

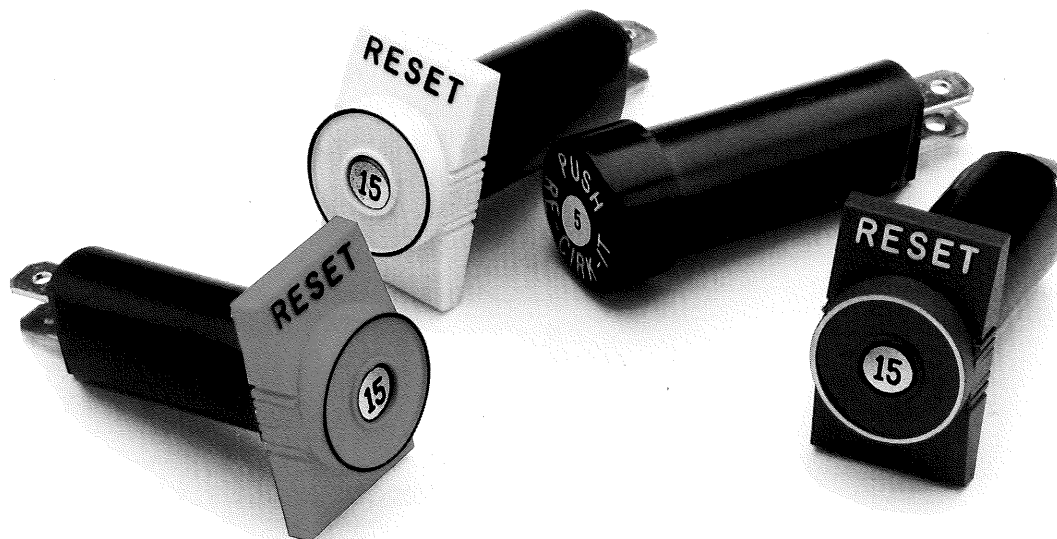
# Heinemann®

Circuit Protectors



## Series KD1 Re-Cirk-It®

- Resettable pushbutton circuit protector
- Available with decorative cap in various colors
- UL recognized, CSA certified, VDE and SEV approved (See page 4)
- Ratings: 0.25A to 15A



Bulletin KD

# The KD1 Re-Cirk-It protector... the ideal fuse replacement

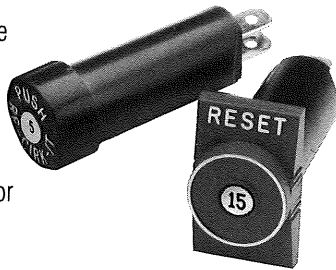
The Heinemann KD1 provides circuit protection similar to a fuse. Both cut off current flow in the event of overload current conditions. But unlike the fuse which must be replaced, simply pushing the Re-Cirk-It protector's reset button closes the circuit again once the electrical problem has been corrected.

### Positive action

The Re-Cirk-It protector trips without delay upon short circuit — and with a controlled delay (see time delay curves) upon sustained overloads. Upon tripping, the contacts open with a positive snap action, thereby suppressing the arc. The KD1 trips only in response to overload current conditions.

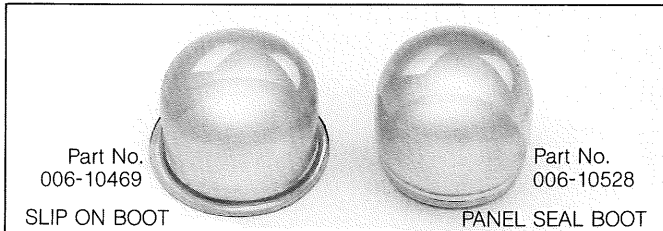
### Round or rectangular cap

The KD1 Circuit Protector is available with either the standard round black cap or a rectangular cap. The rectangular cap can be supplied in any of seven standard colors (black, white, dark grey, red, orange, green or blue) or, on special order, in any other color.



### Protective boots

For applications where equipment may be exposed to dust or moisture, transparent protective boots are available that are sufficiently flexible to allow resetting the circuit protector without removing the boot. A slip-on boot protects the internal mechanism of the KD1 while panel-seal boots are available to shield the protector and seal its panel opening.



### Reliable operation

KD1 operation is based upon the action of a bimetallic element. When the host electrical equipment is operating normally, the contact on the bimetallic element is part of the circuit in series with a fixed contact (see cross-sectional drawing). The contact on the bimetallic element fits through a hole in the non-conductive slide. It holds the warning button in place against the force of the slide return spring.

When a sustained overcurrent heats the bimetallic element, it snaps its contact away from the fixed contact and out of the hole in the slide, breaking the circuit and shutting down the equipment. The spring forces the warning button out of the housing. Separation of the contacts is maintained by the non-conductive slide. When the button is pushed back into the housing (after the electrical fault has been cleared), the contact snaps back into the hole in the slide, makes connection with the fixed contact and closes the circuit.

### Easy installation

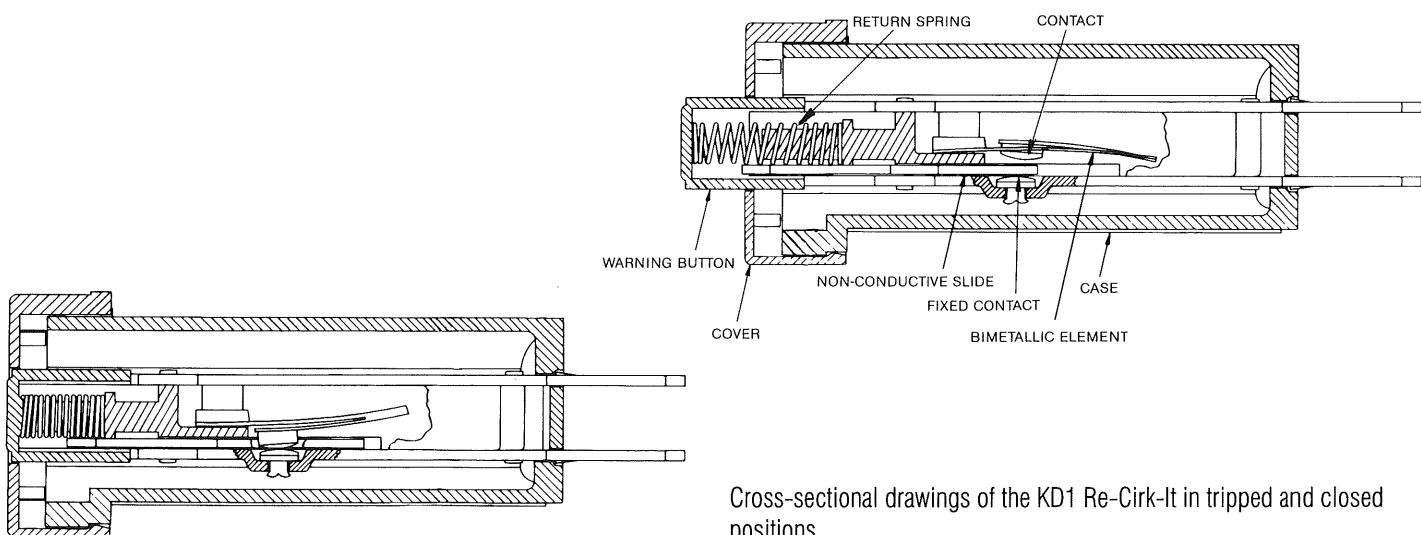
The Re-Cirk-It resettable circuit protector is easily installed in a 5/8" round or D-shaped panel cutout similar to that used for conventional panel-mounted fuseholders. It can be mounted either from front or rear, and is held in place by special hardware (see dimension drawings). Its 1/4" quick-connect terminals are solderable.

### Wide selection of ratings

The Re-Cirk-It protector is available in a range of ratings from 0.25A through 10A at 250 Vac and/or 50 Vdc. Also to 15A at 250 Vac and/or 32 Vdc. The rating is printed in black on the white reset button.

### UL/CSA/VDE/SEV

Underwriters' Laboratories has granted recognition of the full range of ratings under UL Standard 1077 as has the Canadian Standards Association. The KD1 has also been tested and certified to VDE 0631/1283. Schweizerischer Elektronischer Verein (SEV) has approved a range of ratings.



Cross-sectional drawings of the KD1 Re-Cirk-It in tripped and closed positions

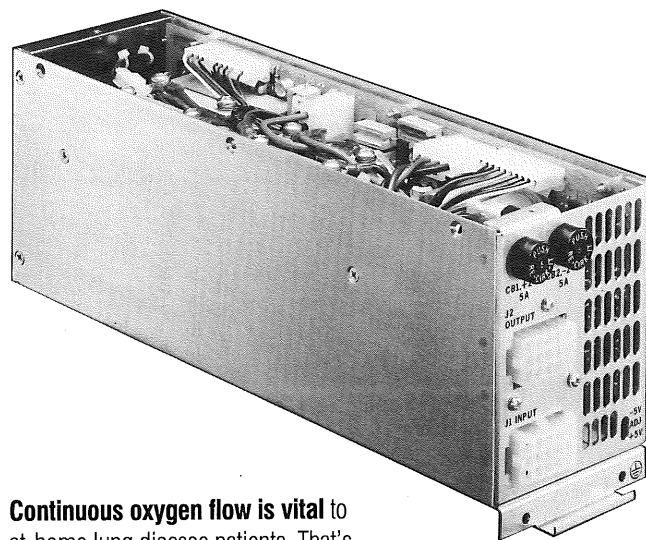
## Heinemann Circuit Protectors Series KD1

The Heinemann KD1...push-button circuit protectin for a broad array of commercial equipment and consumer-oriented products

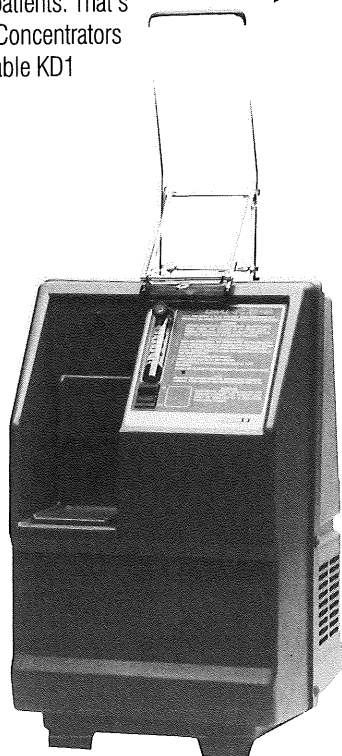
Heinemann designed the KD1 Re-Cirk-It to protect appliances, power tools, power supplies, copiers, printers, lab equipment and other electrical devices against damage by short circuits and overloads.

Equipment designers are using KD1 Re-Cirk-It protectors because they are the attractive price/performance compromise between the more costly circuit breaker and the inconvenient fuse.

**Push-button circuit protection** is provided on various custom-made switching power supplies manufactured by Zytec Corporation.



Continuous oxygen flow is vital to at-home lung disease patients. That's why DeVilbiss Oxygen Concentrators use push-button resettable KD1 circuit protectors.

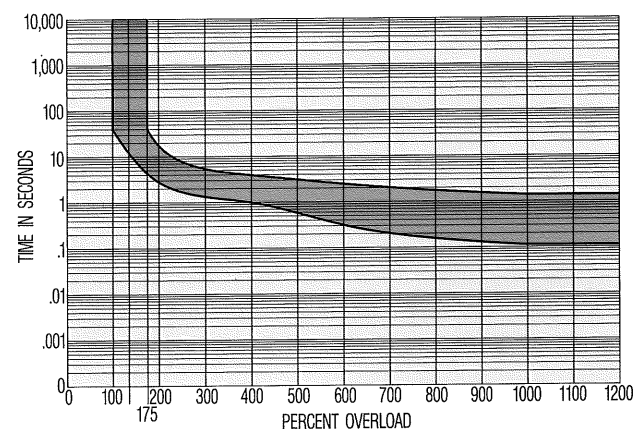


Photographers using Novatron Power Packs for their studio lights don't have to go searching for a fuse should an overload occur during a shooting session. Instead, they simply push the button on a KD1 Re-Cirk-It.



### Time delay curves

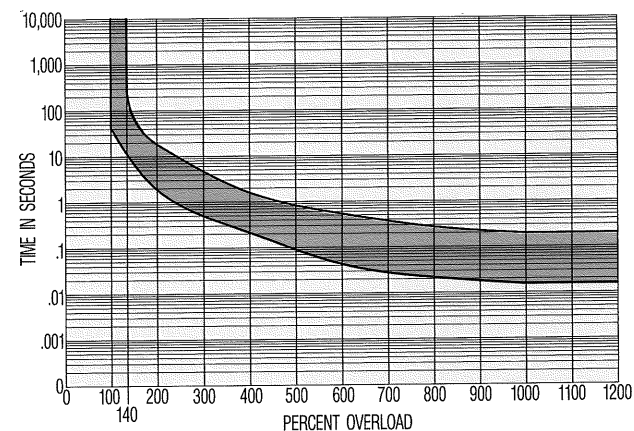
#### AC/DC below 2.5A:



#### Percent of rated current vs. trip delay at 25° C

% Overload	100%	175%	200%	400%	600%	800%	1000%
Delay Maximum (seconds)	no trip	trip in 1 hour	25	6	4	2.5	1.5
Delay Minimum (seconds)	no trip	trip in 1 hour	4.5	1	0.5	0.2	0.15

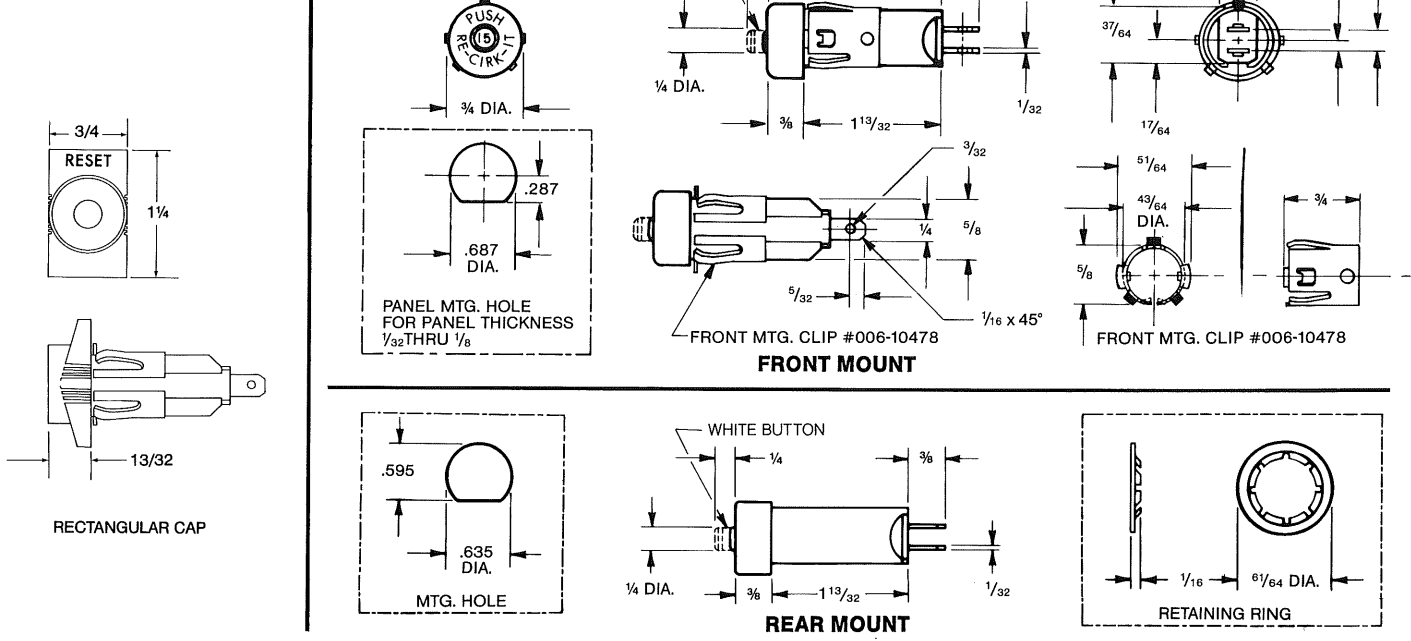
#### AC/DC 2.5A to 15A:



#### Percent of rated current vs. trip delay at 25° C

% Overload	100%	140%	200%	400%	600%	800%	1000%
Delay Maximum (seconds)	no trip	trip in 1 hour	24	1.75	0.70	0.40	0.25
Delay Minimum (seconds)	no trip	trip in 1 hour	2.5	0.3	0.06	0.03	0.015

## Dimensions



## Specifications

**Voltage:** 250 Vac, 50/60 Hz; 32 Vdc (0.25A to 15A), 50 Vdc (to 10A)

**Interrupting capacity:** 1000A @ 250 Vac; 200A @ 32 Vdc (0.25A to 15A); 200A @ 50 Vdc (0.25A to 10A) in accordance with UL Standard 1077 testing procedures.

**Resettable overload capacity:**

2.5A to 15A — 10 times rated current  
0.25A to 2.0A — 5 times rated current

**Life:** 5,000 operations @ 150% of rated current and rated voltage

**Dielectric strength:** 1500 Vac, 50/60 Hz per Mil-Std-202, Method 301

**Insulation resistance:** 100 megohms @ 500 Vdc per Mil-Std-202, Method 302, test condition B.

**Standard current ratings/typical resistance values at 25°C\***

Rating (A)	Resistance (ohms)	Rating (A)	Resistance (ohms)	Rating (A)	Resistance (ohms)
0.25	13.2	2.5	0.064	8.0	0.012
0.5	3.3	3.0	0.064	9.0	0.011
1.0	0.825	4.0	0.037	10.0	0.010
1.5	0.414	5.0	0.031	12.0	0.010
1.75	0.305	6.0	0.020	15.0	0.007
2.0	0.255	7.0	0.015		

\*Resistance values for reference only

**Calibration:** All units carry rated current continuously to 40°C.

0.25-2 amp units — may trip between 101% and 174% and must trip at 175% of rating. 2.5-15 amp units — may trip between 101% and 139% and must trip at 140% of rating. Proper current rating determination for change from 40°C ambient temperature can be obtained by multiplying rated current by  $\pm 0.9\%/^{\circ}\text{C}$  change from 40°C to 55°C, i.e.:

Actual rating of 2A breaker @ 50°C:

$$100\% - (0.9 \times 10) = 91\%; .91 \times 2 = 1.82\text{A}$$

Actual rating of 2A breaker @ 30°C:

$$100\% + (0.9 \times 10) = 109\%; 1.09 \times 2 = 2.18\text{A}$$

**Terminals:** 1/4" quick-connect, solderable

**Approvals:** UL Recognized as supplementary protector for use in electrical equipment under UL Std. 1077, 0.25A thru 15A. Under this standard, the KD1 protector is intended for use as an overcurrent protector within an appliance or other electrical equipment where branch-circuit overcurrent protection is already provided or is not required.

CSA: Certified 0.25A thru 15A

SEV: Approved 3A thru 10A

VDE: Approved 0.25A thru 15A\*\*

Meets UL/CSA Requirements for Class II circuit construction up to 5A.

## How to order circuit protector:

KD1 followed by current rating in amperes; e.g. KD1-2. For decorative square cap, add color code (see table); e.g. KD1-2-GR. Rear mounting ring is supplied with protector. For front-mount clip, order Part No. 006-10478.

**Protective transparent boots:** For round press-on boot, order Part No. 006-10469. For round panel seal boot, order Part No. 006-10528. For square panel seal boot, order Part No. 006-10639.

Cap Color	Color Code	Cap Color	Color Code
Black	BK	Orange	OR
White	WH	Green	GR
Dark Grey	DG	Blue	BL
Red	RD		

\*\*Applies to round cap models

VDE and SEV approval pending for rectangular cap models

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For warranty information, see CMCO Bulletin C-C7.0.

Products described by this catalog are covered by one or more United States of America patents and appropriate foreign patents, where applicable.