1 - 30 VDC, .100 A. DC resistive only
- Operating Temperature Range: 0 - 65°C (149°F)
- The Optical Coupler Switch outputs are optically isolated from one another. One can source while the other is sinking current.
- Designed to operate directly with programmable controllers
- Switch terminals A+, A- and B+, B- may be connected in series or parallel provided the combined load current switched does not exceed .100 ampere.
- The LED indicating light will show when the output solid state switch of that pole is on.
- A slide switch for each pole allows the operator to select a cam dwell greater than or less than 180°.
- Where mechanical contacts are used in the same circuit with the Optical Coupler Switch, care must be taken to ensure the mechanical contact openings do not expose the solid state switches to high voltage transients.
- Care should be taken to isolate low voltage outputs from machine power wiring.

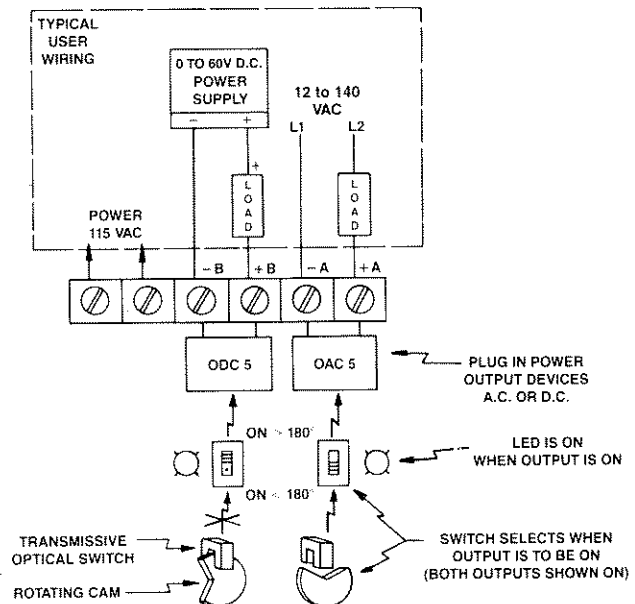


## H1 HIGH POWER SWITCH OPTICAL COUPLER SWITCH SD-3124-C

The High Power Output Optical Coupler Switch SD-3124-C consists of two isolated solid state switches, with each switch photo-coupled to micro-adjust cams. Each circuit of the two circuit assembly has been designed to incorporate standard OAC and ODC modular output devices with a 5 VDC input.

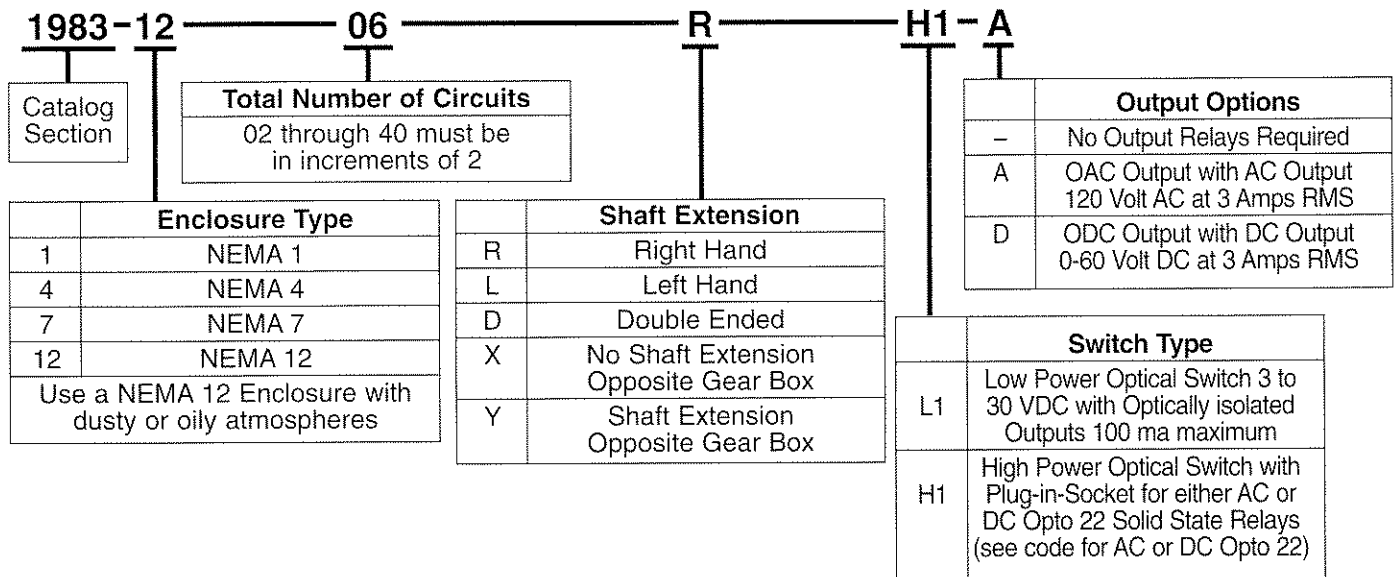
### NO INPUT DC POWER SUPPLY REQUIRED

- Power Source: 100 - 130 VAC input
- Load Rating: 12 - 140 VAC, 3 Amps Max. 20 mA Min.  
1 cycle surge 80 Amps peak  
.5 Power Factor Min.  
AND/OR  
60 VDC, 3 Amps Max., 1 second surge  
(200 VDC at 1 Amp available)  
5 Amps, off state leakage 1 mA Max.
- A slide switch for each pole allows the operator to select a cam dwell greater than or less than 180°.
- The High Power Optical Coupler Switch outputs are optically isolated from one another. One circuit may have an AC output while the other circuit is driving a DC output.
- The LED indicating light will show when the output solid state switch of that pole is turned on.
- The cam coupler output switch terminals, A+, A- and B+, B- may be connected in series or parallel. Parallel switches will not divide the load equally and may cause damage if the combined load is greater than 3 Amperes.
- OAC Output Device incorporates a built-in R-C network for inductive loads.
- ODC Output Device is protected against reverse polarity.

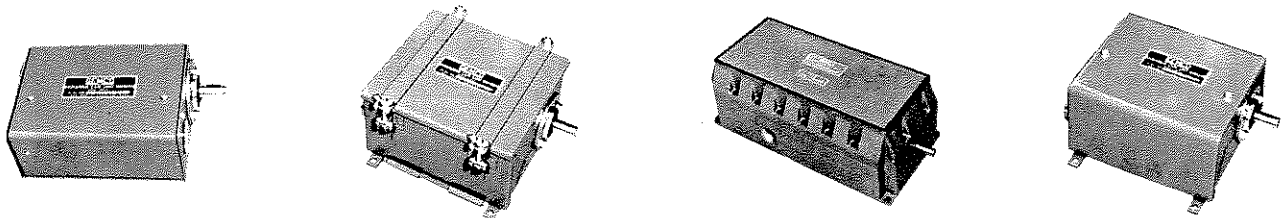


# Optical Coupler Rotating Cam Limit Switch

## EXPLANATION OF CATALOG NUMBERING SYSTEM



## STANDARD PART NUMBERS



	NEMA 1	NEMA 4 & 5	NEMA 7	NEMA 12
Number of Circuits	Catalog Number	Catalog Number	Catalog Number	Catalog Number
2	1983-102	1983-402	1983-702	1983-1202
4	1983-104	1983-404	1983-704	1983-1204
6	1983-106	1983-406	1983-706	1983-1206
8	1983-108	1983-408	1983-708	1983-1208
10	1983-110	1983-410	1983-710	1983-1210
12	1983-112	1983-412	1983-712	1983-1212
14	1983-114	1983-414	1983-714	1983-1214
16	1983-116	1983-416	1983-716	1983-1216
18	1983-118	1983-418	1983-718	1983-1218
20	1983-120	1983-420	1983-720	1983-1220
22	1983-122	1983-422	1983-722	1983-1222
24	1983-124	1983-424	1983-724	1983-1224
26	1983-126	1983-426	1983-726	1983-1226
28	1983-128	1983-428	1983-728	1983-1228
30	1983-130	1983-430	1983-730	1983-1230
32	1983-132	1983-432	1983-732	1983-1232
34	1983-134	1983-434	1983-734	1983-1234
36	1983-136	1983-436	1983-736	1983-1236
38	1983-138	1983-438	1983-738	1983-1238
40	1983-140	1983-440	1983-740	1983-1240

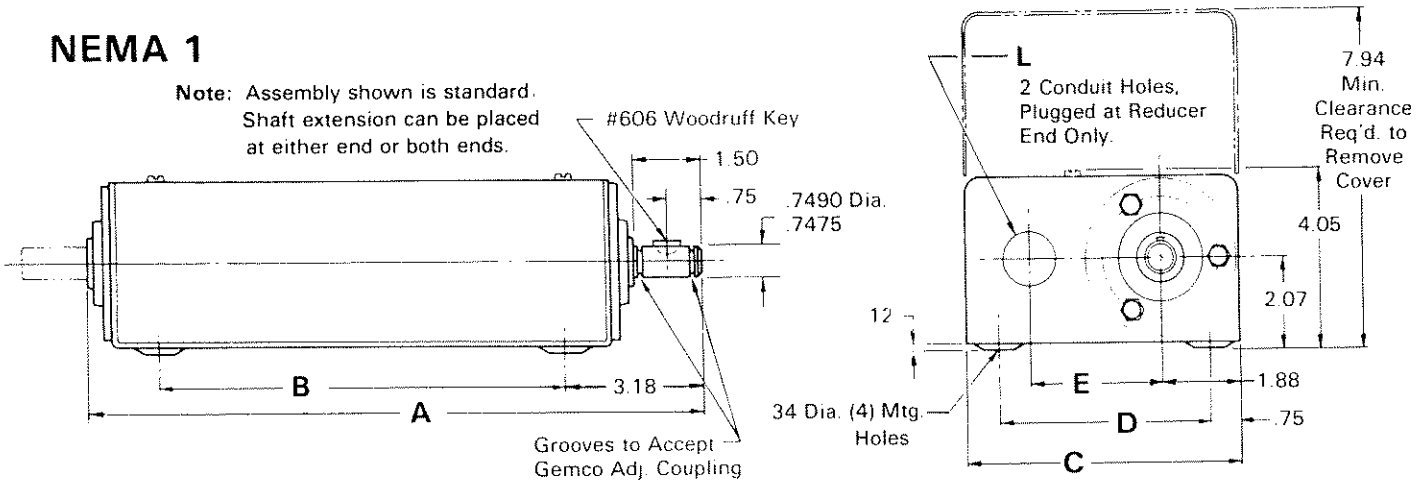
REPLACEMENT COMPONENTS		
Catalog Number	Switch Type / Output Option	Item
SD0310700	L1	Low Power Optical Switch 3 to 30 VDC with isolated outputs 100 ma Maximum - 2 circuits
SD0312400	H1	High Power Optical Switch with provisions for Opto 22 Solid State Relay - 2 circuits
SD0312600	D	Opto 22 DC Plug-in Relay 0-60 Volt DC at 3 Amps RMS
SD0312500	A	Opto AC Plug-In Relay 120 Volt AC at 3 Amps RMS
SD0231200		Micro Adjust Cam Assembly for Optical Coupler Rotating Cam Limit Switch

# Optical Coupler Rotating Cam Limit Switch

## ENCLOSURE DIMENSIONS

### NEMA 1

Note: Assembly shown is standard.  
Shaft extension can be placed  
at either end or both ends.



NUMBER OF CIRCUITS	A	B	C	D	E	L	WEIGHT APPROX. GROSS*
2 or 4	9.28	4.42	6.50	5.00	3.12	.075	12 lbs.
6	11.72	6.86	6.50	5.00	3.12	1.25	14 lbs.
8	14.16	9.30	6.50	5.00	3.12	1.25	16 lbs.
10 or 12	19.04	14.18	6.50	5.00	3.12	1.25	21 lbs.
14 or 16	25.45	20.60	7.00	5.50	3.40	2.00	35 lbs.
18 or 20	30.33	25.48	7.00	5.50	3.40	2.00	46 lbs.
22 or 24	35.21	30.36	7.00	5.50	3.40	2.00	55 lbs.
26 or 28	41.62	36.76	7.00	5.50	3.40	2.00	
30 or 32	46.50	41.64	7.00	5.50	3.40	2.00	
34 or 36	51.38	46.52	7.00	5.50	3.40	2.00	
38 or 40	56.26	51.40	7.00	5.50	3.40	2.00	

\*NOTE: Add 4 lbs. with Right Angle Gear Reducer  
Add 6 lbs. with Straight Drive Gear Reducer

### STRAIGHT DRIVE

RATIO	X	Y	RATIO	X	Y
1.25:1	2.71	2.07	32:1	3.82	2.26
2:1	2.63	2.07	35:1	3.82	2.32
2.2:1	3.13	2.07	40:1	3.82	1.88
3:1	2.80	2.07	48:1	3.82	2.01
4:1	4.13	2.07	50:1	3.82	2.07
5:1	4.38	2.07	80:1	3.82	2.44
6:1	4.30	2.07	96:1	3.82	2.32
7:1	4.55	2.07	100:1	3.82	2.07
8:1	4.51	2.07	200:1	3.82	2.07
8.5:1	3.99	2.07	400:1	3.82	2.07
10:1	3.82	1.88	500:1	3.82	1.91
12:1	3.82	2.01	600:1	3.82	1.76
14:1	3.82	2.13	1:2	2.63	2.07
15:1	3.82	2.19	1:3	2.80	2.07
16:1	3.82	2.26	1:4	4.13	2.07
20:1	3.82	1.88	1:5	4.38	2.07
24:1	3.82	2.01	1:6	4.30	2.07
25:1	3.82	2.07	1:7	3.34	2.13
28:1	3.82	2.13	1:8	3.57	2.07
30:1	3.82	2.19			

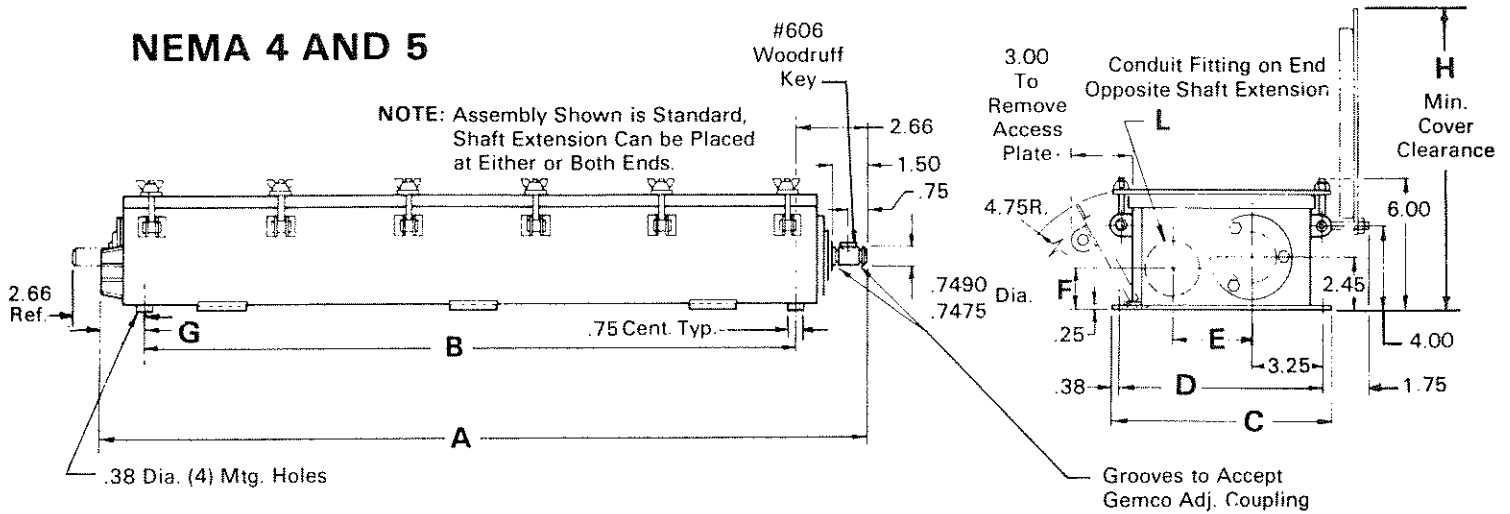
### RIGHT ANGLE DRIVE

RATIO	Y	RATIO	Y	RATIO	Y	RATIO	Y
1:1	1.00	4.75:1	.906	15:1	1.250	36:1	1.437
1.2:1	1.375	5:1	9.37	16:1	1.312	40:1	1.562
1.25:1	1.125	6:1	1.062	17:1	1.368	48:1	1.812
1.33:1	1.750	7:1	1.187	18:1	1.437	50:1	1.875
1.5:1	1.250	7.5:1	1.250	20:1	.937	60:1	1.156
1.6:1	1.625	8:1	1.312	24:1	1.062	64:1	1.218
2:1	1.500	10:1	.937	25:1	1.875	72:1	1.344
2.5:1	1.750	12:1	1.062	28:1	1.187	80:1	1.469
3:1	2.00	12.5:1	1.875	30:1	1.250	96:1	1.719
4:1	1.875	14:1	1.187	32:1	1.312	100:1	1.781

# Optical Coupler Rotating Cam Limit Switch

## ENCLOSURE DIMENSIONS

### NEMA 4 AND 5



NUMBER OF CIRCUITS	A	B	C	D	E	F	G	H	L	WEIGHT APPROX. GROSS*
2 or 4	9.69	5.45	10.12	9.38	3.69	2.06	1.58	13.64	.75	18 lbs.
6	12.24	7.89	10.12	9.38	3.69	2.06	1.69	13.64	1.25	24 lbs.
8	14.68	10.33	10.12	9.38	3.69	2.06	1.69	13.64	1.25	26 lbs.
10 or 12	19.56	15.21	10.12	9.38	3.69	2.06	1.69	13.64	1.25	32 lbs.
14 or 16	26.02	21.62	12.12	11.38	4.69	2.81	1.74	15.64	2.00	50 lbs.
18 or 20	30.90	26.50	12.12	11.38	4.69	2.81	1.74	15.64	2.00	65 lbs.
22 or 24	35.78	31.38	12.12	11.38	4.69	2.81	1.74	15.64	2.00	75 lbs.
26 or 28	42.19	37.80	12.12	11.38	4.69	2.81	1.74	15.64	2.00	
30 or 32	47.07	42.66	12.12	11.38	4.69	2.81	1.74	15.64	2.00	
34 or 36	51.95	47.54	12.12	11.38	4.69	2.81	1.74	15.64	2.00	
38 or 40	56.83	52.42	12.12	11.38	4.69	2.81	1.74	15.64	2.00	

\*NOTE: Add 4 lbs. with Right Angle Gear Reducer  
Add 6 lbs. with Straight Drive Gear Reducer

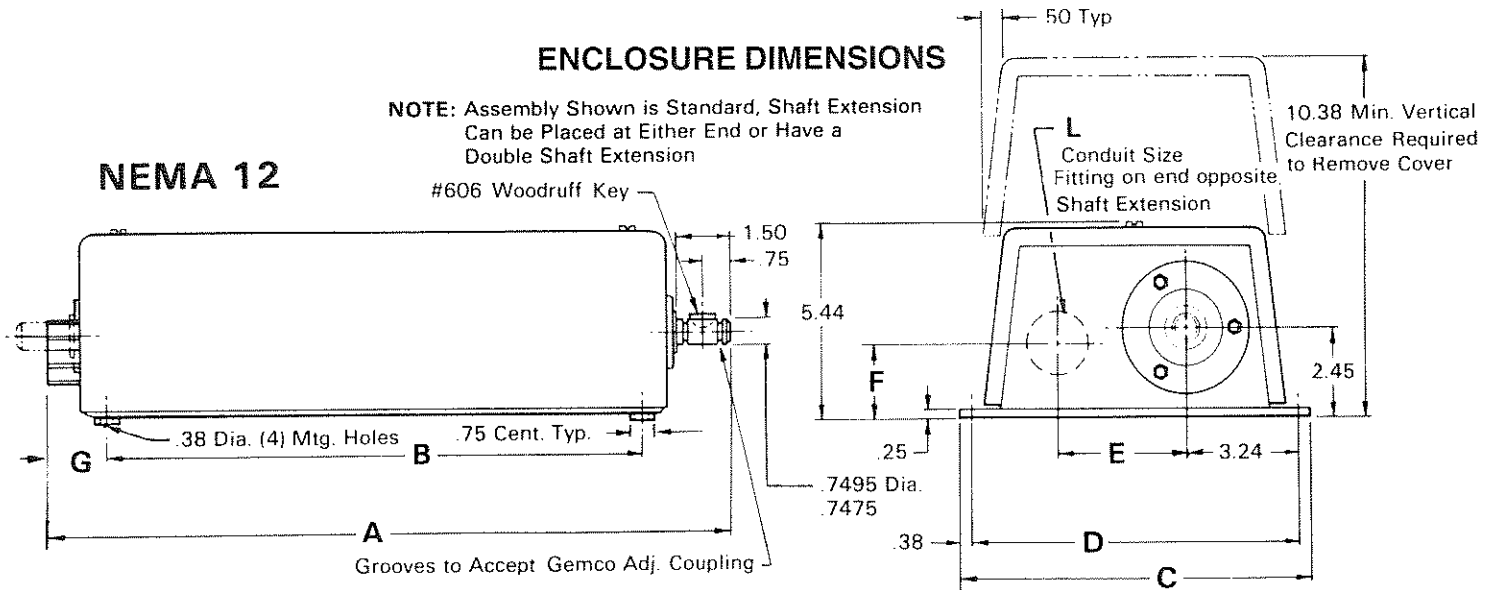
### STRAIGHT DRIVE

RATIO	X	Y	RATIO	X	Y
1.25:1	2.71	2.07	32:1	3.82	2.26
2:1	2.63	2.07	35:1	3.82	2.32
2.2:1	3.13	2.07	40:1	3.82	1.88
3:1	2.80	2.07	48:1	3.82	2.01
4:1	4.13	2.07	50:1	3.82	2.07
5:1	4.38	2.07	80:1	3.82	2.44
6:1	4.30	2.07	96:1	3.82	2.32
7:1	4.55	2.07	100:1	3.82	2.07
8:1	4.51	2.07	200:1	3.82	2.07
8.5:1	3.99	2.07	400:1	3.82	2.07
10:1	3.82	1.88	500:1	3.82	1.91
12:1	3.82	2.01	600:1	3.82	1.76
14:1	3.82	2.13	1:2	2.63	2.07
15:1	3.82	2.19	1:3	2.80	2.07
16:1	3.82	2.26	1:4	4.13	2.07
20:1	3.82	1.88	1:5	4.38	2.07
24:1	3.82	2.01	1:6	4.30	2.07
25:1	3.82	2.07	1:7	3.34	2.13
28:1	3.82	2.13	1:8	3.57	2.07
30:1	3.82	2.19			

### RIGHT ANGLE DRIVE

RATIO	Y	RATIO	Y	RATIO	Y	RATIO	Y
1:1	1.00	4.75:1	.906	15:1	1.250	36:1	1.437
1.2:1	1.375	5:1	9.37	16:1	1.312	40:1	1.562
1.25:1	1.125	6:1	1.062	17:1	1.368	48:1	1.812
1.33:1	1.750	7:1	1.187	18:1	1.437	50:1	1.875
1.5:1	1.250	7.5:1	1.250	20:1	.937	60:1	1.156
1.6:1	1.625	8:1	1.312	24:1	1.062	64:1	1.218
2:1	1.500	10:1	.937	25:1	1.875	72:1	1.344
2.5:1	1.750	12:1	1.062	28:1	1.187	80:1	1.469
3:1	2.00	12.5:1	1.875	30:1	1.250	96:1	1.719
4:1	1.875	14:1	1.187	32:1	1.312	100:1	1.781

# Optical Coupler Rotating Cam Limit Switch



NUMBER OF CIRCUITS	A	B	C	D	E	F	G	L	WEIGHT APPROX. GROSS*
2 or 4	9.69	5.45	10.12	9.38	3.69	2.06	1.58	.75	18 lbs.
6	12.24	7.89	10.12	9.38	3.69	2.06	1.69	1.25	24 lbs.
8	14.68	10.33	10.12	9.38	3.69	2.06	1.69	1.25	26 lbs.
10 or 12	19.56	15.21	10.12	9.38	3.69	2.06	1.69	1.25	32 lbs.
14 or 16	26.02	21.62	12.12	11.38	4.69	2.81	1.74	2.00	50 lbs.
18 or 20	30.90	26.50	12.12	11.38	4.69	2.81	1.74	2.00	65 lbs.
22 or 24	35.78	31.38	12.12	11.38	4.69	2.81	1.74	2.00	75 lbs.
26 or 28	42.19	37.80	12.12	11.38	4.69	2.81	1.74	2.00	
30 or 32	47.07	42.66	12.12	11.38	4.69	2.81	1.74	2.00	
34 or 36	51.95	47.54	12.12	11.38	4.69	2.81	1.74	2.00	
38 or 40	56.83	52.42	12.12	11.38	4.69	2.81	1.74	2.00	

\*NOTE: Add 4 lbs. with Right Angle Gear Reducer  
Add 6 lbs. with Straight Drive Gear Reducer

## STRAIGHT DRIVE

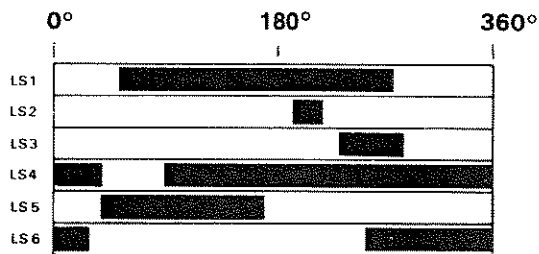
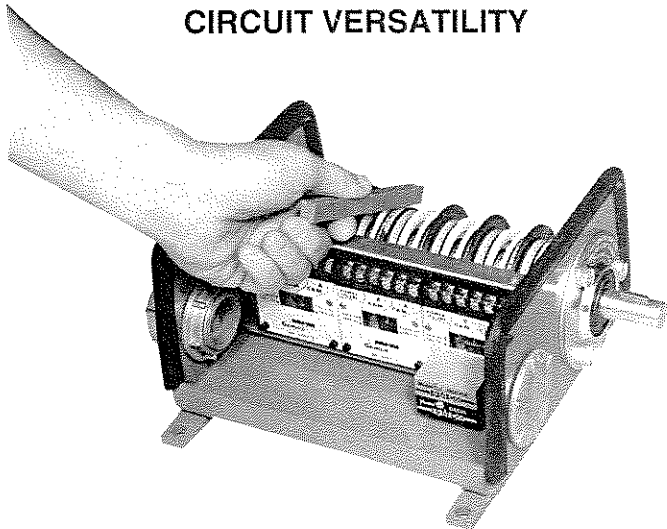
RATIO	X	Y	RATIO	X	Y
1.25:1	2.71	2.07	32:1	3.82	2.26
2:1	2.63	2.07	35:1	3.82	2.32
2.2:1	3.13	2.07	40:1	3.82	1.88
3:1	2.80	2.07	48:1	3.82	2.01
4:1	4.13	2.07	50:1	3.82	2.07
5:1	4.38	2.07	80:1	3.82	2.44
6:1	4.30	2.07	96:1	3.82	2.32
7:1	4.55	2.07	100:1	3.82	2.07
8:1	4.51	2.07	200:1	3.82	2.07
8.5:1	3.99	2.07	400:1	3.82	2.07
10:1	3.82	1.88	500:1	3.82	1.91
12:1	3.82	2.01	600:1	3.82	1.76
14:1	3.82	2.13	1:2	2.63	2.07
15:1	3.82	2.19	1:3	2.80	2.07
16:1	3.82	2.26	1:4	4.13	2.07
20:1	3.82	1.88	1:5	4.38	2.07
24:1	3.82	2.01	1:6	4.30	2.07
25:1	3.82	2.07	1:7	3.34	2.13
28:1	3.82	2.13	1:8	3.57	2.07
30:1	3.82	2.19			

## RIGHT ANGLE DRIVE

RATIO	Y	RATIO	Y	RATIO	Y	RATIO	Y
1:1	1.00	4.75:1	.906	15:1	1.250	36:1	1.437
1.2:1	1.375	5:1	9.37	16:1	1.312	40:1	1.562
1.25:1	1.125	6:1	1.062	17:1	1.368	48:1	1.812
1.33:1	1.750	7:1	1.187	18:1	1.437	50:1	1.875
1.5:1	1.250	7.5:1	1.250	20:1	.937	60:1	1.156
1.6:1	1.625	8:1	1.312	24:1	1.062	64:1	1.218
2:1	1.500	10:1	.937	25:1	1.875	72:1	1.344
2.5:1	1.750	12:1	1.062	28:1	1.187	80:1	1.469
3:1	2.00	12.5:1	1.875	30:1	1.250	96:1	1.719
4:1	1.875	14:1	1.187	32:1	1.312	100:1	1.781

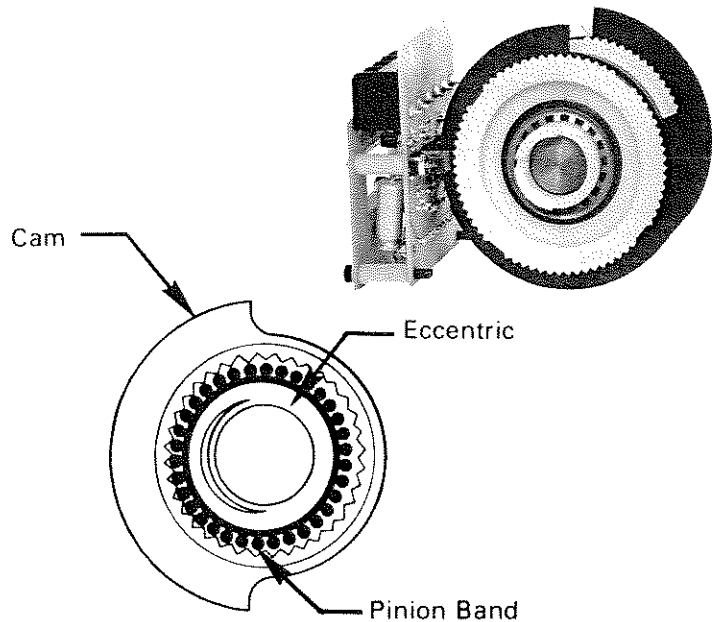
# Optical Coupler Rotating Cam Limit Switch

**GEMCO MICRO-ADJUST  
CAMS PROVIDE UNLIMITED  
CIRCUIT VERSATILITY**



Each switch setting can be adjusted to your circuit requirements. An unlimited selection of circuit arrangements is available with the Gemco Rotating Cam Limit Switch, with no special mounting of cams, dogs, etc., for contact settings.

**NO SPECIAL CAMS ARE REQUIRED**

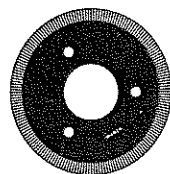
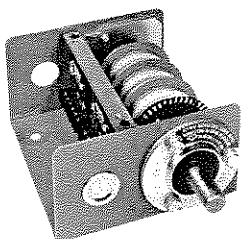


The accurate cam adjustments are made possible by the use of a separate reduction drive in each half of a circuit cam block assembly. This drive provides a 36 to 1 ratio, which means that one revolution of the adjustment wheel will advance or retard the cam setting by 10 degrees.

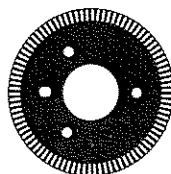
For most applications, therefore, no special cams are necessary and settings may be changed at any angular position of the cam shaft.

## STAINLESS STEEL PULSE GENERATING DISCS

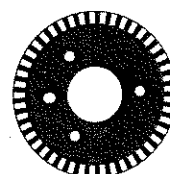
Pulse generating discs can be substituted for the Micro-Adjust Cam Assembly at no additional charge.



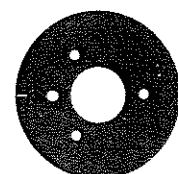
**2° INCREMENTS  
S-521-B**



**4° INCREMENTS  
S-522-B**



**8° INCREMENTS  
S-523-B**



**1½° INCREMENT  
S-530-B**

Consult factory for maximum speed and other disc configurations



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800-635-0289 • 248-435-0700 • Fax 248-435-8120  
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8/01 • Z18  
3M