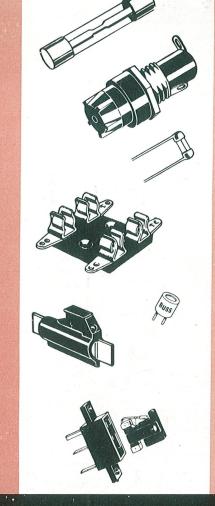


For Additional Information Write

BUSSMANN MFG. DIVISION

McGraw-Edison Company

University at Jefferson St. Louis, Mo. 63107 Phone: Area Code 314 421-1740 For the Protection of Electronic and Electrical Circuits and Devices



BUSS QUALITY SMALL DIMENSION SMALL DIMENSION FUSES and FUSEHOLDERS

BUSS Form SFB Printed in U.S.A.



















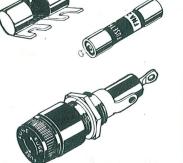






McGraw-Edison Company

University at Jefferson St. Louis, Mo. 63107 Phone: Area Code 314 421-1740



Form SFB

Symbol and Numerical Index

			D		D		Daga		Daga		D
ABC ABS ABU ACF ACH ACK ACL ACO ACT AF AFI AFS	Page 3 4 5 11 11 11 11 6 11 11 11 11	HDI HDJ HEB HEJ HGA HGG-C HGB HGB-C HGC HHH HHI HHI	Page 12 12 18 18 17 17 17 17 17 12 12 12	HRH HRI HTA HTSK HVA HVB HVJ HVL HVR HVT	Page 12 12 12 18 11 10 10 10 10 10 10	4AB 4AG 5AB 5AG 7AG 8AG 9AG 35A thru 35T 70A thru 71A 2807	Page 4 4 5 5 6 3 6 10 6 20	4224 4226 4243 4287 4386 4393 4396 4398 4399 4401 4402 4403	Page 9 8 21 9 9 20 20 20 20 20 20 20 20 20 20 20 20 20	4522 4523 4524 4525 4528 4529 4530 4532 4533 4534 4533 4534	Page 20 20 20 9 & 20 10 10 20 20 20 9 & 20 20 20 9 & 20 21
AFX AGA AGC AGS AGU AGW AGX ANL BAF BAN BBS C		HIF HIG HJL HJM-CC HJM-H HKA HKL HKL HKL HKL HKL HKM	14	HVX HWA IBM KAA KAB KAC KAJ KAW KAX KAZ KBC KLM KTK	10 6 see GLD 8 8 & 9 9 8 8 9 8 8 & 9	2808 2809 2810 2811 2812 2960 3434 3503 thru 3604 3742 3743 3781 3792	20 20 20 20 20 10 21 9 19 19 19	4405 4406 4407 4408 4409 4410 4411 4412 4413 4414 4415 4416 4417	20 20 20 20 20 20 20 20 20 20 20 20 20	4550 4551 4560 4561 4567 4569 4570 4574 4575 4583 4585 4586 4592 4593	21 21 21 21 21 21 21 20 20 20 21 21 21 21
GĴV GLD GLH GLN GLQ GLR	5 5 5 7 8 7 see GMA 4 3 7 13	HKP-CC HKP-H HKR HKT HKU HKX HLD HLF HLQ HLR HLR HLR HME HME	14 14 16 16 16 19 18 13 13 7 12 12	KTQ MBB MBO MBW MDA MDC MDF MDL MDM MDR MDV MDV MDS MGB MIC	6 see AGC 3 see AGC 4 4 4 5 4 4 5 4 4 5	3794 3795 3823-1 to 12 3828-1 to 12 3833-1 to 12 3833-1 to 12 3845 3887 3888 3889 3890 3949 3959 3966	20 20 19 19 19 20 20 11 11 11 11 23 20	4418 4419 4420 4421 4422 4423 4424 4426 4427 4428 4429 4431 4431 4437	20 20 20 20 20 20 20 20 20 20 20 21 21	4594 4909 5487 5591-42 5591-52 5592-33 5672-11 5674-01 5678-14	Former No. Page 4570 21 4269 21 4212 21 4212 21 4593 21 4550 21 4550 21 4051 21
GLX GMA GMF GMQ GMT GMW GRF HAF HAG HBO HC HCM-H HCM-H	7 6 13 7 6 13 12 12 12 11 12 14	HMH HMI HMI HMM HMR HMS HN HPC-C HPC-D HPC-L HRE HRF HRG	12 12 12 18 18 18 12 15 15 15 15 12 12 12	MIN MJB MJW MKB MTH N Quick-0	see AGX see AGX 3 3 12 Connect 12, 13, 16 6 6 6 3 3	3967 3968 4051 4161 4164 4164-FR 4178 4184 4185 4186 4190 4207 4208 4212	11 11 18 11 11 18 11 11 11 11 21 21	4439 4440 4462 4464 4481 4482 4483 4483 4503 4512 4513 4514 4515 4520	20 21 21 21 20 20 20 20 21 20 20 20 20 20 20 20 20 20 20 20 20 20	5681-15 5682-02 5682-02 5682-41 5682-44 5956-16 5960-07 5960-03 5960-63 6374 9967	3781 21 4440 21 4592 21 4503 21 4548 21 4243 21 4464 21 4594 21 4462 21 4551 13 12

DIMENSIONS

All dimensions shown are average. When dimensional tolerances are required for specification purposes, write for blueprint.

WEIGHTS

Weights shown are approximate. They include weight of fuses in carton but do not include weight of shipping box.

BLOWING TIME CHARTS

Charts showing time-current characteristics of BUSS and FUSETRON small dimension fuses will be found on pages 21, 22 and 23.

RESISTANCE OF FUSES

The approximate resistance of fast acting fuses, the type generally used for instrument protection, is given to assist in circuit design.

These resistance values can be used as a guide but the actual resistance of any individual fuse may vary due to commercial tolerances and the degree of loading of the fuse.

The resistance of other fuses is not shown because it generally has little significance in the circuit. Should, however, the resistance of any fuse be the important factor, fuses can be furnished to definite resistance tolerances, if specified. The additional cost of such controlled resistance will depend upon the tolerances required.

VOLTAGE RATING OF FUSES

The voltage rating of a fuse indicates the maximum voltage for which the fuse is designed and tested. A typical voltage rating might read "for 250 volts or less". This shows that the fuse may be used on circuits of ANY voltage up to 250. It will operate just as accurately on any circuit of lower voltage since it is the current in amperes flowing through the fuse that causes it to open, regardless of the circuit voltage.

The voltage rating is only important to indicate the highest voltage at which the fuse is tested to safely clear the circuit.

VIBRATION CHARACTERISTICS

To determine the vibration characteristics of BUSS and FUSETRON fuses, a costly Caladyne Vibration System has been installed.

This system permits the evaluation of the vibration characteristics of Small Dimension fuses at cycles of 5 to 2000 per second and acceleration levels up to 30g (vector) or with displacements up to ½ inch double amplitude.

Tests with this equipment have permitted great improvement in the designing of fuses to withstand vibration.

UNDERWRITERS' LABORATORIES LISTING

Where Underwriters' Laboratories listing is shown, this means that the fuse meets the requirements for special fuses contained in UL Standard No. 198.

MILITARY SPECIFICATIONS

Most BUSS fuses and Fuseholders are also available to meet the requirements of the Military Specifications. For more information ask for BUSS Bulletin covering products that meet such specifications.

SPECIAL FUSES, FUSE CLIPS, FUSE BLOCKS or FUSEHOLDERS

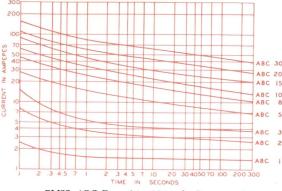
Sometimes a special fuse or fuse mounting not shown is required. In such cases, we welcome your requests either to quote — or to help in designing or selecting the special type of fuse or fuse mounting best suited to your particular conditions.

Submit description or sketch, showing type of fuse to be used, number of circuits, type of terminal, etc. If your protection problem is still in the engineering state, tell us current, voltage, load characteristics, etc.

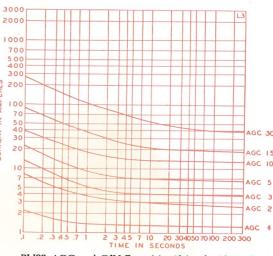
Be sure to get latest information BEFORE final design is crystallized.

Frequently, a standard fuse or fuse mounting that is readily available from local wholesalers' stocks can be adapted or modified to meet your exact requirements. This makes it possible for users of your equipment to easily obtain replacements.

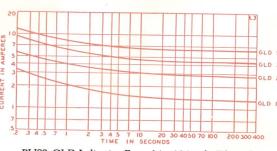
At any time our staff of fuse engineers is at your service to help solve your problems in electrical protection.



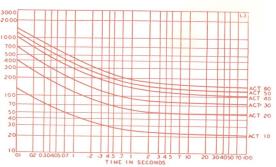
BUSS ABC Fuses $\frac{1}{4}$ x 1 $\frac{1}{4}$ inch. Ceramic tube



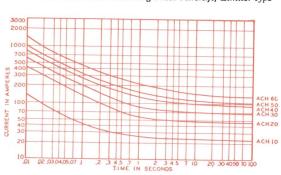
BUSS AGC and GJV Fuses 1/4 x 11/4 inch. Glass tube



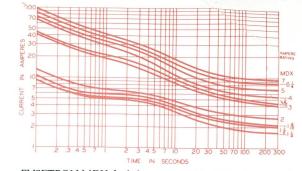
BUSS GLD Indicating Fuses 1/4 x 1 1/4 inch. Fibre tube



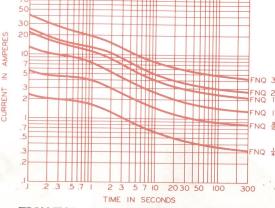
BUSS ACT and ACF Indicating Fuses Aircraft, Limiter type



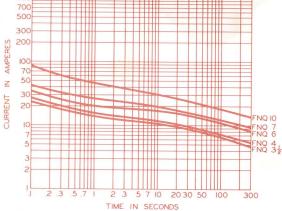
BUSS ACH Indicating Fuses Aircraft, Limiter type



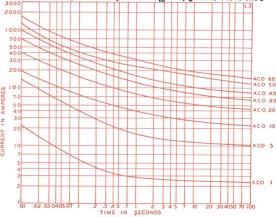
FUSETRON MDX dual-element Fuses ¼ x 1 ¼ inch. Glass tube

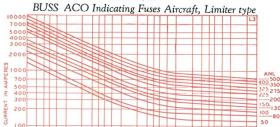


TRON FNQ time-delay Fuses $1\frac{3}{32} \times 1\frac{1}{2}$ inch. Fibre tube



TRON FNQ time-delay Fuses 13/32 x 11/2 inch. Fibre tube

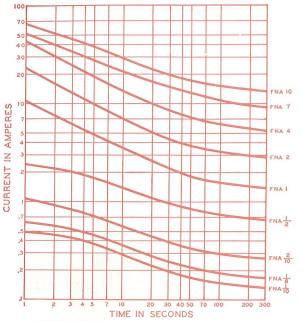




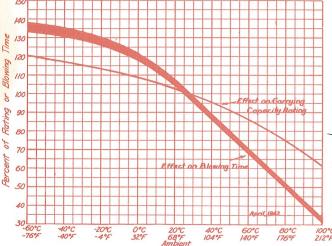
BUSS ANL Limiters

As a guide to help in the selection of the proper size and type of fuse these charts are given.

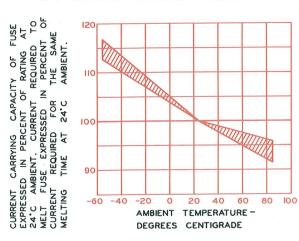
They indicate the time-current characteristics of FUSETRON and BUSS fuses.



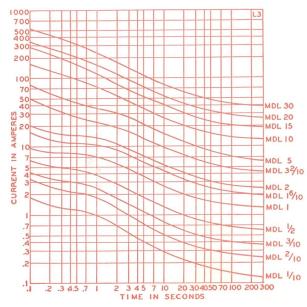
FUSETRON FNA dual-element, Indicating Fuses $1\frac{3}{3}$ 2 x $1\frac{1}{2}$ inch. Fibre tube



AMBIENT TEMPERATURE EFFECT ON NORMAL OPENING FUSES



It must be realized that the information given is only approximate — if more accuracy is needed for some specific problem in electrical protection tell us your requirements. Our fuse engineers are always at your service.



FUSETRON MDL dual-element Fuses 1/4 x 11/4 inch. Glass tube

EFFECT OF AMBIENT TEMPERATURE ON OPERATING CHARACTERISTICS OF FUSETRON dual-element FUSES

Fusetron dual-element fuse ratings are based on an ambient temperature of 70° to 80° F.

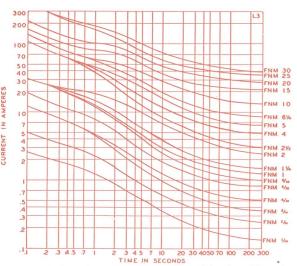
Higher or lower ambient temperatures affect the carrying capacity as shown on the chart.

For instance, an ambient of 104° F. reduces the carrying capacity 5%

On loads of 500% or less, ambients other than 70° to 80° affect the blowing time as shown on the chart.

It must be remembered that these figures are only approximate and that they would be affected by the condition of the clips and other contact conditions.

Chart #50564 effect of ambient temp. on all fuses (general 2/2°F statement).



FUSETRON FNM dual-element Fuses 13/32 x 11/2 inches. Fibre tube

1/4 x 1 inch FUSES

BUSS FAST ACTING FUSES for PROTECTION OF INSTRUMENTS, etc.

1/4 x 1 inch. Glass tube Formerly called 8AG.



AGX 1/16 to 2 amp.

Provide high speed action necessary to protect sensitive instruments or delicate apparatus.

AGX 1/500 to 1/32 ampere sizes and MKB 1/16 and 1/8 ampere sizes have bridge construction. This prevents physical damage to delicate element from rough handling or vibration.

If resistance lower than shown for AGX fuses is desired use MKB fuses in equivalent sizes.

1/6 to 2 ampere sizes have straight through element.

AGX fuses are listed by Underwriters' Laboratories, Inc. Test specification — carry 100%, open at 200% within 5 seconds.

Symbol Amperes AGX 1/500, 1/200, 1/100, 1/32, 1/16, 1/10, 1/8, 250 or less $\frac{3}{16}$, $\frac{2}{10}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{4}{10}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, 1½ or 2

250 or less MKB $\frac{1}{16}$ or $\frac{1}{8}$

MJB & MJW fuses now called AGX. Carton quantity 5, shelf package 100. Shipping weight 0.76 lbs. per 100

Resistance of Fast-Acting Fuses

See note on resistance of fuses on opposite page Cold Hot Symbol Cold Symbol Resistance Resistance Resistance Resistance Ampere Rating Approx. (ohms) Ampere Approx. (ohms) Approx. Approx. (ohms) Rating AGX 3/8 5.6 AGX 1/500 1260 1920 1.5 3.3 AGX ½ 92 AGX ½00 200 300 AGX ¾ .45 1.5 AGX 1/100 102 186 AGX 1 .31 1.2 AGX 1/32 30 62 AGX 1½ .11 AGX ½ 6 91 AGX 2 .07 .11 AGX 1/8 21 8.4 MKB $\frac{1}{16}$ AGX 1/4 2.3 8.3 MKB 1/8 1.2 3.1 Cold resistance obtained at 10% load.

Hot resistance obtained at 100% load BUSS GLASS TUBE FUSES, 1/4 x 1 inch.



Formerly called 8AG

Test specification — carry 110%, open at 135% within 1 hour. 125 volt sizes listed by Underwriters' Laboratories, Inc.

Voltage Symbol Amperes

125 or less AGX 3, 4 or 5

32 or less **AGX** 8, 10, 15, 20, 25 or 30

Carton quantity 5, shelf package 100. Shipping weight 0,76 lbs. per 100.

1/4 x 11/4 inch FUSES

BUSS FAST ACTING FUSES for PROTECTION OF INSTRUMENTS, etc.

1/4 x 1/4 inch. Glass tube. Formerly called 3AG.



AGC ¹/₅₀₀ to ¹/₃₂ amp. MGB ¹/₁₆ and ¹/₈ amp.

 $^{1}/_{16}$ to 2 amp.

Provide high speed action necessary to protect sensitive instruments or delicate apparatus.

AGC $\frac{1}{500}$ to $\frac{1}{32}$ ampere sizes and MGB $\frac{1}{16}$ and $\frac{1}{8}$ ampere sizes have bridge construction. This prevents physical damage to delicate element from rough handling or vibration.

1/16 to 2 ampere sizes have straight through element.

Listed by Underwriters' Laboratories, Inc.
Test specifications — carry 110%, open at 135% in 1 hour or less.

1/600 to 2 ampete sizes also will open at 200% load in 5 seconds or less.
See Blowing Time Charts, page 23.

Symbol Amperes $\frac{1}{1500}$, $\frac{1}{200}$, $\frac{1}{100}$, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{8}$, $\frac{15}{100}$, $\frac{175}{1000}$, $\frac{3}{16}$, $\frac{2}{10}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{3}{8}$, $\frac{45}{100}$, $\frac{1}{2}$, $\frac{6}{10}$, $\frac{3}{4}$, $\frac{1}{1}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{16}{10}$, $\frac{2}{12}$ 250 or less AGC

MGB $\frac{1}{16}$ or $\frac{1}{18}$ MBW & MBB fuses now called AGC. Carton quantity 5, shelf package 100. Shipping weight 0.91 lbs. per 100.

BUSS GLASS TUBE FUSES, 1/4 inch



AGC 3 and 4 and MTH 4, 5 and 6 Formerly called 3AG.

Test specification — carry 110%, open at 135% within 1 hour See Blowing Time Charts, page 23.

Fuses rated for 250 and 125 volts listed by Underwriters' Laboratories, Inc.

Voltage Symbol Amperes 250 or less AGC 2½, 3 250 or less **MTH** 4, 5 or 6

For 250 volt fuses above 6 amperes — See ABC fuses. **GLH** 8 or 10

125 or less 32 or less

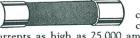
AGC 4, 5, 6, 7½, 8, 10, 15, 20, 25 or 30
Sizes larger than 30 ampere are not recommended as clips or fuseholders would not permit fuse to carry such high currents. If surges or starting irrents make heavier fuse necessary, use MDI

AGC 5 to 30

FUSETRON dual-element fuses.

Carton quantity 5, shelf package 100. Shipping weight 0.91 lbs. per 100.

BUSS MELAMINE TUBE FUSES, 1/4 x 11/4 inch



These are high interrupting capacity fuses for use on circuits capable of delivering currents as high as 25,000 amperes at 125 volts or 10,000

amperes at 250 volts. Test specification — carry 110%, open at 135% in 1 hour or less

Voltage 250 or less **MBO** 1, 2, 3, 4, 5, 6, 8, 10 or 15 125 or less **MBO**, 20, 25 or 30

Carton quantity 5, shelf package 100. Shipping weight 0.93 lbs. per 100.

BUSS CERAMIC TUBE FUSES, 1/4 x 1 1/4 inch



Formerly called 3AB

These are high interrupting capacity fuses for use on circuits capable of delivering currents as high as 25,000 amperes at 125 volts or 10,000 amperes at 250 volts.

Test specification — carry 110%, open at 135% within 1 hour.

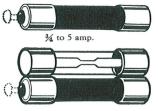
See Blowing Time Charts, page 23.

Listed by Underwriters' Laboratories, Inc., 15 amps. and less. Voltage Symbol Amperes

250 or less **ABC** 1/4, 1, 2, 3, 5, 6, 8, 10, 12, 15 or 20 125 or less **ABC** 25 or 30

Carton quantity 5, shelf package 100. Shipping weight 1 lb. per 100.

BUSS INDICATING FUSES, 1/4 x 11/4 inch



Fibre tube, silverplated indicating pin extends from end of fuse when fuse is blown. If desired indicating pin can be used to actuate a signal by using fuses in a BUSS HKA Fuseholder or in a BUSS Signal Fuse Block. GLD fuses in sizes larger

than 5 ampere have a dual $_{
m 6\ to\ 30\ amp.}$ tube construction. They can be used in BUSS Signal fuse blocks but not in the HKA

125 volt sizes listed by Underwriters' Laboratories, Inc. Test specification — carry 110%, open at 135% in 1 hour or less.

See Blowing Time Charts, page 23.

Voltage Symbol Amperes 125 or less **GLD** $\frac{3}{4}$, 1, $\frac{1}{2}$, 2, 3, 4 or 5

32 or less **GLD** 6, 8, 10, 12, 15, 20, 25 or 30 IBM now called GLD.

0 to 5 amp. Carton quantity 5. Shipping weight 0.86 lbs. per 100. 8 to 15 amp. Carton quantity 5. Shipping weight 1.75 lbs. per 100.

GBA FUSES

GBA fuses are the same as BUSS GLD fuses EXCEPT that the indicating pin is RED. This results in a more vivid indication of an open fuse when the fuses are used in BUSS HLD fuseholders.

GBA fuses have same electrical and physical characteristics as BUSS GLD fuses and are made in the same ampere sizes up to 5 ampere. These sizes are listed by the Underwriters' Laboratories, Inc.

To specify: give symbol GBA and amperes.

1/4 x 1/4 inch FUSES (continued)

FUSETRON CERAMIC TUBE FUSES, 1/4 x 11/4 inch

DUAL-ELEMENT — SLOW BLOWING TYPE



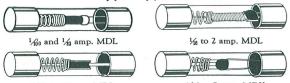
MDA 25 or 30 125 or less

Carton quantity 5, shelf package 100. Shipping weight 0.97 lbs. per 100

FUSETRON MELAMINE TUBE FUSES

Type MDF. These fuses are same as fuses MDL and MDX below, and come in same sizes except they have a Melamine tube.

FUSETRON GLASS TUBE FUSES, 1/4 x 1 1/4 inch



2½ to 30 amp. MDL

11/4 to 7 amp. MDX

DUAL-ELEMENT — SLOW BLOWING TYPE

These fuses avoid needless blows from starting currents or surges. They have a fuse link which operates only on very high overloads or short-circuits - they have a thermal cutout which functions on low overloads - the thermal cutout cannot operate quickly at any load, hence long time-lag is obtained. Yet protection is afforded against short-circuits or continued overloads.

Test specification — carry 110%, open at 135% within 1 hour. See Blowing Charts, pages 22 & 23.

MDL 0 to 21/10 amperes and MDX 0 to 7 amperes listed by Underwriters' Laboratories, Inc. MDL fuses have longer time-lag than MDX fuses.

Voltage	Symbol	Amperes
250 or less	MDL	$\frac{1}{175}$ $\frac{1}{100}$, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{10}$, $\frac{1}{4}$, $\frac{15}{100}$, $\frac{1}{36}$, 1
		$\frac{175}{1000}$, $\frac{3}{16}$, $\frac{2}{10}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{3}{8}$,
		4/10, 1/2, 6/10, 7/10, 3/4, 8/10 or 1
250 or less	MDX	$1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{6}{10}$ or 2
125 or less	MDL	$1\frac{2}{10}$, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{6}{10}$, 2, $2\frac{1}{2}$, or $2\frac{8}{10}$
125 or less	MDX	$3, 3\frac{2}{10}, 4, 5, 6\frac{1}{4}$ or 7
32 or less	MDL	$3, 3\frac{2}{10}, 4, 5, 6\frac{1}{4}, 8, 10, 15, 20, 25 \text{ or } 30$
Carton quar	ntity 5, sh	elf package 100. Shipping weight 0.93 lbs. per 100

PIG-TAIL FUSES

FUSETRON PIG-TAIL FUSES DUAL-ELEMENT — SLOW BLOWING TYPE

Test specifications and performance, MDV ½00 to 28/10 ampere same as MDL fuses. 3 to 7 ampere same as MDX fuses.

1/4 x 11/4 inch glass tube with 11/4 inch leads of No. 20 tinned wire. Listed by Ur derwriters' Laboratories, Inc. Symbol Amperes Amperes
100, 132, 16, 10, 18, 15100, 1751000, 316, 210, 14, 310, 38, 410, 12, 610, 34, 810 or 1
114, 112, 1610, 2, 212, 2810, 3, 3210, 4, 5, 614 or 7 250 or less MDV 125 or less MDV Packed 5 in a metal box, 100 in a shelf package. Shipping weight 1.1 lbs. per 100.

BUSS PIG-TAIL FUSES

 $\frac{1}{4} \times \frac{1}{4}$ inch glass tube fuse with $\frac{1}{4}$ inch leads of No. 20 tinned wire.

Test specifications — carry 110%, open at 135% in one

Listed by Underwriters' Laboratories, Inc. Symbol Amperes 1/16, 1/8, 1/4, 3/10, 3/8, 1/2, 3/4, 1, 11/2, 2, 3, 4, 5, or 6 GJV 250 or less

Fuses packed 5 in metal box — 100 in shelf package. Shipping weight 0.9 lbs. per 100.

9/32 x 11/4 inch FUSES

BUSS GLASS TUBE FUSES, 1/4 inch



Formerly called 4AG

Test specification — carry 110%, open at 135% within 1 hou except 35 and 40 ampere which open at 300% in 2 to 4 seconds when tested in a standard 30 ampere test circuit.

Voltage Symbol Amperes

250 or less AGS $\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{1}{2}$ 1, 2, $2\frac{1}{2}$ or 3

5, 10, 15, 20, 25, 30, 35, 40 or 50

These fuses in sizes larger than 30 ampere are not recommended as clips or fuseholders will not permit the fuse to carry such high currents. If surges or starting currents make heavier fuse necessary, use MDM Fusetron fuses.

Carton quantity 5, shelf package 100. Shipping weight 1.2 lbs. per 100.

BUSS CERAMIC TUBE FUSES, %2 x 11/4 inch



Formerly called 4AB

Test specification — carry 110%, open at 135% within 1 hour except 35 and 40 ampere which open at 300% in 2 to 4 seconds when tested in a standard 30 ampere test circuit.

250 or less **ABS** 1, 2, 3, 5, 8, 10, 15 or 20 125 or less ABS 25 or 30

32 or less ABS 35 or 40

These fuses in sizes larger than 30 ampere are not recommended as clips or fuseholders will not permit the fuse to carry such high currents. If surges or starting currents make heavier fuse necessary, use MDM Fusetron fuses.

Carton quantity 5, shelf package 100. Shipping weight 1.2 lbs. per 100.

FUSETRON GLASS TUBE FUSES, %2 x 11/4 inch



DUAL-ELEMENT — SLOW BLOWING TYPE

These fuses avoid needless blows from starting currents or surges. They have a fuse link which operates only on very high overloads or short-circuits - they have a thermal cutout which functions on low overloads - the thermal cutout cannot operate quickly at any load, hence long time-lag is obtained. Yet protection is afforded against short-circuits or continued overloads.

Test specification — carry 110%, open at 135% within 1 hour. Approximate blowing time: at 200% load 25 seconds. at 300% " 8 " at 500% " 3 "

Voltage Symbol Amperes

250 or less MDM $\frac{1}{10}$, $\frac{15}{100}$, $\frac{2}{10}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{4}{10}$, $\frac{1}{2}$, $\frac{6}{10}$, $\frac{3}{4}$, $\frac{8}{10}$ or 1

125 or less **MDM** $1\frac{1}{4}$, $1\frac{6}{10}$, 2, $2\frac{1}{2}$, $2\frac{8}{10}$ or 3 32 or less MDM $3\frac{2}{10}$, 4, 5, $6\frac{1}{4}$, 8, 10, 15, 20, 25, 30,

35, or 40 Carton quantity 5, shelf package 100. Shipping weight 1.2 lbs. per 100.

FUSETRON CERAMIC TUBE FUSES, %2 x 1 1/4 inch

DUAL-ELEMENT — SLOW BLOWING TYPE



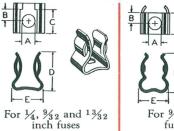
Test specifications and performance same as MDM fuses.

Symbol Amperes Voltage 250 or less **MDC** $\frac{1}{10}$, $\frac{15}{100}$, $\frac{2}{10}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{4}{10}$, $\frac{1}{2}$, $\frac{6}{10}$, $\frac{3}{4}$, $\frac{8}{10}$ or 1 125 or less **MDC** $1\frac{1}{4}$, $1\frac{6}{10}$, 2, $2\frac{1}{2}$ or $2\frac{8}{10}$

32 or less **MDC** 3, $3\frac{2}{10}$, 4, 5, $6\frac{1}{4}$, 8, 10, 15, 20, 25 or 30 Carton quantity 5, shelf package 100. Shipping weight 1.25 lbs. per 100.

TRON FUSE CLIPS

Clips are made of a bronze of distinctly superior quality. This metal gives clips great gripping strength and ability to retain spring under ad-





For % inch





For $\frac{1}{4}$, $\frac{9}{32}$, $\frac{13}{32}$ and $\frac{9}{16}$ inch fuses

Beryllium copper is by far the most satisfactory metal yet discovered for use in fuse clips. It has the ability to retain spring pressure better than any other metal. It also has exceedingly high electrical conductivity.

verse conditions.

Clips are Albaloy plated as this alloy plating is very resistant to corrosion and has a high conductivity.

For Fuses with	A Size of	В	C Min. length		Е				_	Shpg.
a DIAMETER of	Mounting hole	Center of hole to back-stop	of Contact Surface	Maximum Height	Maximum Width	Material	Finish	New No.	Former No.	Weight per 100
					(Spring bronze	Albaloy plated	5682-44	4548	.3 lb.
1 /4 inch	.130 to .135	□.125 to .135	.250	.430	.335	Beryllium copper	Silver plated	5682-02	4592	.3 "
For loads above 20 amperes, Beryllium Copper Clips are					(Spring bronze	Albaloy plated	5682-41	4503	.3 "
recommended.	.130 to .135	△ .099 to .109	.250	.430	.335 {	Beryllium copper		5682-01	4440	.3 "
Clip without End Stop	.130 to .135	†	.265	.430	.335 {	Spring bronze	Albaloy plated	5681-15	3781	.3 "
	150 155	_ 152 102	260	525	305	Spring bronze	Albaloy plated	5674-41	4550	.5 "
9/32 inch	.170 to .175	□.172 to .182	to .182 .360	.525	.385 {	Beryllium copper	Silver plated	5674-01	4593	.5 "
Clip without End Stop	.170 to .175	†	.358	.525	.385 {	Spring bronze	Albaloy plated	5672-11	4437	.4 ''
					[Spring bronze	Albaloy plated	5960-63	4551	.7 "
	.170 to .175	□.196 to .206	.383	.743	.464	Beryllium copper	Silver plated	5960-09	4594	.6 "
13/32 inch	100 100	. 161 171	200	7.42	161	Spring bronze	Albaloy plated	5960-61	4462	.7 "
	.193 to .199	△ .164 to .174	.378	.743	.464	Beryllium copper	Silver plated	5960-07	4464	.6 ''
Clip without End Stop	.170 to .175	†	.307	.743	.464 {	Spring bronze	Albaloy plated	5956-16	4243	.5 "
	150 155	. 245 255		027	(((Spring bronze	Dipped finish	5591-42	4570	1.4 "
9/16 inch	.170 to .175	† .247 to .257	.500	.937	.666	Spring bronze	Albaloy plated	5591-52	4569	1.4 "
Clip without End Stop	.170 to .175	†	.500	.937	.666 {	Spring bronze	Dipped finish	5592-33	4212	1.2 "
☐ Hole in center of contact	□ Hole in center of contact area. Δ Hole in center of clip. † Hole in center of both clip and contact area. Carton quantity, all clips: 10									

BUSS CLIP ASSEMBLIES





With Terminal and

Assembly consists of clip, brass terminal base, and screws as shown in table.

Carton quantity, all clip assemblies: 10.

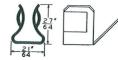
For Fuses with a DIAMETER of	New Clip No.	Former Clip No.	Mounting Screw	Terminal Screw	F Size of mount'g hole	G C to Cm't'ghole & term'l screw	H Diameter of terminal	Assembly No.	Shipping Weight per 100
1/4 inch For loads above 20 amperes,	5682-44 5682-02	4548 4592	\4-40, ½ inch Steel flat head	6-32, 3/16 inch Brass washer head	.088 to .090	.355 to .360	.375 to .380	4431 4432	} }1 lb.
Beryllium Copper Clips are recommended.	5682-44 5682-02	4548 4592	None	"	.130 to .135	- 66	" {	4567 4583	
9/32 inch	5674-41 5674-01	4550 4593	\8-32, 3⁄8 inch ∫Steel flat head	8-32, 3/16 inch Brass washer head	.135 to .137	.440 to .445	.440 to .450	4560 4585	\\ 1.6
13/32 inch	5960-63 5960-09	4551 4594	} "	"	"	"	{	4561 4586	\big 1.6 "
9/16 inch	5591-42 5591-52	4570 4569	} "	"	"	.568 to .573	.505 to .515	4208 4207	2.7 "

BUSS ONE-PIECE CLIP AND TERMINAL



Carton quantity: 10.

type terminal for 1/4 inch fuse.



Spring bronze, albaloy plated, shipping weight .3 lbs. per 100.





No. 5678-14 (Formerly called 4051) one-piece clip and solder

-21 -

Make it easy to replace blown pig-tail fuses without cutting or unsoldering pig-tails. Twin-Clips snap on

BUSS Insulated TWIN-CLIPS

for 1/4" FUSES

blown fuse.

No. 3434 One pair of BUSS Twin-Clips.

Packed 5 pair in a handy carton. Shipping Wt. 1.0 lbs. per 100 pairs.

BUSS FUSE and BUSS SILICON RECTIFIER BLOCKS





Small base.



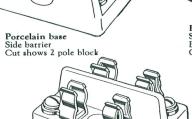


Small base, Screw terminals Bakelite base Cut shows 1 pole block

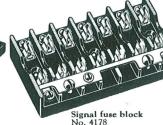
Solder terminals Bakelite base Cut shows 1 pole block

Screw terminals Bakelite base Cut shows 1 pole block











Signal fuse block No. 3839 Silicon Rectitier Block Cut shows 4 pole block

Bakelite Bases. Nos. 4393, 4398, 4399, 4405, 4406, 4407, 4520 and 4574 are made of molded bakelite. Height 1764 inch. All others are made of 3/6 inch thick laminated, paper base bakelite.

Mounting holes on Bakelite base blocks. 2 and 3 pole blocks have two mounting holes, c to c 5/8 inch on width of base. One pole blocks have one mounting hole except that full bakelite base, screw terminal blocks have two holes staggered, c to c 3/8 inch on width of base, c to c 1/4 inch on length of base. Laminated bakelite blocks have countersunk holes for No. 6 flat head screws. Molded bakelite blocks have counterbored holes for No. 6 screws or rivets.

Porcelain bases

Porcelain base

Center barrier Cut shows 2 pole block

LOLCGIGILI N	43031				
Thicknes	s of base	Height over barrier			
4161289"	4396355"	4161719"	4396830"		
4439500"	4575594"	4439 - 1.25"	4575 - 1.406"		

Mounting holes in Porcelain base blocks. No. 3792, No. 3845 and No. 4396 have one hole in center of base. No. 4161 has two holes, c to c 19/32 inch on width of base.

Holes are counterbored for No. 8 screws. No. 4439 has two holes counterbored for No. 12 screws, c to c 1.710 inch on width of base. No. 4575 has two holes counterbored for No. 12 screws, c to c 11/8 inch on width of base.

Terminal screws. Brass, washer head. On blocks for 1/4 inch fuses, except 4396 and 4161 No. 6. On blocks 4396 4161, 4513, 4523 and 4533 and blocks for 1/2 and 13/2 inch fuses, No. 8.

Clips on blocks are made of high quality spring bronze or beryllium copper. For clip dimensions see page 21.

Insulating Plates. When necessary to provide added in sulation due to high voltage, 1/32 inch thick laminated bakelite plates are available. Mounting holes in plate line up with mounting holes in block for which they are intended so that plate and block are installed with the same screws. In ordering specify block for which plates are

CARTON QUANTITY 10 on all fuse blocks.		For ⅓ x 1 inch Fuses	For 1/4 x 11/4 Inch Fuses	For 1/4 x 17/ ₁₆ Inch Fuses	For ⁹ / ₃₂ x 1 ½ inch Fuses	For 13/ ₃₂ x 11/2 inch Fuses		
		Dimension of No. base—inches	No. Dimension of No. base—inches	No. Dimension of No. base—inches	Dimension of No. base—inches	Dimension of No. base—inches		
Small bakelite base, solder terminals	1 pole 2 " 3 "	4520 .500 x 1.375 4485 1.000 x 1.250 4403 1.625 x 1.125	4405 .500 x 1.625 4408 1.000 x 1.625 4411 1.625 x 1.500	THE BUILD MEMORIAL	4413 500 x 1.375 4416 1.000 x 1.375 4419 1.625 x 1.375	4421 .625 x 1.625 4424 1.375 x 1.625 4428 2.125 x 1.625		
Small bakelite base, screw terminals	1 " 2 " 3 "	4399 .500 x 1.375 4402 1.000 x 1.125 4404 1.625 x 1.125	4407 .500 x 1.625 4410 1.000 x 1.500 4412 1.625 x 1.500		4415 .500 x 1.375 4418 1.000 x 1.375 4420 1.625 x 1.375	4423 .625 x 1.625 4427 1.375 x 1.625 4429 2.125 x 1.625		
Small bakelite base, Solder side terminals	1 "	4398 .500 x 1.375 4401 1.000 x 1.250	4406 500 x 1.625 4409 1.000 x 1.625		4414 .500 x 1.375 4417 1.000 x 1.375	4422 .625 x 1.625 4426 1.375 x 1.625		
Full bakelite base, screw terminals	1 " 2 " 3 "	4514 .750 x 2.187 4524 1.062 x 2.187 4534 1.687 x 2.187	4512 .750 x 2.187 4522 1.062 x 2.187 4532 1.687 x 2.187	4513 .750 x 2.562 4523 1.187 x 2.562 4533 1.812 x 2.562	4481 .750 x 2.562 4482 1.187 x 2.562 4483 1.812 x 2.562	4515 .750 x 2.562 4525 1.312 x 2.562 4535 2.062 x 2.562		
Spare fuse block	1 "	4393 .500 x 1.375	4574 .500 x 1.625					
Porcelain base, side barrier, screw terminals	1 " 2 " 3 "		4396 .925 x 2.160 4161 1.312 x 2.250			3792 1.156 x 2.688 4439 2.938 x 2.938		
Porcelain base, center barrier, screw terminals	2 "					4575 1.970 x 2.875		
Porcelain base, side barrier, screw terminals	1 "	3845 for ½ x 1¾ inc	h fuses (BUSS BBS) Dim	ensions of base 1.156 x	2.688			
Molded phenolic base side barrier screw terminals	1 " 2 " 3 "							
Molded phenolic base side barrier	1 "					2810 .859 x 3.000 2811 1.625 x 3.000		
pressure lug terminals	3 "					2812 2.375 x 3.000		
Signal Fuse Block	7 "	4178 for 1/4 x 11/4 BU 3839 for 13/2 x 11/2 BU	SS GLD fuses. Dimensio ISS FNA and FNJ fuses.	ns of base 2.375 x 4.281 Dimensions of base 2.66	88 x 4.375			
SILICON RECTIFIER BLOCKS	1 " 2 " 4 "	3794 solder terminals. 3795 solder terminals. 3966 solder terminals.	•					

Most Buss Fuse Blocks Can Be Furnished With Quick-Connect Terminals.

$13/32 \times 11/2$ inch FUSES

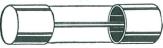
BUSS FUSES, 13/32 x 11/2 inch

Test specifications on AGU, ABU, BAF, BAN and MIN—carry 110%, open at 135% within 1 hour.

35 to 60 ampere open at 300% in 2 to 4 seconds when tested in a standard 30 ampere test circuit

These fuses in sizes larger than 30 ampere are not recommended as clips or fuse holder would not permit fuses to carry such high currents. If surges or starting currents make heavier fuses necessary use FNM Fusetron fuses.

Glass Tube type — formerly called 5AG.



Listed by Underwriters Laboratories, Inc. in 3 amp, and smaller sizes.

Symbol Amperes 250 or less AGU

32 or less AGU 5, 10, 15, 20, 25, 30, 35, 40, 50 or 60 Carton quantity 10, shelf package 100. Shipping weight 1.8 lbs. per 100.

Bakelite Tube type — formerly called 5AB.



Because of higher voltage ratings the use of BAF or BAN fuses is recommended instead of ABU fuses.

Symbol Amperes 250 or less ABU 1, 2, 3 or 5

32 or less ABU 10, 15, 20, 25, 30, 35, 40, 50 or 60 Carton quantity 10, shelf package 100. Shipping weight 1.17 lbs. per 100.

Laminated Tube type

Often called "midget type

250 volt sizes listed by Underwriters' Laboratories, Inc Voltage Symbol Ampere

250 or less BAF 1, 3, 6, 10 or 15 125 or less BAF 20, 25 or 30

Carton quantity 10, shelf package 100. Shipping weight 1.3 lbs. per 100

Fibre Tube type

BAN fuses are BAF fuses with a fibre tube to give greater mechanical strength.

Voltage Symbol Amperes
250 or less BAN 1, 3, 6, 10, 15, 20, 25 or 30
Carton quantity 10, shelf package 100. Shipping weight 1.4 lbs. per 100

Visual Indicating type — Fibre tube



Red button on indicating pin extends from end of fuse when fuse is blown. Made in ac

cordance with Navy Specifications

MIN fuses can be used in BUSS HPC-C fuseholders.

Voltage 250 or less MIN 1, 2, 3, 5, 10 or 15 125 or less MIN 20, 25 or 30

Carton quantity 10, shelf package 100. Shipping weight 1.5 lbs per 100

Signal or Visual Indicating type

MIC fuses have a silver plated indicating pin. Pin can be used as visual indicator as in a BUSS HPC-C fuseholder-or can be used to actuate a signal by using fuses in BUSS Signal fuse block.

250 volt sizes listed by Underwriters' Laboratories, Inc. Symbol

Voltage 250 or less 1, 2, 3, 5, 10 or 15 MIC 20, 25 or 30 32 or less Carton quantity 10, shelf package 100. Shipping weight 1.5 lbs. per 100.

LIMITRON FUSES **High Interrupting Capacity**



13/32 x 11/2 inch

Type KTK fuses are for protection of circuits having fault current capacity up to 100,000 amperes, AC only. Listed by Underwriters' Laboratories Inc.

0 to 15 ampere sizes listed by Canadian Standards Assn. Test specifications - carry 110%, open at 135% in 1 hour or less.

Voltage 600 or less KTK Amperes 1/10, 1/8, 2/10, 1/4, 3/10, 1/2, 3/4, 1, 11/2, 2, 3, 4, 5, 6, 8, 10, 15, 20, 25 or 30

Type KLM is the military version of Type KTK fuses, made in conformity and tested to meet the requirements of Specification MIL-F-15160-D. They have an interrupting rating on voltages of 500 of 68,000 amperes AC or DC. Available in same ampere ratings as Type KTK fuses.

Carton quantity 10, shelf package 100. Shipping weight 1.8 lbs. per 100.

FUSETRON FIBRE TUBE FUSES.

13/32 x 11/2 inch DUAL-ELEMENT - SLOW BLOWING TYPE

These fuses avoid needless blows from starting currents or surges. They have a fuse link which operates only on very high overloads or short-circuits - they have a thermal cutout which functions on low overloads - the thermal cutout cannot operate quickly at any load, hence long



time-lag is obtained. Yet protection is afforded against short-circuits or continued overloads.

Test specification — carry 110%, open at 135% within 1 hour

See Blowing Time Charts, page 22.

125 and 250 volt sizes listed by Underwriters' Laboratories, Inc.

Voltage Symbol 250 or less FNM 250 or less FNM 1,0, 15,100, 2,0, 3,10, 4,10, 12, 6,10, 8,10, 1, 11,14, 11,14, 15,0, 18,0, 2, 2,14, 2,12, 28,10, 3,10, 3,12, 4, 4,12, 5, 56,10, 6,14, 7, 8, 9 or 10

125 or less FNM 12 or 15

32 or less **FNM** 20, 25 or 30

Carton quantity 10, shelf package 100. Shipping weight 1.5 lbs. per 100

Signal or Visual Indicating type — FNA are

FNM Fusetron fuses with silver plated indicating pin which ex-tends from fuse when

1/4 to 10 amp fuse is blown. In sizes up to 10 amperes can be used in BUSS HPC-C fuseholder or if desired pin can be used to actuate a signal by using fuses in BUSS Signal fuse block.



dual tube construction. They can be used in BUSS Signal fuse blocks but not in the HPC-C fuseholder.

Fuses in sizes larger

than 10 ampere have a

12 to 30 amp

See Blowing Time Chart, page 22.

0 to 15 ampere sizes listed by Underwriters' Laboratories, Inc.

250 or less $\frac{1}{10}$, $\frac{1}{5}$, $\frac{1}{100}$, $\frac{2}{10}$, $\frac{3}{10}$, $\frac{4}{10}$, $\frac{1}{2}$, $\frac{6}{10}$ or 1, 1½, 1½, 1½,0, 1½,0, 1½,0, 2. 2½, 2½, 2½,0, 3, 3½,0, 3½, 4, 4½, 5, 5½,0, 6, 6½, 7, 8, 10, 12 or 15 125 or less FNA

32 or less FNA 20, 25 or 30 0 to 10 amps. Carton quantity 10. Shipping weight 1.5 lbs. per 100 12 to 30 amps. Carton quantity 5. Shipping weight 3.0 lbs. per 100

FUSETRON GLASS TUBE FUSES, 13 ₃₂ x 11 ₂ inch



Dual-element type Same as FNM above listed except glass tube instead of fibre tube.

Voltage Amperes 3, 35, 0, 4, 5, 614, 8, 10, 15, 20, 25, 30, 35 or 40 250 or less MDR 125 or less MDR 32 or less MDR

Carton quantity 10, shelf package 100. Shipping weight 1.9 lbs. per 100

TRON FNQ time-delay FUSES

TRON FNQ Time-Delay fuses are designed primarily for the protection of motor control transformers being applied at 440 to 480 volts. This midget type fuse has an interrupting rating of 10,000 amperes at 500 volts. FNQ fuses may be sized close to the control transformer full load rating because of their inherent time-delay, avoiding needless blows which might otherwise occur from harmless transient

These fuses may also be applied in other circuits up to 500 volts that require time-delay and have space limitations.

These fuses can be used in BUSS HPC fuseholders and 13/32" x 11/2" fuse blocks.

Test specification — carry 110%, open at 135% within 1 hour Voltage Symbol Amperes

500 or less **FNQ** $\frac{1}{4}$, $\frac{6}{10}$, 1, $\frac{16}{10}$, 2, $\frac{32}{10}$, $\frac{31}{2}$, 4, 6, 7, 10 Carton quantity 10. Shipping Weight 1.5 lbs. per 100.

13/32 x 1% inch FUSES

BUSS BBS FUSES 600 Volt. UL Listed 13/32 x 13/8 inch.

Fibre tube. Designed for the protection of control circuits or wherever a fuse with "quick-blowing" characteristics is desirable.

Listed by the Underwriters' Laboratories, Inc.

Voltage Symbol Amperes 600 or less BBS \(\frac{4}{10}, \frac{34}{24}, \frac{8}{10}, 1, 2, 3, 4 \text{ or 5} \)
These fuses can be used in BUSS HPC-L fuseholder, or in BUSS No. 3845 fuse block.

BUSS KTQ FUSE

KTQ fuses have been specifically engineered for use in mercury vapor fixture circuits. KTQ fuses have an interrupting rating of 10,000 amperes at 600 volts and are designed to override ballast inrush current while still opening quickly on short circuits.

Voltage Symbol Amperes 600 or less KTQ. 2, 3, 4, 5.

These 13/32" x 13/8" fuses will fit BUSS HPC-L fuseholders, or BUSS No. 3845 fuse blocks.

1/4 x 5/8 inch FUSES

BUSS GLASS TUBE FUSES, 1/4 x 5/8 inch



Formerly called 1AG

Test specification — carry 110%, open at 135% within 1 hour. Symbol Amperes

32 or less AGA 1, 1½, 2, 3, 5, 6, 7½, 10, 15, 20, 25 or 30 Carton quantity 5, shelf package 100. Shipping weight 0.73 lbs. per 100.

1/4 x 1/8 inch FUSES

BUSS GLASS TUBE FUSES, 1/4 x 7/8 inch



Formerly called 7AG

Test specification — carry 110%, open at 135% within 1 hour

Voltage Symbol Amperes 32 or less AGW 2½, 4, 6, 7½, 15, 20 or 30

Carton quantity 5, shelf package 100. Shipping weight 0.80 lbs. per 100

MINIATURE FUSES

BUSS MINIATURE GLASS TUBE FUSES 5 mm x 20 mm (.197 x .769 inches)



GJU fuses now called GMA.

Designed for protection of miniaturized circuits or equipment. Commonly used in equipment of foreign make. Test specifications — Carry 100% load indefinitely.

Open at 200% load within 10 seconds

Voltage Symbol Amperes

125 volts or less if available fault current is not over 50 amps.

HWA

GMA $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{7}{10}$, 1, $1\frac{2}{10}$, $1\frac{1}{2}$, 2, 3, 4, 5, 6, 10.

Carton quantity 5, shelf package 100. Shipping weight 0.69 lbs. per 100.

SFE STANDARD FUSES

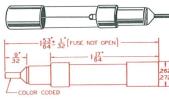
BUSS FUSES — SFE STANDARD All cuts actual size. Fuses of different amperages are of different lengths - to make it impossible to insert too large a size — thereby preventing overfuseing.

SFE 7½ SFE 14 SFE 20 SFE 30 & SFE 9 Glass tube — diameter ¼ inch. Length as per table below. Test specification — carry 110%, open at 135% within 1 hour. Listed by Underwriters' Laboratories, Inc.

Made accor	raing to oak spe	ecincations.	
	Symbol &	Length	Shipping Weight
Voltage	Ámperes	Inches	Lbs. Per 100
32 or less	SFE4	5/8	0.73
"	SFE6	3/4	0.75
"	SFE71/2	7/8	0.80
"	SFE9	7/8	0.80
"	SFE14	11/16	0.82
""	SFE20	11/4	0.87
"	SFF30	17/16	1.60

"
SFE30 1/16
All SFE fuses, carton quantity 5, shelf package 100.

BUSS Series 70 FUSES



SFE 4

SFE 6

Signal-Indicating Alarm-Activating

For use in telephone and similar applications. Color coded indicating pin extends from end when fuse opens. Glass tube construction permits visual check of

element. Fuse rated 300v, carry rated current minimum 10 minutes. For opening time-current characteristics, see table.

Number & Type	Ampere Rating	Color Code	At 150% of rating open in:
70 E	18/100	Yellow	0 to 90 Sec.
70 X	2/10	Black	90 to 300 "
70 F	1/4	Violet	0 to 90 "
70 K	1/4	Violet & White	90 to 300 "
70 G	1/2	Red	0 to 90 "
70 H	3/4	Tan	0 to 90 "
70 P	1	Pink	90 to 300 "
70 A	1 1/3	White	0 to 90 "
70 B	2	Orange	0 to 90 "
70 C	3	Blue	0 to 90 "
70 D	5	Green	0 to 90 "
71 A	6	Green & White	0 to 90 "
70 M	8	Red & White	0 to 90 ''
70 R	10	Purple	0 to 90 "

Carton quantity 10, Shipping weight 1 lb. per 100

GMW Fuse and HWA Fuseholder

Sub-miniature fuse-holder combination Body size of fuse only .270 x .250 inches. Diameter of holder body .375 inches.

Offering a space-saving protective device for space-tight applications in multiple circuit apparatus. GMW fuse has transparent window for visual inspection of element. Fuse may be used alone for mounting into printed circuit boards. HWA holder can be panel mounted easily — or

soldered on printed circuit boards. AF knob for holder makes holder water-proof

from front of panel.

Test specifications—carry 100%, open at 200% within 10 seconds or less.

Interrupting rating—300 ampere at 125 volts.

Ampere \(\frac{1}{200}, \frac{1}{100}, \frac{1}{64}, \frac{1}{32}, \frac{1}{16}, \frac{1}{10}, \frac{2}{10}, \frac{1}{4}, \frac{3}{3}, \frac{1}{16}, \frac{1}{10}, \frac{2}{10}, \frac{1}{4}, \frac{3}{3}, \frac{1}{10}, \frac{1}{2}, \frac{2}{10}, \frac{3}{4}, \frac{1}{112}, \frac{1}{2}, \frac{2}{3}, \frac{4}{4}, \text{ and 5} \)

For military type specify FM01 and ampere rating. Carton quantity 10. Shipping weight 0.20 lbs. per 100.

Fuseholder takes all sizes of GMW fuses For military type specify FHN42W. Carton quantity 10. Shipping Weight 0.44 lbs. per 100. Knob for HWA fuseholder

Carton quantity 10. Shipping weight 0.25 lbs. per 100.

When tooling up for mounting holder, get latest blueprint.

BUSS Panel Mounted FUSEHOLDERS

Visual-Indicating Series HLD

For 1/4 x 11/4 inch BUSS GBA fuses (or GLD fuses) 3/4 to 5 amps.



Holder has bayonet type transparent knob. This permits visual indicating pin on an open BUSS GBA fuse to be seen.
BUSS GBA indicating fuse has red headed indicating pin

that shows up clearly when fuse is open.

(BUSS GLD fuses up to 5 amps. may also be used in HLD holder, but because of silvered head on indicating pin they will not indicate open fuse as clearly as the BUSS GBA fuse.)

Knob of HLD holder grips fuse tightly and pulls fuse

from holder when knob is removed.

Side terminal is held mechanically as well as by solder. Heat of soldering cannot cause it to loosen or come off. Vibration will not cause failure of terminals as they are designed to withstand severe service.

Neoprene washer and zinc plated, chromate dipped steel fastening nut furnished with each holder.

Body is of molded black phenolic.

Flat part of body locks it against rotation when used in punched hole - or permits use of a locking key in drilled

Locking keys are obtainable, without charge — 1/16 inch long for panels up to 1/8 inch thick or 1/8 inch long for thicker panels. Specify length wanted.

The BUSS HLD fuseholder when used with BUSS GBA (or GLD) fuses is designed for circuits of 125 volts or less. Quick-connect terminals also available — specify HLD-HH.

Listed by Underwriters' Laboratories, Inc. for 15 ampere rating for any voltage up to 250. HLD for 1/4 x 11/4 inch GBA Indicating fuses in ratings of

 $\frac{3}{4}$ to 5 ampere. Shipping weight 31/4 lbs. per 100. Carton quantity 10.

2[ૄ] MAX.→ -24 Threads HOLE DRILLED PUNCHED

When tooling up for mounting get latest blue print

Knob of HLD holder can be used to make your HKP holders indicating type

Present HKP holders can readily be changed into visual indicating type holders, simply by replacing the HKP knob with a transparent knob such as is used on HLD holders.



Each fuse can be

used as a circuit

disconnect

To order specify: Transparent Knob No. 5487.

BUSS STANDARD FUSE BLOCKS

Available from 1 to 12 poles. Have laminated black phenolic base. Clips of strong spring bronze, albaloy plated highly resistant to corrosion with great gripping strength. Types 3823 and 3828 have soldered terminals on small base. Mounting holes are straight for No. 6 screw. Type 3833 has screw terminals on full base that provides ample insulation around terminals. Mounting holes are countersunk for No. 6

BUSS standard fuse blocks available with quick-connect terminals.

Full base Black phenolic base. Cut shows 10 pole block

For 1/4 x 11/	4" Fuses — Solder '	Terminals	For ¼ x	1" Fuses — Solder To	erminals	For 1/4 x 11/2	4" Fuses — Screw To	erminals
Туре	Base Dimension	No. Poles	Туре	Base Dimension	No. Poles	Туре	Base Dimension	No. Poles
3823-1	½ x 15/8	1	3828-1	½ x 13/8	1	3833-1	²⁵ / ₃₂ x 2 ³ / ₈	1
3823-2	$1\frac{1}{8} \times 1\frac{5}{8}$	2	3828-2	$1\frac{1}{8} \times 1\frac{3}{8}$	2	3833-2	$1^{11}/_{16} \times 2^{3}/_{8}$	2
3823-3	$1\frac{3}{4} \times 1\frac{5}{8}$	3	3828-3	$1\frac{3}{4} \times 1\frac{3}{8}$	3	3833-3	2^{19} ₃₂ x 2^{3} ₈	3
3823-4	$2\frac{3}{8} \times 1\frac{5}{8}$	4	3828-4	$2\frac{3}{8} \times 1\frac{3}{8}$	4	3833-4	$3\frac{1}{2} \times 2\frac{3}{8}$	4
3823-5	$3 \times 1\frac{5}{8}$	5	3828-5	$3 \times 1\frac{3}{8}$	5	3833-5	$4^{13}/_{32} \times 2^{3}/_{8}$	5
3823-6	$3\frac{5}{8} \times 1\frac{5}{8}$	6	3828-6	$3\frac{5}{8} \times 1\frac{3}{8}$	6	3833-6	$5\frac{5}{16} \times 2\frac{3}{8}$	6
3823-7	$4\frac{1}{4} \times 1\frac{5}{8}$	7	3828-7	$4\frac{1}{4} \times 1\frac{3}{8}$	7	3833-7	$6\frac{7}{32} \times 2\frac{3}{8}$	7
3823-8	$4\frac{7}{8} \times 1\frac{5}{8}$	8	3828-8	$4\frac{7}{8} \times 1\frac{3}{8}$	8	3833-8	$7\frac{1}{8} \times 2\frac{3}{8}$	8
3823-9	$5\frac{1}{2} \times 1\frac{5}{8}$	9	3828-9	$5\frac{1}{2} \times 1\frac{3}{8}$	9	3833-9	$8\frac{1}{32} \times 2\frac{3}{8}$	9
3823-10	$6\frac{1}{8} \times 1\frac{5}{8}$	10	3828-10	$6\frac{1}{8} \times 1\frac{3}{8}$	10	3833-10	$8^{15}/_{16} \times 2^{3}/_{8}$	10
3823-11	$6\frac{3}{4} \times 1\frac{5}{8}$	11	3828-11	$6\frac{3}{4} \times 1\frac{3}{8}$	11	3833-11	$9^{27}/_{32} \times 2^{3}/_{8}$	11
3823-12	$7\frac{3}{8} \times 1\frac{5}{8}$	12	3828-12	$7\frac{3}{8} \times 1\frac{3}{8}$	12	3833-12	$10\frac{3}{4} \times 2\frac{3}{8}$	12

BUSS Add-On FUSE BLOCKS For 13/32 x 11/2 inch Fuses

-19-

With BUSS Add-On fuse

blocks it is easy to make up a

fuse block of any number of

Each single pole unit is simply nested against the next one

and locked in position by a single screw so that the whole

assembled block becomes a single unit that seats flat and

New poles can be added to either end of the existing

block. There are no retaining rods or mounting channel

straps to remove, cut or modify when adding poles.

firm, no matter how many poles are added

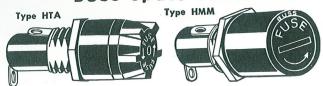
Marking strips are available that snap-lock onto base. Strips can be marked with circuit number and proper fuse or identified in other manner.

3742 End Barrier Only 3743 One-Pole Block Only Marking Strip in 50 inch lengths

When ordering, be sure to specify number of End Barriers and number of One-Pole Blocks desired. Only ONE End Barrier is required for each assembled fuse block of any number of poles.

Listed by Underwriters' Laboratories, Inc. for 30 ampere rating at any voltage up to 600.

BUSS Space Saver Panel Mounted FUSEHOLDERS



For 1/4 x 11/4 inch Fuses

These compact BUSS fuseholders require only $\frac{1}{2}$ inch mounting holes—are only 1^{25} %2 inch long and extend just 1 inch behind front of panel.

One holder has a bayonet type knob for easy gripping and has a "breakaway" test prod hole.

The other has a screw type slotted knob recessed in holder body. This guards against anyone removing fuse without a screwdriver.

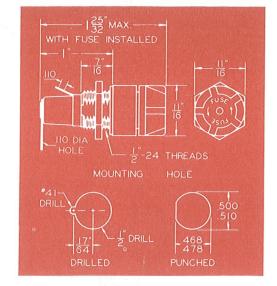
Side terminals held mechanically as well as by solder and are designed to withstand severe service.

Body is of molded phenolic and comes with a zinc plated, chromate dipped steel fastening nut and neoprene washer.

Flat part of body locks it against rotation in punched hole—or permits use of locking key in drilled holes. Locking keys available without charge, specify thickness of panel.

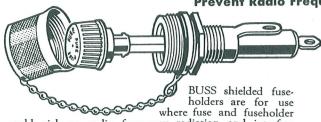
"Easy-Grip" Knob type, specify BUSS symbol HTA.
Screwdriver Slot Knob, specify BUSS symbol HMM.
Current carrying capacity; 15 amperes at any voltage up to 250.

Fuseholders available with quick-connect terminals.



Mounting dimensions for HTA and HMM $-\cdots 2$ inch mounting hole. Before tooling up for mounting get latest BUSS blue print.

BUSS Shielded Panel Mounted FUSEHOLDERS Prevent Radio Frequency Interference



could pick up radio frequency radiation and interfere with circuit containing fuseholder or act as a radiating antenna and interfere with or disrupt other nearby circuits.

They install quickly as an ordinary fuseholder and accomplish both shielding and grounding, eliminate need for placing grounded metal shield around fuseholder.

Fuseholders available with quick-connect terminals.

Current carrying capacity; 30 amperes at any voltage up to 250.

Fuseholders are available to take two size fuses

BUSS HMR Fuseholder takes ¼ x 1¼ inch fuses. BUSS HMS Fuseholder takes ¼ x 1 inch fuses.

Both fuseholders comply with the requirements of

MIL-I-6181 D for interference control.

Both fuseholders meet requirements of MIL-F-19207B covering such environments as salt spray, humidity, vibration, shock.

2 ½ MAX. WITH FUSE INSERTED PANEL FRONT 112 290 PANEL FRONT 118 260 300 300 118 PUNCHED 12 15 164 PUNCHED 165 PUNC

HMR and HMS Fuseholders
Before tooling up for mounting get latest BUSS blue print.

Give fuseholder symbol, then Load-side symbol, then Line-side symbol.

TRON Waterproof FUSEHOLDER



TRON In-the-Line Waterproof fuseholders fill the need for a water-tight fuseholder that are easy to install and give fuse protection in exposed locations.

The fuseholder completely encloses the fuse and protects it against damage from water, weather, salt spray, corrosive fumes and the like.

TRON HEB fuseholder takes $^{13}\!\!/_{22}$ x $1^{1}\!\!/_{2}$ inch fuse such as KTK, FNM, BAF, etc. at rated voltage of fuse up to 600.

TRON HEJ fuseholder takes 13 /₃₂ x 21 /₄ inch fuse such as SC35 to 60, HVW 1 /₂ to 6, etc. at rated voltage of fuse up to 1200.

For detailed information on wide range of terminal sizes and Breakaway Feature, ask for BUSS bulletin SFH-11.

Fuseholder Symbol	Crimp Type Terminals Symbol	AWG COPPER Wire Size Terminal will take
HEB	A	One #14, 12, 10 or 8 solid or stranded wire Two #14 or 12 solid or stranded wires
Takes 13/32 x 11/2 inch fuse—at rated voltage of fuse—up to	В	One #6 or 4 solid wire One #6 stranded wire Two #10 solid or stranded wires
600 volts.	С	Two #8 solid or stranded wires One #4 stranded wire
KTK, FNM, BAF, etc. fuses)	D	Two #6 solid or stranded wires One #2 stranded wire
1	E	Two #4 solid or stranded wires
• 7	Set Screw Type Connector Term	
HEJ	J	One #12 to #2 solid or stranded wire
takes ¹³ / ₃₂ x 2 1/ ₄ inch fuse—at	К	Two #12 to #2 solid or stranded wire
rated valtage of fuse—up to	Set Screw Typ Connector Terr	
1200 volts. (SC35 to SC60	L	One #12 to #2 solid or stranded wire
HVW½ to HVW6 etc. fuse)	Y	{Two #12 to #2 solid or stranded wires
1. TVO etc. 10se)	W	Solid copper terminal for breakaway receptacle.

NOTE: TRON Fuseholders can readily be adapted to take aluminum wire or cable

TRON' PIGTAIL FUSES

Sub-miniature — hermetically sealed — visual indicating

Tron fuses are so small they can easily be used as an integral part of circuit — to protect miniaturized devices — or gigantic multi-circuit electronic devices — without sacrifice of space.

Fuse element hermetically sealed

Tron fuses may be potted or encapsulated without danger of sealing material affecting operation. Not affected by atmospheric or surrounding conditions. Designed for installation in high shock and vibration ambients.

They are self-protecting and operate without exterior flash or venting, so they can be installed anywhere in the circuit. Likewise, they may be teamed in one capsule or replaceable unit with such components as resistors or condensers. Glass tube construction permits visual inspection of element.

GFA TRON Fuses

D 1	1 145	200 :
Body	size only .145	x .300 inches
	Test	Color Code
Symbol &	Specifi-	One Other End End
Amperes	cation	200
GFA 1/100	A	Red - Orange
GFA 1/32	A	Red - Brown
GFA 1/20	Α	Yellow - Yellow
GFA 116	A	Brown - Brown
GFA 10	A	Red - Red
GFA 18	A	Orange - Orange
GFA 15/100	В	Red - Yellow
GFA 210	B	Red - Blue
GFA 14	B	Red - Purple
GFA 310	Å	Green - Green
GFA ½10	A	Blue - Blue
GFA ½	В	Orange - Green
GFA 910	В	Orange - Blue
GFA 34	B	Orange - Purple
GFA 1	B	Yellow - Green
GFA 1½	В	Yellow - Purple
GFA 2	В	Green - Blue
GFA 3	В	Blue - Purple
GFA 4	В	Purple - Brown
GFA 5	В	Brown - Black
GFA 7	A	Purple - Green
GFA 8	A	Green - Black
GFA 15	A	Black - Purple
		Other ratings are available w

GFA, GLN & GLX fuses are for use on circuits where available fault current is not over 50 amperes — 1/100 to 5 ampere ratings for 125 volts or less.

7 to 15 ampere ratings, for 32 volts or less.

Color coding indicates ampere rating and assists in final

inspection of fused circuits.

Made with 1½ inch axial pigtails that are adapted to feed through automatic wire forming machines — or with 1 inch right angle pigtails conveniently spaced for assembly on printed circuit chassis. Leads are of No. 24 tinned copper wire for ratings 1/100 thru 5 amp. — No. 18 tinned copper wire for ratings 7 thru 15 amp.

Test specifications —
Characteristic A — Carry 100% load, open within 10 seconds at 200% load.

Characteristic B — Carry 100% load, open within 10 seconds at 150% load.

GLN and GLX TRON Fuses

Body size only .140 x .300 inches

Symbol &	Specifi-	One Other
Amperes	cation	End End
GLN 1/100	A	Red - Orange
GLN 1/32	A A	Red - Brown
GLN 1/20	A	Yellow - Yellow
GLN 16	A	Brown : Brown
GLN 1/10	A	Red - Red
GLN 1/8	A A A A	Orange - Orange
GLN 310	A	Green - Green
GLN \$10	A	Blue - Blue
GLN 7	Α	Purple - Green
GLN 8	A	Green - Black
GLN 15	Α	Black - Purple
GLX 15/100	В	Red - Yellow
GLX 210	В	Red - Blue
GLX 14	В	Red - Purple
GLX ½	В	Orange - Green
GLX 610	В	Orange - Blue
GLX 34	В	Orange - Purple
GLX 1	В	Yellow - Green
GLX 11/2	В	Yellow - Purple
GLX 2	В	Green - Blue
GLX 3	В	Blue - Purple
GLX 4	В	Purple - Brown
GLX 5	В	Brown - Black
1.1	-	

Other ratings are available with a nominal test charge.

Approximate Unit weight 0.33 grams. Shipping weight 0.116 lbs. per 100.

BUSS GMT Fuses — HLT Fuseholders

Signal Indicating Alarm For mulapparatus is at a

Alarm Activating

For multiple circuit apparatus where space is at a premium

GMT fuses and HLT fuseholders permit multiple mounting of fuses in limited space, for protection of communication equipment, business machines, computers, control circuits or any equipment operating at 300 volts or less.

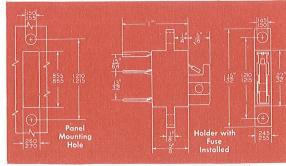
The walls of the holder form a barrier around fuse so that adjacent fuses are protected from damage when the fuse blows to isolate a fault.

Holders take panel mounting space of only $\frac{1}{4}$ inch horizontal by $1^{15}3_2$ inches vertical.

Fuses give visual indication when blown by release of a spring indicator. The spring carries a colored plastic flag, in a different color for each fuse ampere rating.

The indicator spring when released makes contact with an alarm terminal in the fuseholder, which can be connected to activate a signal circuit.

Blown fuses are readily replaced without use of insulated tools. When mounted on minimum centers, removal of fuse is easy by use of a wire hook.



When tooling up for mounting fuse blocks, obtain latest blueprint.

Buss GMT Fuses — Available Ratings and Color Code 300 volts or less

Test specification — carry 100% for 10 minutes; open at 150% within 5 minutes

Symbol & Amperes	Color of Indicator	Symbol & Amperes	Color of Indicator
GMT 18/100	YELLOW	GMT 11/3	WHITE
GMT 1/4	VIOLET	GMT 2	ORANGE
GMT ½	RED	GMT 3	BLUE
GMT 65/100	BLACK	GMT 5	GREEN
GMT 34	BROWN	GMT 7½	BLACK-WHITE
GMT 1	GRAY	GMT 10	RED-WHITE
Carto	n quantity 10. Shi	pping weight .3	3 lb. per 100.

Buss HLT Fuseholders

Buss HLT fuseholders take all sizes of GMT fuses.
Carton quantity 10. Shipping weight 1 lb. per 100.

— 18 —

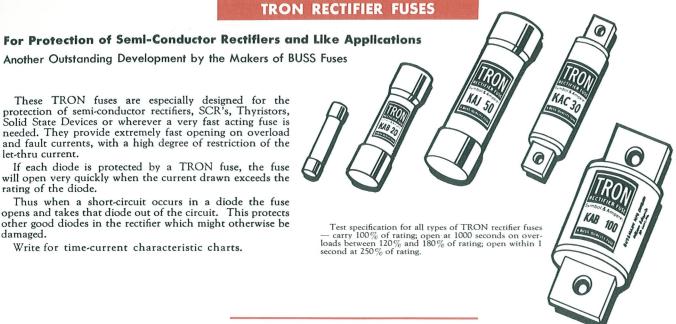
Another Outstanding Development by the Makers of BUSS Fuses

These TRON fuses are especially designed for the protection of semi-conductor rectifiers, SCR's, Thyristors, Solid State Devices or wherever a very fast acting fuse is needed. They provide extremely fast opening on overload and fault currents, with a high degree of restriction of the let-thru current.

If each diode is protected by a TRON fuse, the fuse will open very quickly when the current drawn exceeds the rating of the diode.

Thus when a short-circuit occurs in a diode the fuse opens and takes that diode out of the circuit. This protects other good diodes in the rectifier which might otherwise be

Write for time-current characteristic charts.



Dimensions of TRON Rectifier Fuses

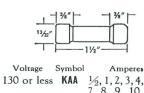
For 130 volts or less



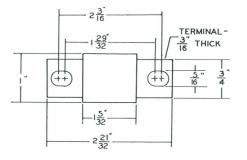
130 or less **GBB** 1, 1¼, 2, 3, 4, 5, 6, 7, 8, 9 or 10.

65 or less **GBB** 12, 15, 20, 25 or 30.

Shipping weight 1 lb. per 100

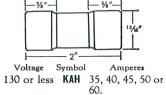


130 or less KAW 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 20, 25 or 30. Carton quantity 10. Shipping weight 13/4 lbs. per 100.

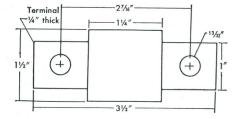


Voltage Symbol 130 or less KAA 70, 80, 90, 100, 125, 150, 200, 225, 250, 300, 350 or 400.

Carton quantity 10. Shipping weight 21½ lbs. per 100

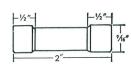


Carton quantity 10. Shipping weight 83/4 lbs. per 100.



Voltage Ampere 130 or less KAA 450, 500, 600, 650, 800 or 1000. Carton quantity 10. Shipping weight 60 lbs. per 100.

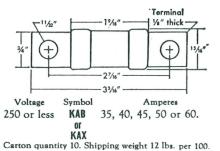
For 250 volts or less



Voltage Symbol Amperes 250 or less KAB 1/2, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, KAX

hipping weight 3½ lbs. per 100.

Catton quantity 10



Continued Next Page

BUSS Panel Mounted FUSEHOLDERS

Lamp Indicating Series HG for Military Types FHL10U, FHL11U, FHL12U For $\frac{1}{4}$ x $\frac{1}{4}$ and $\frac{13}{32}$ x $\frac{1}{2}$ inch Fuses

Transparent knob permits indicating light to be readily

Fuses are held in beryllium copper fuse clips on a fuse

Fuse carrier slides into holder and locks in with bayonet type knob

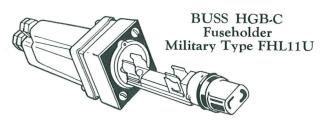
Terminals are plated brass with external tooth lock washers and hex nuts, 8-32 threads.

"O" ring and gasket makes holder drip proof from front of panel.

Test hole is provided in body so circuit can be tested without disturbing fuse carrier.

Holder designed for panels up to 1/8 inch thick.

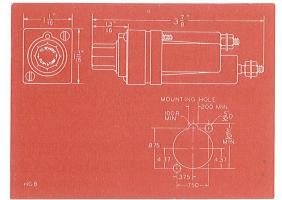
Holder is inserted in panel from rear. Mounting screws can be conveniently tightened from front of panel.



Single Pole for $\frac{1}{4}$ x $1\frac{1}{4}$ inch fuses Made to Military Specification Type MIL-F-19207B

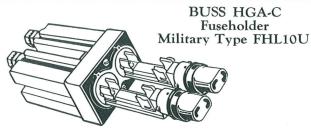
SN N 5920-581-7959. Drawing No. 9000-S6202-74229 Rev. D For circuits of 90 to 250 volts — Maximum ampere rating 30 -Neon type lamp — Lamp resistor 120,000 ohms — Clear flat sided knob. Body of molded alkyd.

BUSS HGB. Same as HGB-C except clear octagon knob. Carton quantity 10. Shipping Weight 20½ lbs. per 100.



Dimensions of HGB-C and HGB

When tooling up for mounting holder, get latest blueprint.



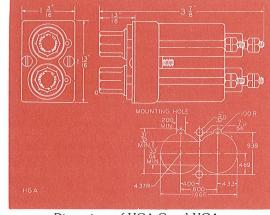
Two Pole for $\frac{1}{4}$ x $\frac{1}{4}$ inch fuses

Made to Military Specification Type MIL-F-19207B SN N 5920-296-5869. Drawing No. 9000-S6202-74228 Rev. D For circuits of 90 to 250 volts — Maximum ampere rating 30 — Neon type lamp — Lamp resistor 120,000 ohms — Clear flat sided knob. Body of molded alkyd.

Carton quantity 10. Shipping Weight 38½ lbs. per 100.

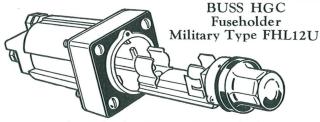
BUSS HGA. Same as HGA-C except clear octagon knob and molded black phenolic body.

Carton quantity 10. Shipping Weight 31 1/2 lbs. per 100.



Dimensions of HGA-C and HGA

When tooling up for mounting holder, get latest blueprint.



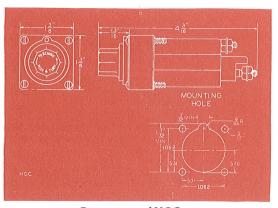
Single Pole for 13/32 x 11/2 inch fuses

Made to Military Specification Type MIL-F-19207B SN N 5920-552-0269. Drawing No. 9000-S6202-74230 Rev. D For circuits of 90 to 500 volts—Maximum ampere rating 30—Neon type lamp — Lamp resistor 330,000 ohms — Clear octagon knob. Body of molded alkyd.

HIGH INTERRUPTING CAPACITY

HGC Fuseholders, with BUSS KLM fuses, have been tested and found safe on circuits capable of delivering 68,000 amperes at 500 volts or less both AC or DC.

Carton quantity 10. Shipping Weight 30 lbs. per 100.



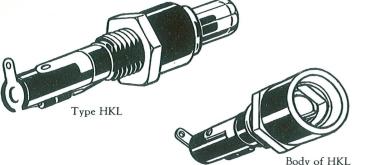
Dimensions of HGC

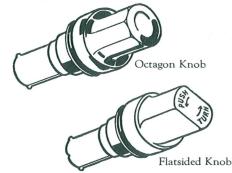
When tooling up for mounting holder,

HOLDER FOR SPARE FUSES — A spare holder for spare fuses dimensionally interchangeable with any of above holders can be obtained.

BUSS Panel Mounted FUSEHOLDERS

Lamp Indicating Series HK and HJ For 1/4 x 1 and 1/4 x 11/4 inch Fuses





Bayonet type knob. Body of molded phenolic. Strong coil spring provides contact pressure at ends of fuse.

Transparent knob permits indicating light to be readily seen.

HKL, HKL-X and HJL side and end terminals—and HKX, HKU, HKT and HKR side terminal—are held mechanically as well as by solder. Heat of soldering cannot cause terminals to loosen or come off. HKX, HKU, HKT and HKR end terminals are held mechanically but move outward approximately 1/8 inch when fuse is inserted.

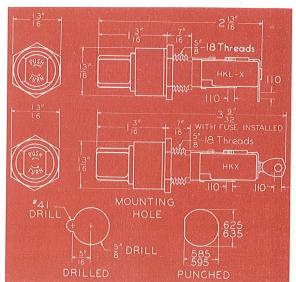
Fuseholder is designed to withstand vibration as required in aircraft applications.

Holder is inserted through front of panel and can be used in panels up to $\frac{3}{16}$ inches thick.

Furnished with holder is a flat neoprene washer and steel fastening nut that is zinc plated and chromate dipped.

A flat area on threaded section prevents rotation when holder is used in a punched hole — or permits use of a locking slug in a drilled hole. Holes shown on dimensional drawing.

 $\frac{1}{16}$ inch locking slugs are obtainable on request, without extra charge.



Dimensions of HKL and HJL same as HKL-X Dimensions of HKR, HKT and HKU same as HKX When tooling up for mounting holder, get latest blueprint.

If holders that are drip proof from front of panel are required, they can be furnished at slight additional cost. Flat washer on body is replaced with "O" ring and "O" ring is added to knob. To specify them add letter W to Type shown in table below. (Example HKL-W.)

When fuses rated at $\frac{1}{2}$ ampere or less are used in fuse-holders rated at 90 volts or less, special consideration should be given to the relationship between resistance value of the fuse and the parallel resistance value of the lamp and resistor.

Holders have Non-Interchangeable Fuse Carriers

Carriers of HKX, HKU, HKT and HKR holders with fuse will not fit in HKL, HKL-X or HJL holders and vice versa.

This assures indication by the lamp when the fuse is blown because the higher voltage lamp cannot be unintentionally installed in a low voltage circuit and vice versa,

The bodies of the HKX, HKU, HKT and HKR are also brown in color to distinguish them from the HKL, HKL-X and HJL which have black bodies.

For Military Use

The HK series fuseholders are also available in military type. These fuseholders meet all the requirements of Military Specification MIL-F-19207B — and cover the entire voltage range from 12 to 250 volts.

The body molding material is Navy Grey diallyl phthalate SDG(F) of MIL-M-14. The Type Designation is stamped on the body. The assembly is equipped with an internal tooth lockwasher and solder dipped terminals. The fuseholder is fungus resistant and drip proof, and meets a 200 hour salt spray test.

To provide a more positive finger grip, fuseholders are supplied with a knob that has two flat parallel sides to make it easier to change the fuse with a gloved hand.

For Dimensions See Type	†Voltage	Lamp Resistor Ohms	Knob Color
HKL-X*	90-250	120,000	Clear
HKX*	12-22	None	Ambe
HKX*	23-33	330	Ambe
HKX*	34-45	680	Ambe
HKX*	46-60	1,200	Ambe
HKX*	61-80	1,800	.Amber
HKX*	81-90	2,000	Ambe
HKX*	2.5-4	None	Ambe
HKX*	5-7	22	Ambe
HKX*	8-12	39	Ambe
	Dimensions See Type HKL-X* HKX* HKX* HKX* HKX* HKX* HKX* HKX* HK	Dimensions See Type HKL-X* 90-250 HKX* 12-22 HKX* 23-33 HKX* 46-60 HKX* 61-80 HKX* 81-90 HKX* 2.5-4 HKX* 5-7	Dimensions †Voltage Resistor Ohms HKL-X* 90-250 120,000 HKX* 12-22 None HKX* 23-33 330 HKX* 34-45 680 HKX* 46-60 1,200 HKX* 61-80 1,800 HKX* 81-90 2,000 HKX* 2.5-4 None HKX* 5-7 22

* DO NOT ORDER BY THIS SYMBOL — USE MILITARY TYPE DESIGNATION.

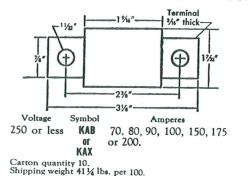
Type	Fuse Size Inches	Lamp †Voltage	ximum Cu Carrying Capacity		Lamp Resistor Ohms	Type Knob	Knob Color	Body Color	Wt. Lbs. per 100	Carton Quantity
HJL	¼ x 1	90 to 250	20	Neon	220,000	Octagon	Clear	Black	51/8	10
*HKL	1/4 x 11/4	90 to 250	20	Neon	220,000	Octagon	Clear	Black	51/8	10
HKL-X	½ x 1½	90 to 250	20	Neon	220,000	Flat Sided	Clear	Black	51/8	10
HKR	$\frac{1}{4} \times 1\frac{1}{4}$	22 to 33	20	Incandescent	330	Octagon	Amber	Black	51/8	10
HKT	¼ x 1¼	13 to 22	20	Incandescent	None	Octagon	Amber	Black	51/8	10
HKU	¼ x 1¼	4 to 6	20	Incandescent	15	Octagon	Red	Black	51/8	10
HKX	$\frac{1}{4} \times 1\frac{1}{4}$	22 to 33	20	Incandescent	330	Flat Sided	Amber	Black	51/8	10

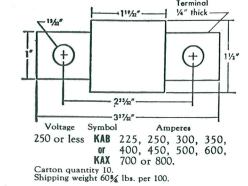
^{*} HKL Holder listed by Underwriters' Laboratories, Inc. for 15 ampere 250 volt rating.

† Voltage shows operating range for lamp indication.

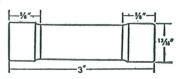
HOLDERS FOR SPARE FUSES — A spare holder for spare fuses dimensionally interchangeable with any of above holders can be obtained.

For 250 volts or less -





For 600 volts or less



Voltage Symbol Amperes 600 or less KAJ 35, 40, 45, 50 or 60.

Carton quantity 10. Shipping weight 12 lbs. per



*			-	
13				
	5 -			
	Voltage	Symbol	Amperes	
60	00 or less	KBC	1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 15, 17½, 20, 25, 3	, 10,
			12, 15, 171/2, 20, 25, 3	30.

Carton quantity 10. Shipping weight 13 lbs. per 100

Voltage Symbol Amperes
600 or less KAC 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
12, 15, 17½, 20, 25, 30,
35, 40, 45, 50, 60.
600 or less KAC 70, 80, 90, 100, 110, 125,
or 150, 175, 200, 225, 250,
KBC 300, 350, 400, 425, 450,
500, 600, 800

	_									600, 600,	800.	
	Ampere		Dimensions are in inches					H Mounting Holes		Carton Quan-		
Symbol	Rating	A	B	C	D	E	F	G	Round	Elongated	tity	100
KAC	0-30 35-60 65-100 110-200 225-400 425-600	3	32132 32132	2 ½ 3 5/8 4 ½ 4 3/8 4 3/4 4 3/4	2 7/8 4 3/8 5 5 1/2 6 1/4 6 1/4	916 1 316 1 1½ 2 2 2 ½	13/32 5/8 3/4 11/8 15/8 2	1/16 3/32 1/8 3/16 1/4 1/4	9/16 9/16	13/32 13/32	10 10 1 1 1 1	4 3/4 13 3/4 37 1/2 84 1/2 187 1/2 331 1/2
KBC	35-60 65-100 110-200 225-400 425-600	$\begin{array}{c} 2\frac{3}{4} \\ 2\frac{29}{3}\frac{3}{3}\frac{2}{2} \\ 2\frac{29}{3}\frac{3}{3}\frac{2}{2} \\ 2\frac{29}{3}\frac{3}{2} \\ 2\frac{7}{8} \end{array}$		35/8 321/32 321/32 41/16 41/16	4 3/8 4 1 3/3 2 4 1 3/3 2 5 1/8 5 1/8	$ \begin{array}{c} 13/16 \\ 1 \\ 17/32 \\ 11/2 \\ 2 \end{array} $	5/8 3/4 7/8 1 1 1/2	3/3 2 1/8 3/1 6 1/4 1/4	11/32 5/16 5/16 13/32 13/2		10 1 1 1	13 ³ ⁄ ₄ 43 95 106 128

BUSS FUSE BLOCKS FOR RECTIFIER PROTECTION FUSES

Туре	Symi	Fuse pol & amperes	Block No.	Dimensions base — inch	
1 pole 2 pole 3 pole	KAA & Kaw	1 to 30	4515 4525 4535	34 x 29/16 15/16 x 29/16 21/16 x 29/16	5
1 pole 2 pole 3 pole	КАН	35 to 60	3520 3544 3545	13/8 x 37/8 23/4 x 37/8 41/8 x 37/8	_
1 pole 3 pole	KAA	70 to 400	3575 3560	1½ x 3½ 6 3¾ x 3½ 6	3
1 pole 3 pole	KAA	450 to 1000	3576 3557	1 ³ / ₄ x 3 ¹ / ₂ 5 ¹ / ₄ x 3 ¹ / ₂	_
1 pole 2 pole 3 pole	KAB & KAX	1 to 30	4386 4287 3959	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	2
1 pole 3 pole	KAB & KAX	35 to 60	3531 3604	1½ x 3¾6 4½ x 3¾6	
1 pole 3 pole	KAB & KAX	70 to 200	3556 3521	$\frac{1\frac{1}{2}}{5^{2}\frac{3}{3}}$ x $\frac{3\frac{1}{8}}{8}$	_
1 pole 3 pole	KAB & KAX	225 to 800	3562 3515	$1\frac{3}{4}$ x $3\frac{27}{3}$ $5\frac{1}{4}$ x $3\frac{27}{3}$	2

Туре	Sym	Fuse bol & amperes	Block No.		nensions o
l pole 2 pole 3 pole	KAC	1 to 30	3595 3528 2795	$\frac{1\frac{1}{4}}{2\frac{1}{2}}$ $\frac{3\frac{1}{2}}{2}$	x 3½ x 3½ x 3½
l pole 3 pole	KAC & KBC	35 to 60	3571 3513	$\frac{11}{2}$ $\frac{33}{4}$	x 5 x 5
l pole 2 pole 3 pole	KAC	70 to 100	3594 2834 3523	13/4 23/4 4	x 5 x 5 x 5
l pole 3 pole	KAC	110 to 200	3591 3512	2½ 6	x 6½ x 6½
l pole 3 pole	KAC	225 to 400	3572 3503	31/4	x 67/8 x 67/8
l pole 3 pole	KAC	425 to 800	3580 3510	3½ 9	x 67/8 x 67/8
l pole 2 pole 3 pole	KAJ	35 to 60	3519 2833 2860	13/8 23/4 41/8	x 47/8 x 47/8 x 47/8
l pole 3 pole	KBC	70 to 100	2713 2760	$\frac{1\frac{3}{4}}{5\frac{1}{2}}$	x 5 x 5
pole	KBC	110 to 200	2650	13/4	x 5
l pole	KBC	225 to 400	2714	21/4	x 6½

GBB — Use any BUSS block for 1/4 x 11/4 inch fuse.

BUSS GRASSHOPPER FUSES



Give a visible signal and activate an alarm circuit when blown.

For quick identification of circuit in trouble, when fuse blows - indicator spring rises well above insulator bar and sharp spur on alarm spring makes positive contact on

bus.									
Sy mbol	Amps	Maximum Bl Amperes	owing Time Seconds	Volts	Color Code	"A"	"B"	"C"	Mount Screw
35A	11/3	2	90	90 or less	White	.200	13/16	143/64	10
35B	11/3	2	90	90 or less	White	.150	$1\frac{3}{16}$	143/64	6
35B	2	3	180	90 or less	Orange	.150	$1\frac{3}{16}$	143/64	6
35C	2	3	180	90 or less	Orange	.200	13/16	143/64	10
35D	$1\frac{1}{3}$	2	90	90 or less	White	.150	$1\frac{1}{8}$	15/8	6
35E	3	4	300	90 or less	White	.150	$1\frac{1}{2}$	163/64	6
35F	1/2	3/4	90	90 or less	Red	.200	13/16	143/64	10
35G	3	41/2	300	90 or less	Blue	.150	$1\frac{3}{16}$	143/64	6
35H	5	$6\frac{1}{2}$	300	90 or less	Green	.150	$1\frac{3}{16}$	143/64	6
35J	1/2	3/4	90	160 or less	Red	.200	13/16	143/64	10
35K	$1\frac{1}{3}$	2	180	160 or less	White	.200	$1\frac{3}{16}$	143/64	10
35L	2	3	180	160 or less	Orange	.200	$1\frac{3}{16}$	14364	10
35M	3	41/2	300	160 or less	Blue	.150	13/16	143/64	6
35N	5	$6\frac{1}{2}$	300	160 or less	Green	.150	13/16	143/64	6
35P	$\frac{3}{4}$	11/8	90	160 or less	Tan	.200	$1\frac{3}{16}$	143/64	10
35R	18/100	.270	90	90 or less	Yellow	.200	13/16	143/64	10
35S	1/4	.375	90	160 or less	Pink	.200	13/16	14364	10
35T	65/100	1.1	180	90 or less	Tan	.200	$1\frac{3}{16}$	143/64	10

Carton Quantity 10

BUSS Type SC Fuses

BUSS Type SC fuses are size-limiting and may be applied in any circuit rated 300 volts or less. These fuses contain time-delay features which allow harmless transient currents to pass without blowing the fuse. They have an interrupting rating of 100,000 amperes with a



high degree of current-limitation to prevent damage to circuits, appliances or equipment on heavy short-circuits.

The physical dimensions have been reduced to the smallest practical size so that panels and fuse blocks, which are designed to house them, will be space saving.

BUSS Type SC fuses are 13/32" in diameter with lengths that vary according to the amperage range.

Type SC fuses fit size-limiting fuse blocks which are available in 1, 2 and 3 pole styles.

For detailed information ask for bulletin SCS. Listed by

Inderwriters	Laborat	ories, inc.	
Voltage	Symbol	Amperes	Length Over Al
300 or less	SC	1, 3, 6, 10, 15	15/16
"	SC	20	113/32
"	SC	25, 30	15/8
"	SC	35, 40, 45, 50, 60	21/4

BUSS KAZ Actuator



BUSS KAZ Actuators are used primarily to call attention to the opening of a larger fuse (50 amperes or larger). These fuses can provide visual indication or when used in a special micro-switch fuse block (BUSS No. 2837 or No. 2838), can provide a signal activating scheme to announce trouble at a distant station.

The indicating mechanism in the KAZ Actuator is a spring operated pin which is released by the opening of an internal element. Applied in parallel with larger fuses, the KAZ Actuator finds useful application in fused breaker units, semi-conductor power rectifier circuits, power factor correction capacitors, and other circuits where fuses larger than 50 amperes are used.

Although these fuses may be mounted "piggy-back" on larger fuses, 2 and 3 pole KAZ Actuator Blocks are available for remote signaling.

200,000 ampere interrupting rating, 600 volts or less, $1\frac{3}{32}$ " x 2". Opens at 10 amperes or more.

For detailed information ask for bulletin KAFS.

BUSS HIGH VOLTAGE FUSES

A color code is used on the insulating bar to indicate

type and amperage of fuse. This helps in assuring proper



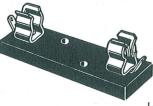
HVA, HVB, HVJ, and HVL fuses are designed for protection of circuits up to 20 KW on d.c. and 30 KVA

Test spec	cape	hes	unds 100		
Voltage	Symbol	Amperes	O	I or	Pour
1000 or less	HVA	$\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $\frac{11}{2}$	13/32	3	2
2500 or less	HVB	or 2 ½, 34, 1, 1½			
		or 2	13/32	41/2	3
5000 or less	HVJ	$\frac{1}{16}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$,	13/16	5	9
10000 or less	HAL	34, 1, 1½ or 2 1/16, 1/8, 1/4, 3/8, 1/2, 34, 1, 1½, or 2	13/16	10	15
Fo	r high	er interrunting cana	city: us	ρ	

HVR fuses for circuits up to 500 KVA a.c. only
HVT fuses for circuits up to 1250 KVA a.c. only HVU fuses for circuits up to 2500 KVA a.c. only HVX fuses for circuits up to 5000 KVA a.c. only HVW fuses for circuits up to 12000 KVA a.c. only

Test spec	ifications 150% w	—carry 100%, ithin 1 hour.	caps	ngth	unds 100
Voltage 1000 or less	Symbol HVR	Amperes 1/2, 1, 11/2, 2, 3, 4, 5	13%	Jan I	Pod 3
2500 or less	HVT	$\frac{1}{2}$, 1, $\frac{1}{2}$, 2, 3, 4, 5	1332	41/2	4
5000 or less 10000 or less	HVV	1/2, 1, 1/2, 2, 3, 4, 5 1/2, 1, 1/2, 2, 3, 4, 5	$\frac{13}{16}$	10	19 36
1200 or less	HVW	1/2, 1, 2, 3, 4, 5, 6	13/32	$2\frac{1}{2}$	2
	EIICE	RIOCKS FOR RI	100		

FUSE BLOCKS FOR BUSS **HIGH VOLTAGE FUSES**



— 10 **—**

Bakelite base — alloy plated solder terminals. Two mounting holes for No. 8 screws on No. 4528 and 4529 and for No. 10 screws on No. 4530 and No. 2960.

		Length	Width	Thickne
	Number	inches	inches	inches
For HVA & HVR fuses	4528	33/4	1	3/8
" HVB & HVT "	4529	51/4	1	- 8/8
" HVJ & HVU "	4530	61/2	13/8	1/2
" HVL & HVX "	2960	117/16	138	3/4

BUSS Panel Mounted FUSEHOLDERS Series HPC

For $1\frac{3}{32} \times 1\frac{3}{8}$ and $1\frac{3}{32} \times 1\frac{1}{2}$ inch FUSES



HPC-L Fuseholder

Strong coil spring provides contact pressure on ends of fuse.

Side terminal is held mechanically as well as by solder. Heat of soldering cannot cause it to loosen or come off.

Vibration will not cause failure of terminals as they are designed to withstand severe service.

Holder is attached to panel with screws or rivets. It can be mounted with flange on front side of panel of any thickness. With flange on rear side, panel of thickness up to 1/8 inch can be used.

for 13/32 x 13/8 inch BUSS (BBS) fuses Listed by Underwriters' Laboratories, Inc. for 5 ampere Body is of molded black phenolic.

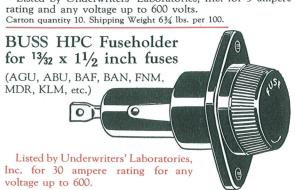
Normal current carrying capacity 30 amperes.

For Military Use

Series HPC fuseholders are also available in military type. They meet all the requirements of Military Specification MIL-F-19207B.

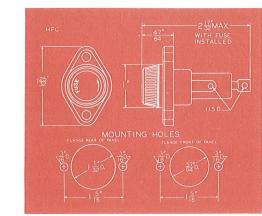
> For Dimension See Type HPC-C* Military Type FHL22W FHN23W HPC-D*

* DO NOT ORDER BY THIS SYMBOL -USE MILITARY TYPE DESIGNATION.

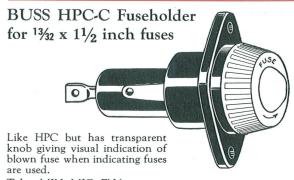




Quick-connect terminals also available — specify HPC-K. Carton quantity 10. Shipping Weight 6¾ lbs. per 100.



HPC and HPC-L HOLDERS When tooling up for mounting holder, get latest blueprint.

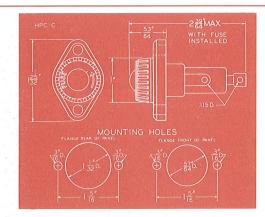


Takes MIN, MIC, FNA.

Shipping Weight 7½ lbs. per 100.

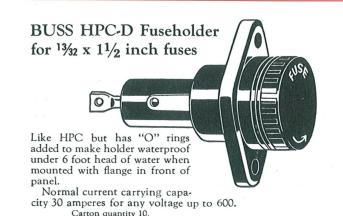
Listed by Underwriters' Laboratories, Inc. for 15 ampere rating for any voltage up to 250.

Quick-connect terminals also available — specify HPC-CK. Carton quantity 10. Shipping Weight 63/4 lbs. per 100.



HPC-C HOLDER

When tooling up for mounting holder, get latest blueprint.





HPC-D HOLDER When tooling up for mounting holder, get latest blueprint.

HOLDER FOR SPARE FUSES — A spare holder for spare fuses dimensionally interchangeable with any of above holders can be obtained. Words "Spare Fuse" shown on cap.

BUSS Panel Mounted FUSEHOLDERS

Non-Indicating Series HJ, HK and HCM

For $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}$ and $\frac{9}{2} \times \frac{1}{4}$ inch FUSES



Bayonet type knob.

Strong coil spring provides contact pressure on ends of fuse.

Side terminal is held mechanically as well as by solder. Heat of soldering cannot cause it to loosen or come off.

Vibration will not cause failure of terminals as they are designed to withstand severe service.

Holder is inserted through hole in panel and can be used in panels up to 5/6 inch thick.

Neoprene washer and zinc plated, chromate dipped steel fastening nut are furnished with each holder.

Body is of molded black phenolic.

Flat spot of body locks it against rotation when used in punched hole — or permits use of a locking key in drilled

Locking keys are obtainable, without charge, - 1/16 inch long for panels up to 1/8 inch thick or 1/8 inch long for thicker panels. Specify length wanted.

For Military Use

Series HJ, HK, and HCM fuseholders are also available in military type. They meet all the requirements of Military Specification MIL-F-19207B.

Military Type Designation	For Dimensio See Type
FHN19G	HCM*
FHN26G1	HKP*
FHN31G1	HJM*

* DO NOT ORDER BY THIS SYMBOL -USE MILITARY TYPE DESIGNATION.

HKP Fuseholder for $\frac{1}{4} \times 1\frac{1}{4}$ inch fuses



Illustrated with quick-connect terminals specify HKP-HH.

Normal current carrying capacity 30 amperes. Knob grips fuse tightly and pulls it from holder when knob is removed.

Listed by Underwriters' Laboratories, Inc. for 15 ampere rating for any voltage up to 250. Carton quantity 10. Shipping Weight 31/4 lbs. per 100

To order with standard terminals—specify HKP.



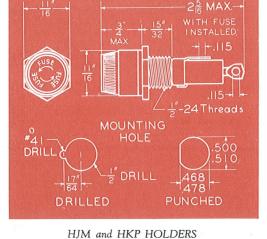
HJM Fuseholder for $\frac{1}{4}$ x 1 inch fuses

Normal current carrying capacity 30 amperes.

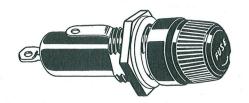
Knob grips fuse tightly and pulls it from holder when

Listed by Underwriters' Laboratories, Inc. for 5 ampere rating for any voltage up to 125.

Shipping Weight 31/4 lbs. per 100. Quick-connect terminals also available — specify HJM-HH. When tooling up for mounting holder, get latest blueprint



HJM-CC & HKP-CC — These holders project a shorter distance behind panel than do the regular HJM or HKP. Dimensions as shown for HJM or HKP except ¾ inch dimension is 1/8 inch and 15/22 inch dimension is 3/8 inch.

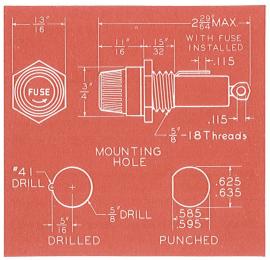


HCM Fuseholder for 32 x 11/4 inch fuses

Normal current carrying capacity 18 amperes for any voltages up to 250.

Knob grips fuse tightly and pulls it from holder when knob is removed. Fuseholder for 1/4 x 11/4 inch fuse also available specify HCM-D.

Carton quantity 10. Shipping Weight 41/4 lbs. per 100.



HCM and HCM-D HOLDERS When tooling up for mounting holder, get latest bluepring

TEST PROD HOLE — These fuseholders with test prod hole in knob can be obtained by giving catalog symbol followed by -H (Example HKP-H).

BUSS AIRCRAFT FUSES

Mechanical Indicating — Limiter type

ACH limiters are designed to meet the very rigorous requirements of high speed, high performance aircraft. They isolate faults or grounds in aircraft electric systems of 120/208 volts 400 cycles AC or 125 volts DC.



ACH limiters give visual indication when blown by a spring activated pin that extends from the limiter body.

These limiters are designed basically for short-circuit protection. Because of their small physical size they may run quite hot on sustained loads near their carrying capacity. Normally this is not objectionable in applications for which they are intended.

The knife blade terminals on ACH limiters are silver plated. Limiters are made with a silicone body that assures reliable performance under severe conditions. They are designed to withstand exposure to moisture, fungus, salt spray, sand and dust, and mechanical vibration and shock. To assure dependable operation they are given various electrical tests at ambient temperatures ranging from -54° C to $+125^{\circ}$ C.

Test specification — carry 200% rated current for 5 minutes, open at 240% within 5 minutes.

Interrupting rating — 6000 amperes at 120 volts AC 4200 amperes at 208 volts AC, 6000 amperes at 125 volts DC - at sea level to 60,000 feet.

For time-current characteristics see charts on page 23.

		Overall		ntact Blad	
Symbol	Amperes	length	Thickness	Width	Length
ACH	1, 2, 3, 5, 10, 15,				
	20, 25 or 30	$1^{3}\frac{1}{3}^{2}$ "	1/16"	13/32"	21/64"
ACH	35, 40, 50 or 60	27/32"	3/32"	13/32"	25/64"
	T	A 1:1:4-	- TT		

For Military Use Qualified to MIL-F-5372C

	Military Type Designation	Buss Cat. Symbol
	MS28938-01	ACH 1*
	MS28938-02	ACH 2*
	MS28938-03	ACH 3*
	MS28937-05	ACH 5*
	MS28937-10	ACH 10*
	MS28938-15	ACH 15* ACH 20*
	MS28937-20 MS28938-25	ACH 25*
	MS28937-30	ACH 30*
	MS28938-35	ACH 35*
	MS28937-40	ACH 40*
	MS28937-50	ACH 50*
	MS28937-60	ACH 60*
)	NOT ORDER BY THIS	SYMBOL—

USE MILITARY TYPE DESIGNATION.

ACF, ACT and ACO Limiters

ACF. ACT and ACO limiters have same dimensions as shown for ACH limiters in same size ranges. They are available in ampere ratings of 1, 2, 3, 5, 10, 15, 20, 25, 30, 40, 50 or 60.

ACF limiters are made with an alkyd body, suitable for ambient temperatures from -55°C to +85°C. Interrupting rating - 4000 amperes at 120 volts AC, 2500 amperes at 208 volts AC.

ACT and ACO limiters have phenolic composition

For time-current characteristics see charts on page 23.

FUSE BLOCKS FOR ABOVE FUSES

All metal parts silver plated. Clips are beryllium copper. Series 4184 through 4226 have molded phenolic base. Series 3887 through 3968 have molded melamine base and are qualified to MIL-F-5373C.

For ACH, ACF, ACT and ACO 1 to 30 amp. For ACH, ACF, ACT and ACO 40 to 60 amp.

	Dimension of base, inches	Number	Dimension of base, inches
pole 4190 or 3887 pole 4184 or 3888 pole 4224 or 3967	5/8 x 31/8 11/8 x 31/8	4185 or 3889 4186 or 3890	13/16 x 311/32 19/16 x 311/32 21/4 x 311/32



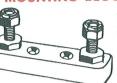
BUSS LIMITERS

These fuses are designed to isolate faults or grounds in aircraft distribution systems. They have a silver plated soft copper link which will maintain its time-current characteristics throughout the life of the fuse. The link is clearly visible through the mica window.

Symbol and amperes are stamped on the fuse terminal Center to center dimensions 27/16 inches. Width of slot

11/32 inch. See Blowing Time Charts, page 23.
Voltage Symbol Amperes Voltage Symbol Amperes 32 or less ANL 35, 40, 50, 80, 100, 130, 150, 175, 200 225, 250, 275, 325, 350, 400 or 500.

MOUNTING BLOCKS FOR ANL LIMITERS



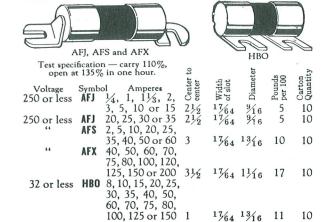
Molded alkyd base with cadmium plated metal parts. Two countersunk mounting holes on 1 inch centers for No. 10 flat head screws.

Length 313/32 in. Width 15/16 in. Height 17/16 in. Studs center to center 27/16 inches.

No. 4164 furnished with stop nuts. No. 4164-FR

free running lock nuts.

BUSS FUSES, Stud mounted type



FUSETRON FUSES

Stud mounted type — Dual-Element





These fuses avoid needless blows from starting currents or surges. They have a fuse link which operates only on very high overloads or short-circuits - they have a thermal cutout which functions on low overloads — the thermal cutout cannot operate quickly at any load, hence long time-lag is obtained on high overloads of short duration. Yet protection is afforded against short-circuits or continued overloads.

This long time-lag also makes it unnecessary to use extra large size or over-size fuses.

Approximate blowing time at various loads: ACK ACL

200%	100 se	con	ds	60	sec	conds	6	0 sec	conds	
300%	35	"		20		"	2	0	**	
500%	13	"		7		"		7	"	
Test specifica			110%,	open	at	125%	within	two	hours,	2

200% 111 40	10 400	seconds.				
		Amperes	Center to	Width of slot	Outside Diameter	
125 or less	AUN	1, 2, 3, 5, 6,	center		Бащетег	rer 100
		10 or 15	21/4	17/64	916	6
125 or less		20, 25 or 30	$2\frac{1}{2}$	17/64	9/16	6
"	ACL	30, 35, 40, 50)			
		or 60	21/2	1764	916	6
"	ACK	35, 40, 50 or				
		60	3	$\frac{17}{64}$	13/16	11
"	ACL	70, 100 or 120	234	17/64	13/16	-11
"	ACK	70, 75, 80, 90		704	710	
		100 or 120	31/2	17/64	11/16	20
"	ACK	140, 150, 160		/04	-/10	
		175 or 200		5/10	11/16	23
"	ACK	225, 250 or 300	35/8	$\frac{5}{16}$	11/16	25
22 1				716	1716	23
32 or less	HSK	20, 30, 40, 50				
		60, 70, 80, 100,	, } 1	1764	13/16	11
		125 or 150	1-			
			,			

BUSS Type C Fuses and FUSETRON Type N Fuses and Fuseholders

Safeguard against use of wrong size and type of fuse. Top cap of each fuse carries two ears that vary in width

for each ampere range. Slot in holder match ears on fuses of each specific range,

thus preventing over fuseing. Fuse and fuseholder should be mounted behind an insulator protected by an interlock because the top of the fuse and fuseholder are electrically "live".

FUSETRON

HN 5 to 7

FUS	SETRON		BUSS			
Typ	e N Fuses	Typ	Type C Fuses			
Fuses	Fuseholders	Fuses	Fuseholders			
Symbol & Amperes	Symbol & Fuse Range	Symbol & Amperes	Symbol & Fuse Range			
N ½100 N ⅓32 N ⅙16 N ½10 N ½100 N ½100	HN 0 to 3/10	C ½32 C ½16 C ½8 C ¾16 C ¼4 C ¾10	HC 0 to 3/10			
N ¹ / ₄ N ³ / ₁₀		C 3/8 C 1/2	HC 3/10 to 1/2			
N 4/10	HN 3/10 to 1/2	C 3/4	HC 1/2 to 3/4			
N ½ N ½		C 1 C 11/4	HC 3/4 to 11/4			
N 7/10 N 3/4	HN ½ to ¾	C 1½ C 1¾	HC 11/4 to 13/4			
N 8/10 N 1 N 1 ¹ / ₄	HN 3/4 to 11/4	C 2 C 2 ¹ / ₂	HC 13/4 to 21/2			
N 16/10 N 13/4	HN 13/10 to 13/4	C 3 C 3½	HC 2½ to 3½			
N 2 N 2 ¹ / ₂	HN 13/4 to 21/2	C 4 C 5	HC 36/10 to 5			
N 28/10 N 32/10	HN 2½ to 3½	C 6 C 7	HC 5 to 7			
N 3½ N 4		C 8 C 10	HC 7 to 10			
N 5	HN 3½ to 5					

FUSETRON Type N are "slow-blowing" fuses for use where harmless surges or starting currents prevail.

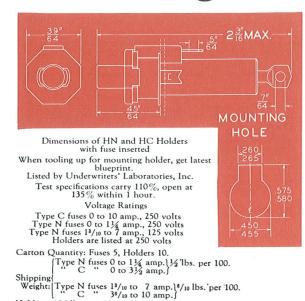
BUSS Type C are "quick-blowing" fuses for fast interruption of a fault current.

Fuseholder is installed by pushing it into panel from front side. Snap-in steel clip on body engages edge of hole in panel and locks holder securely in place in any panel from $\frac{1}{32}$ to $\frac{1}{16}$ inch thick.



Holders: 11/2 lbs. per 100.





BUSS In-the-Line FUSEHOLDERS For \(\frac{1}{4} \) inch Fuses, \(\frac{5}{8} \) to \(1\frac{1}{4} \) inches long



Series HH and HI—Body, molded of black phenolic with bayonet type knob with metal holding ears. Two contacts, ready to be staked to ends of wire, furnished with holder.

Strong steel coil spring assures constant positive pressure on ends of fuse assuring low resistance.

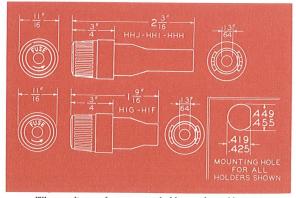
Holders can be mounted in panels up to 5/16 inch thick by means of BUSS No. 9969 spring nut. (order separately)

Flat area on holder prevents rotation when used in matched panel mounting hole.

Contacts designed to take different size wire. For 18 to 22 wire add-"A" to symbol. For 14 to 16 wire add-"B". (Example HHJ-A). SPECIFY WHICH DESIRED.

Series HD and HA — Same as series HH and HI — except holding ears on bayonet knob are of molded phenolic.

Туре	Fuse Size Inches	Maximum Amp. Rating	Wt. lbs. per 100	Carton Quantity
HDJ	$\frac{1}{4} \times 1\frac{1}{4}$	15	2.3	10
HDI	1/4 x 1 or 11/16	15	2.3	10
HDH	1/4 x 7/8	15	2.3	10
HAG	$\frac{1}{4} \times \frac{3}{4}$	15	1.8	10
HAF	$\frac{1}{4} \times \frac{5}{8}$	15	1.8	10
HHJ	$\frac{1}{4} \times 1\frac{1}{4}$	15	2.5	10
HHI	1/4 x 1 or 11/16	15	2.5	10
HHH	1/4 x 7/8	15	2.5	10
HIG	$\frac{1}{4} \times \frac{3}{4}$	15	2.0	10
HIF	$\frac{1}{4} \times \frac{5}{8}$	15	2.0	10



When tooling up for mounting holder, get latest blueprint

Holder Assemblies with Fuse and Wire Loop

HR series have 19 inches of #14 insulated wire. HM series have 8 inches of wire. Assemblies have fuse installed BUSS #9969 spring nut furnished with each holder to permit panel mounting

crime parter modifing.								
	Use Assembly Symbol in Ordering							
Assembly Symbol	Consists of Fuse & Holder with Insulated Wire Loop	Wt. lbs. per 100	Carton Quantity					
IRJ	SFE 20 in HHJ holder	7.2	10					
łRi	SFE 14 " HHI "	7.2	10					
1RH	SFE 9 " HHH "	7.2	10					
IRE	SFE 7½ " HHH "	7.2	10					
IRG	SFE 6 " HIG "	6.6	10					
IRF	SFE 4 "HIF "	6.6	10					
IMJ	SFE 20 in HDJ holder	5.4	10					
IMI	SFE 14 " HDI "	5.4	10					
IMH	SFE 9 " HDH "	5.4	10					
IME	SFE 7½ " HDH "	5.4	10					
IMG	SFE 6 " HAG "	5.0	. 10					
IMF	SFE 4 " HAF "	5.0	10					

BUSS In-the-Line or Panel Mounted FUSE & HOLDER COMBINATIONS

For voltages of 300 or less-Non-Indicating



These fuseholders make it simple to meet N.E. Code (Sec. 410-71-(e)) requirements for protection of fluorescent fixtures.

Safeguards against use of wrong type and size of fuse. Fuse and knob are in one piece — when fuse opens, entire fuse-knob assembly is replaced.

Fuseholders can be mounted in-the-line - or panel mounted for which a snap-in steel clip is available for mounting on any panel $\frac{1}{32}$ to $\frac{1}{16}$ inch thick.

HLR Holder Guards Against Wrong Type Fuse

HLR fuseholders make it simple to protect a wide variety of devices or equipment from damaging fault currents because it is designed to take only all sizes of GLR, GRR. GMF or GRF fuses.

GLR and GRR Buss Glass Tube Fuses Single-Element — Quick-Blowing

Voltage Symbol Amperes ¹/₈, ³/₁₆, ¹/₂, 1, 1¹/₂, 1⁶/₁₀, 2, 2¹/₂, 3, 4, 5, 6, 7, 8, 9, 10 300 or less GLR GRR 13, 15 125 or less

GMF and GRF Fusetron Glass Tube Fuses Dual-Element — Slow-Blowing Type

Symbol Amperes $\frac{1}{100}$, $\frac{1}{32}$, $\frac{1}{16}$, $\frac{1}{10}$, $\frac{1}{8}$, $\frac{15}{100}$, $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{10}$, $\frac{1}{2}$, $\frac{6}{10}$, $\frac{8}{10}$, $\frac{1}{10}$, $\frac{1}{2}$ 300 or less **GMF** GRF 7, 8, 10 125 or less

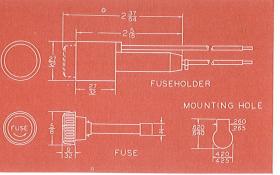
Information applying to both Fuses & Holders Test specifications for GLR, GRR, GMF, GRF, GLQ and

GMQ; carry 110%, open at 135% in 1 hour. U.L. listed. Shipping wt. per 100: GLR, GRR and GLQ 1.5 lbs., GMF, GRF and GMQ 1.4 lbs. Carton quantity: 5.

HLR and HLQ holders recognized under the components program of Underwriters' Laboratories, Inc.

HLR and HLQ holders come with 6 in. leads of insulated Shipping wt. HLR and HLQ holders 3.13 lbs. per 100. Carton quantity: 10. No. 18 solid copper wire.

Mounting clips for HLR and HLQ holders are Buss No. 6374 for panels .043 to .062 in. thick and Buss No. 4909 for panels .030 to .042 in. thick. Snap-in steel clip is inserted in mounting hole BEFORE HOLDER is pushed into place.



When tooling up for mounting holder, get latest blueprint.

HLQ Holder Prevents too Large a Fuse Being Used

GLQ Buss fuses or GMQ Buss fuses used in HLO fuseholder give a size limiting combination.

Over-fuseing is prevented because ears on fuses match slots in holder. This prevents use of a fuse of larger ampere size than marked on holder.

HLQ holders take either GLQ or GMQ fuses up to the largest ampere size marked on holder.

GLQ Buss Glass Tube Fuses are single-element, "quickblowing" type fuses.

GMQ Fusetron Glass Tube Fuses are dual-element, "slowblowing" type fuses.

BUSS GLQ Fuses	FUSETRON GMQ Fuses	HLQ Fuseholders		
Symbol & Amperes	Symbol & Amperes	Catalog Symbol	Fuse Range	
GLQ ½, ¾6, ½	GMQ ½ ₁₀₀ , ½ ₃₂ , ½ ₁₆ , ½ ₁₀ , ½ ₈ , 15/ ₁₀₀ , ¾ ₁₆ , ½ ₄ , ¾ ₁₀ , ½	HLQ ½	0 to ½	
GLQ 1, 1½, 1½, 1	GMQ ½0, ½0, 1, 1¼, 1½0	HLQ 1%0	0 to 11/10	
GLQ 2, 2½, 3	GMQ 2, 2½, 2½, 3, 3½, 3, 3½, 10	HLQ 3½10	0 to $3\frac{2}{10}$	
GLQ 4, 5	GMQ 4, 5	HLQ 5	0 to 5	
GLQ 6, 7, 8	GMQ 61/4	HLQ 8	0 to 8	
GLQ 9, 10		HLQ 10	0 to 10	

Series HKA — BUSS Panel Mounted FUSEHOLDER — Lamp Indicating — Signal Activating

For 1/4 x 11/4 inch Buss GLD Fuse 3/4 to 5 amp.

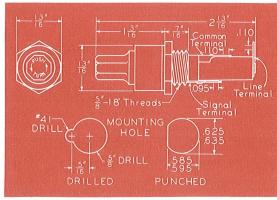


HKA fuseholder is designed for use on circuits of 125 volts or less. When used with BUSS GLD fuses, provides a simultaneous lamp and external signal indication when fuse opens.

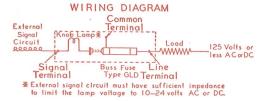
Holder is of molded phenolic with amber knob. Strong coil spring provides pressure at ends of fuse. Terminals on holder are held mechanically as well as by solder.

Holder is inserted through front of panel and can be used in panels up to 1/8 inch thick. A flat area on the threaded section prevents rotation when holder is used in a punched hole — or permits use of a locking slug in a drilled hole.

If desired, holder can be made drip proof from front of panel through use of O-ring — furnished at slight additional cost. To specify add letter W to symbol, thus HKA-W.



When tooling up for mounting holder, get latest blueprint.



Carton quantity 10, shipping weight 51/4 lbs. per 100.