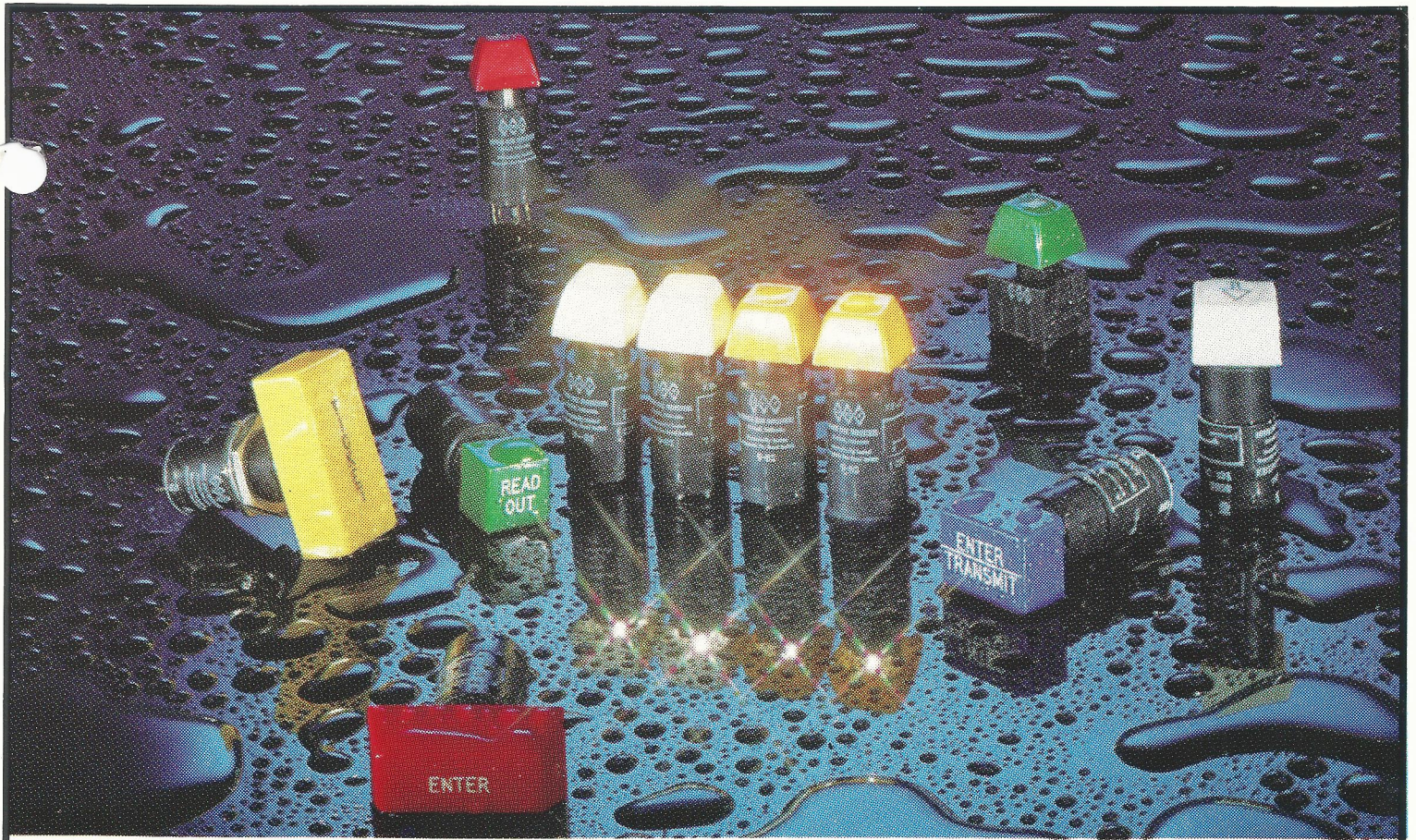




GEORGE RISK INDUSTRIES, INC.

*A Worldwide
Manufacturer
of Quality Keyboards*





FOR YOUR CUSTOM KEYBOARD APPLICATIONS,

use GRI's high reliability reed switches in the illuminated version for those special instances when visibility is a MUST . . . air traffic control, process control, shipboard communications rooms, aircraft cockpits, etc. The keycaps are engraved per your instructions and we can provide an illuminated keyboard with these switches to your exact specifications. We can highlight critical operations with a variety of different colored keycaps. GRI can provide these keyboards in either the illuminated or standard version for commercial or mil-spec applications.

GRI also offers a line of **standard keyboards**. Send us your specs today. For quality and reliability, you want GRI. Contact our Sales Department for more information today.

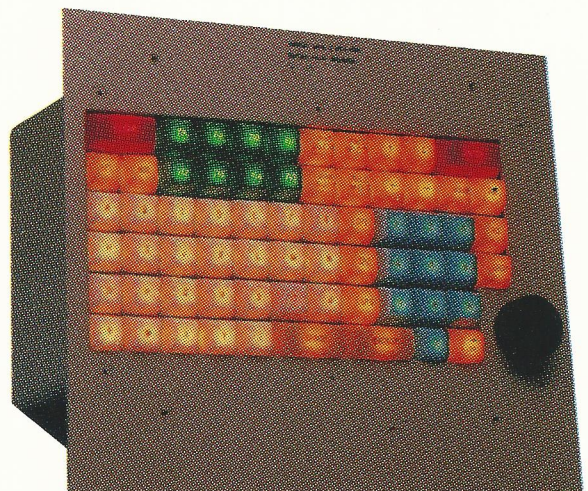
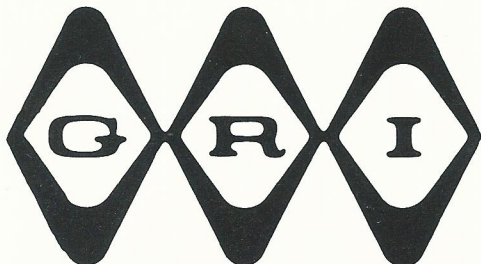
GEORGE RISK INDUSTRIES, INC.

G.R.I. PLAZA, KIMBALL, NEBRASKA 69145

TEL (308) 235-4645 TOLL FREE 1-800-445-5218

FAX 308-235-2609

1-800-523-1227

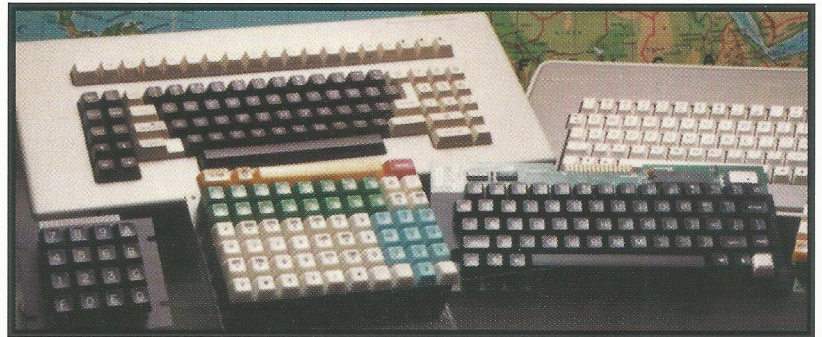




CUSTOM KEYBOARDS, PANELS & KEYPADS

CUSTOM ENGRAVED KEYCAPS

HUNDREDS OF STYLES TO CHOOSE FROM



George Risk Industries has served the O.E.M. market for over 30 years in standard and custom designed data entry peripherals. Our team of engineers will take your original concept through to delivery of production units with the highest quality and reliability. Whatever your requirements - Keyboards or Keypads; let G.R.I. assist in resolving your design problems. G.R.I. is a company that specializes in engineering and manufacturing.

- INTERFACES
- MILITARY
- DRY REED OR MECHANICAL
- ILLUMINATED
- PROTOTYPES
- COMMERCIAL
- ENGRAVING TO SPEC
- FAST TURN AROUND
- SOFTWARE
- AEROSPACE
- LOW TO MEDIUM QUANTITIES
- INDUSTRIAL
- CUSTOM WIRE HARNESSSES



For your Custom Keyboard Applications, use G.R.I.'s high reliability reed switches in the illuminated version for those special instances when visibility is a MUST—Air Traffic Control, Process Control, Shipboard Communications, Aircraft Cockpits, etc.—built to your specifications, either standard or Mil-Spec applications.

PUSHBUTTON SWITCHES



G.R.I. offers a wide selection of keyswitches: illuminated or non-illuminated, incandescent lamp or LED, dry reed or mechanical for commercial, aerospace, industrial or medical applications. Custom orders welcome.

GEORGE RISK INDUSTRIES, INC.

G.R.I. PLAZA, KIMBALL, NEBRASKA 69145-1599

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FAX: 308-235-2609

E-MAIL: grikeyb@megavision.com

WEB SITE: www.grisk.com

EEO/AAP



NEW SERVICE

GRI ADDS WIRE PROCESSING

GRI has added extra wire processing capacity recently with the addition of another wire cutting and stripping machine.

Our equipment includes:

- * Artos CS-26 wire cutter and stripper
- * Artos CS-8E wire cutter and stripper
- * Schleuniger CS-9000 wire cutter and stripper
- * Schleuniger 2015 cable stripper

GRI can cut and strip single conductor hook-up wire and up to 8 conductor cable in wire sizes from 30 gauge to 8 gauge.

Strip lengths available from .01" to 1.97". We can do semi-strip or full strip.

GRI stocks many different wire types:

- * 22 gauge UL 1007 hook-up wire
- * 22 gauge UL 1061 hook-up wire
- * 22 gauge 2, 3, and 4 conductor cable CL2
- * 24 gauge zip cord CL2
- * 20 gauge automotive wire

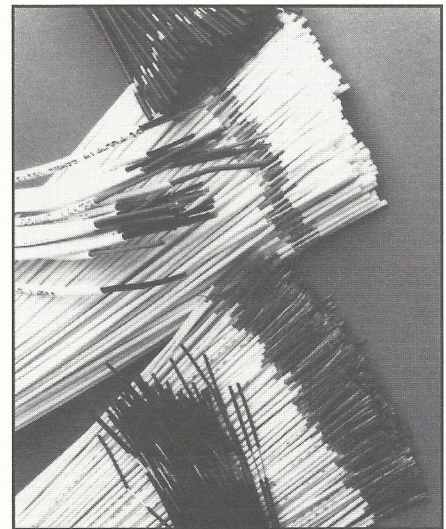
Most other common wire is available from our suppliers.

GRI CAN DO WIRE HARNESSES

Let GRI's experienced production team manufacture your customer's wire harnesses and cables for you. GRI has manufactured cables for our key-boards for many years.

We also have terminal crimping capability!

Send us your drawings for prompt quotations.



G.R.I.

802 S. ELM
KIMBALL, NE 69145

EEO/AAP

TOLL FREE 1-800-445-5218

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(308) 235-4645

FAX (308) 235-2609



KEYBOARDS



SERIES 9062 XT/AT* — FULL TRAVEL KEYS



GRI, an industry leader in standard and custom keyboards for over 20 years, presents the IBM* compatible 9062 XT/AT keyboards.

The GRI 9062 XT/AT are the most compact full-size IBM - compatible keyboards available. These expanded typewriter style keyboards function with IBM PC, XT, AT and PS2 systems, and with IBM - compatible computers.

The GRI 9062 XT/AT features overall dimensions of 12" x 5.75" x 1.5" and has 62 white double-shot keys with black engraving. They feature a microprocessor to provide the most requested features in a modern, straight-forward design. Power required is +5 volts.

These rugged keyboards are ideal for applications where space is limited, such as the factory floor, laboratory, etc. They are economically priced and delivery is "off-the-shelf."

Options include enclosures, protocol (XT, AT or enhanced AT) and MIL-SPEC 883B environmental ratings.

**See the ordering instructions on the reverse side
for option availability**

* IBM, PC, XT, AT and PS2 are registered trademarks of the International Business Machines Corporation.



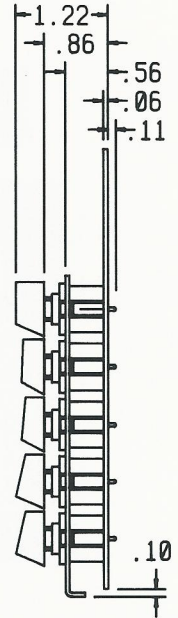
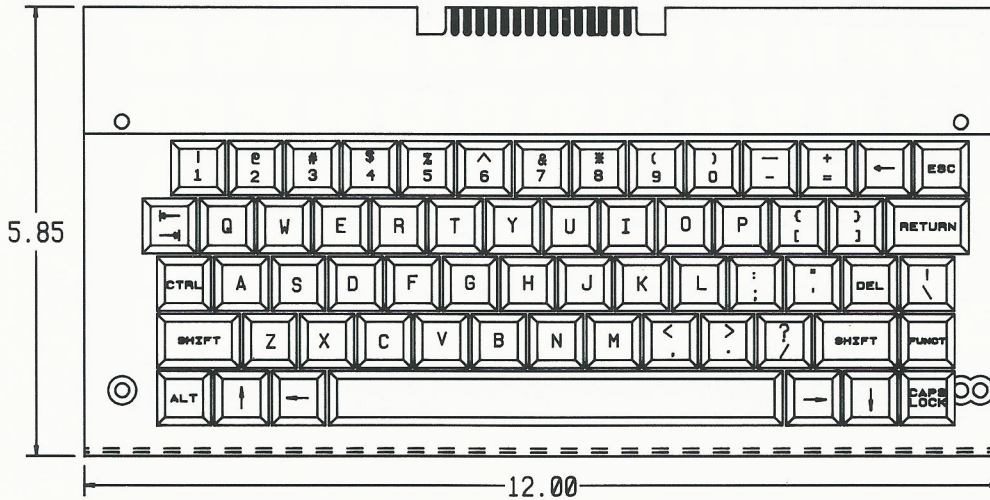
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FAX (308) 235-2609



KEYBOARDS

SERIES 9062 XT/AT* — FULL TRAVEL KEYS



SCULPTURED PROFILE

MODEL 9062 AT/XT
(ALL DIMENSIONS ARE IN INCHES)

HOW TO SPECIFY



ENCLOSURE:

- 0 - None
- 1 - Metal
- 2 - Structural Foam
- 3 - Custom

PROTOCOL:

- 1 - XT
- 2 - AT
- 3 - Enhanced AT

COMMERCIAL/MILITARY:

- 1 - Commercial quality components, mechanical switches
- 2 - Military quality components, conformal coating, and high reliability reed switches on all keys except CAPS LOCK



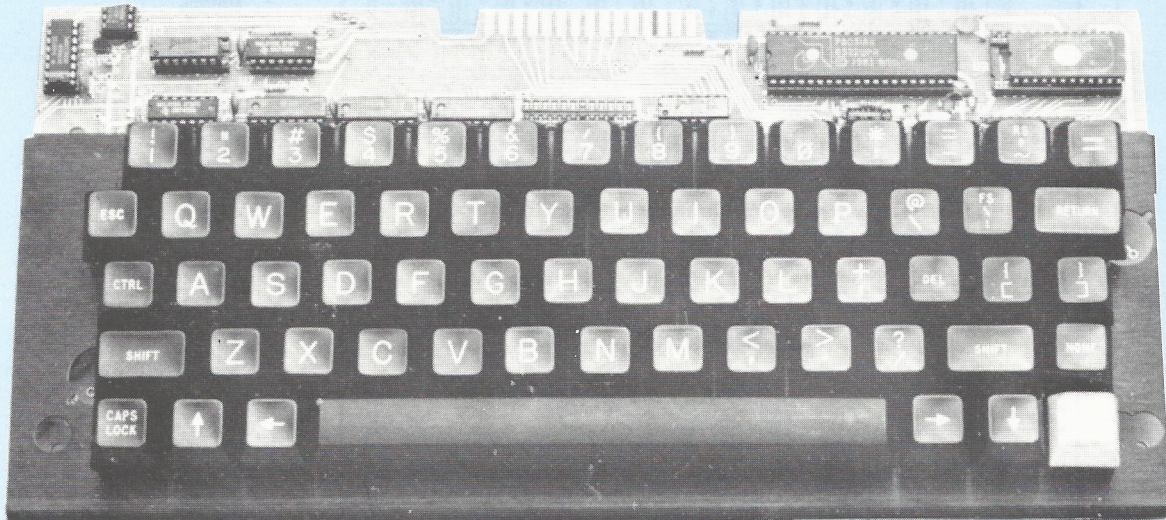
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KEYBOARDS

SERIES 9000 — FULL TRAVEL KEYS



The 56-key model 9056 and the 62-key model 9062 offer greater versatility and more options than have been previously available. **See the ordering instructions on the reverse side for option availability.** The 9056 and 9062 keyboards are economically priced and delivery is "off-the-shelf."

These expanded typewriter-style, low cost, full ASCII keyboards provide the most requested features in a modern, straight-forward design. The heart of the 9000 series keyboards is a micro-controller. This allows high throughput with either customer specified two-key lockout or N-key rollover and baud rates from 150 to 19200.

Interface options are serial RS-232, TTL/RS-422, 20-mA. current loop, parallel or any combination of these. Auto repeat is available, as is either positive or negative logic output. These versatile keyboards can also be specified to incorporate components to meet MIL-spec 883B requirements.



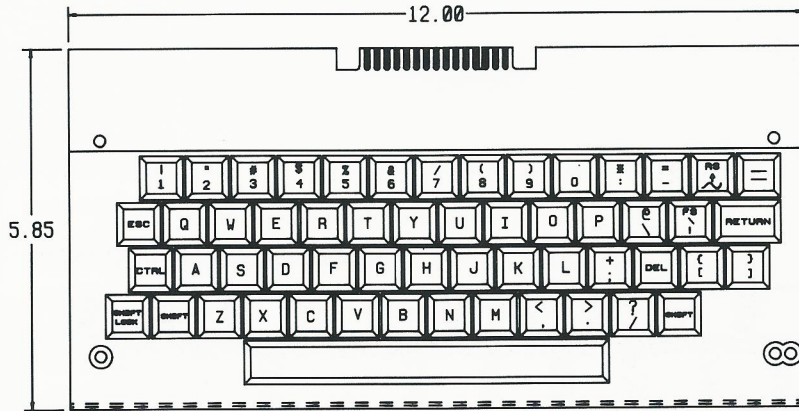
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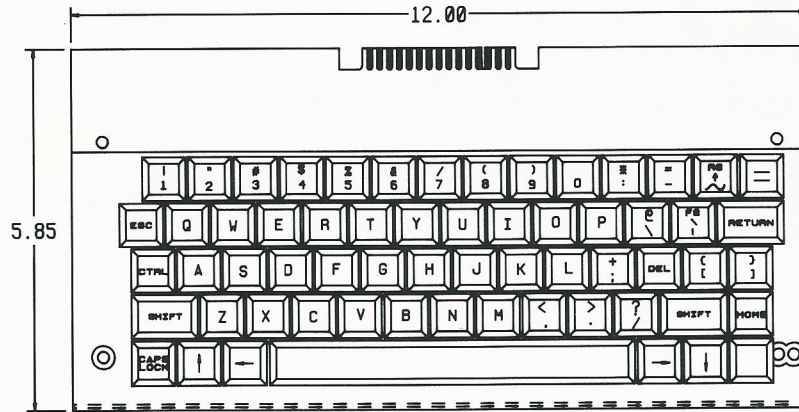


KEYBOARDS

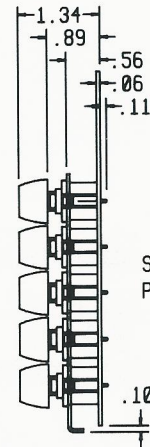
SERIES 9000 — FULL TRAVEL KEYS



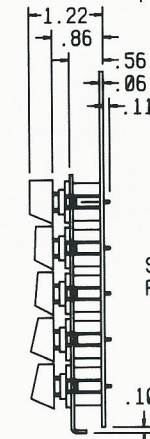
MODEL 9056



MODEL 9062

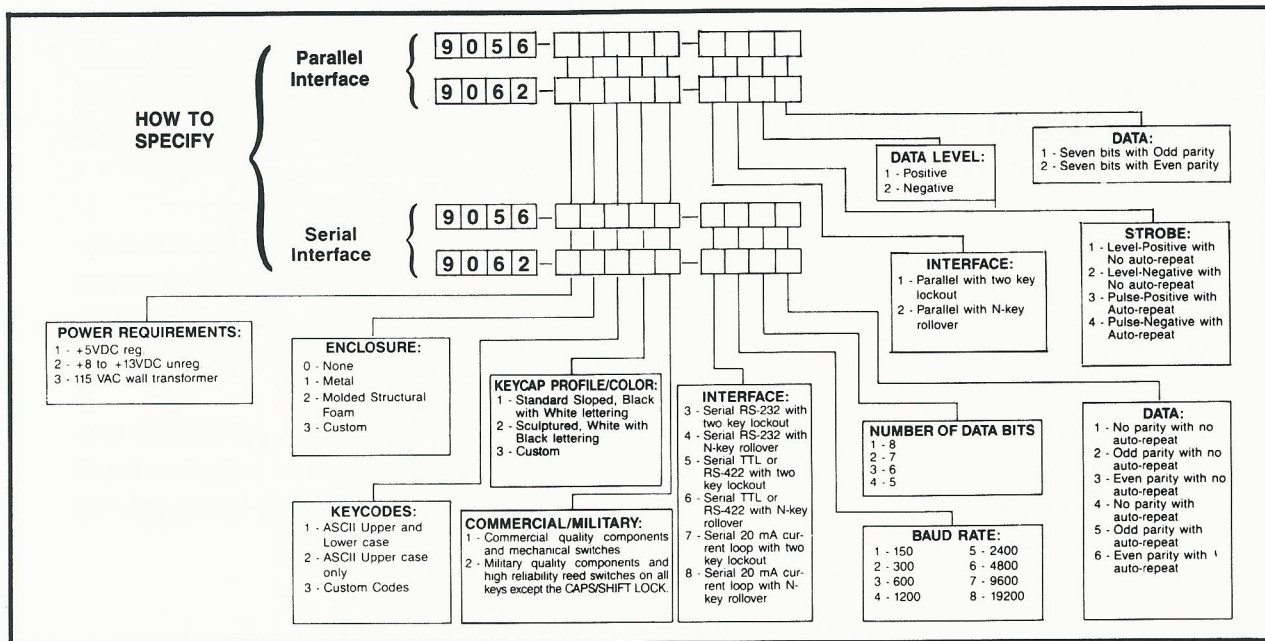


STANDARD PROFILE



SCULPTURED PROFILE

(ALL DIMENSIONS ARE IN INCHES)

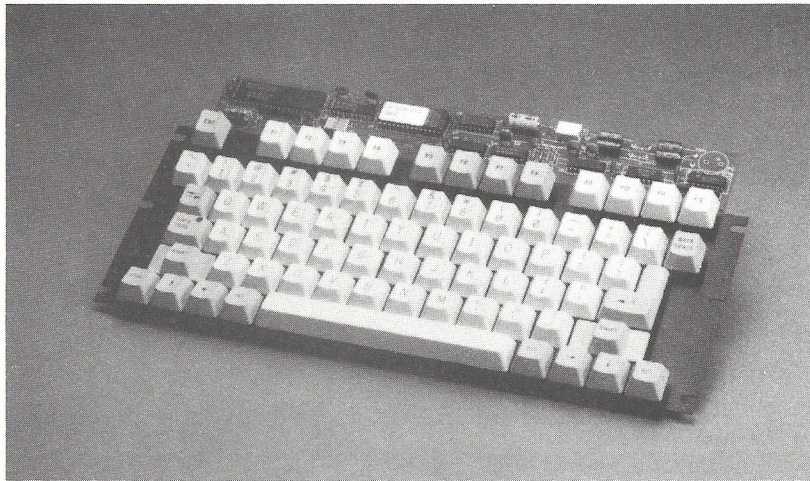


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Model 3075 ASCII, XT/AT

Compact, Low Profile Keyboard

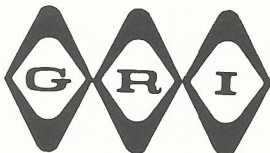


FEATURES

- 75 key, ergonomic design including full QWERTY section, 12 function keys, and four arrow keys
- Compact size, low profile, DIN compatible
- Uses KBM-DIN switch with gold contacts, tactile feedback, and life of 10 million operations
- Available with IBM XT/AT/EAT, RS-232, or TTL Serial Interfaces with jumper selectable baud rates
- Ruggedized metal enclosure; custom keycaps, key legends and/or keycodes; and six foot coiled cable with DIN connector (P/N: 3075-XTAT-CABL) available as options

SPECIFICATIONS

Voltage	+5 \pm 0.25 VDC reg.	Dimensions	12.4x6.6x0.95 In.
Current	300 mA	Weight	1 lb.
Interfaces	IBM XT/AT/EAT RS-232 TTL Serial	Operating force	1.23 \pm 0.35 oz.
Connector	5 pin single in-line 0.1" centers	Pretravel	0.100 \pm 0.005 in.
		Total Travel	0.157 \pm 0.020 in.
		Keycaps	ABS plastic, double shot

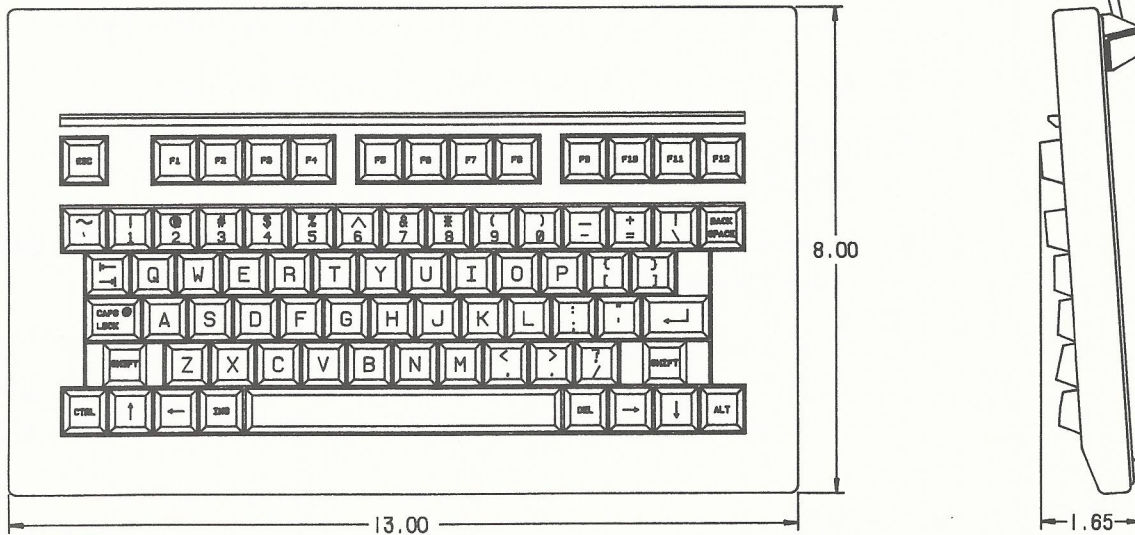
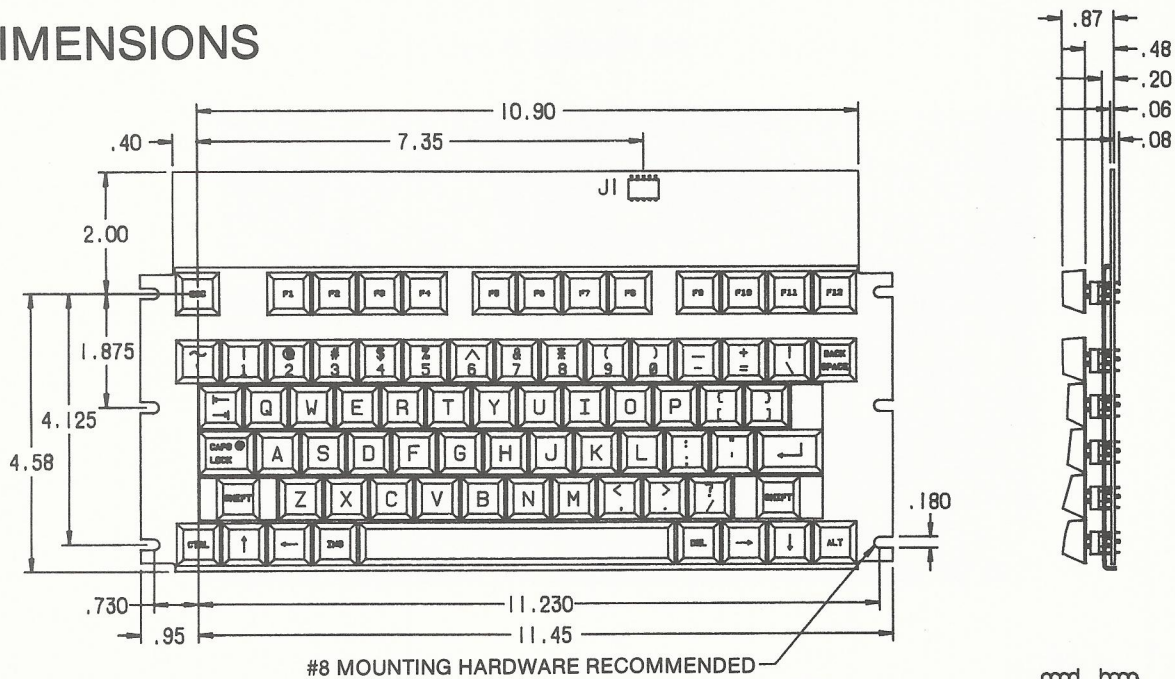


GEORGE RISK INDUSTRIES, INC.

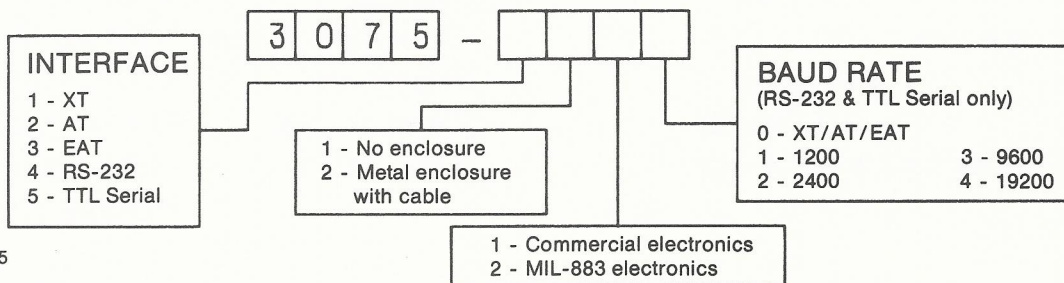
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Model 3075 ASCII, XT/AT

DIMENSIONS



ORDERING INFORMATION



BULLETIN KB-35



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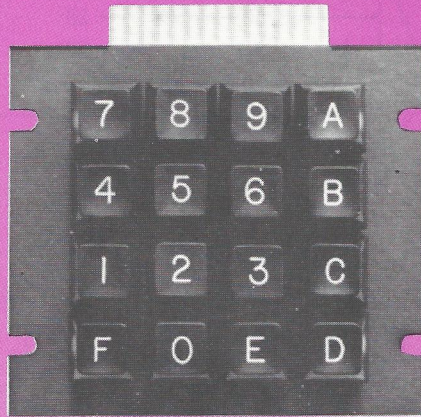
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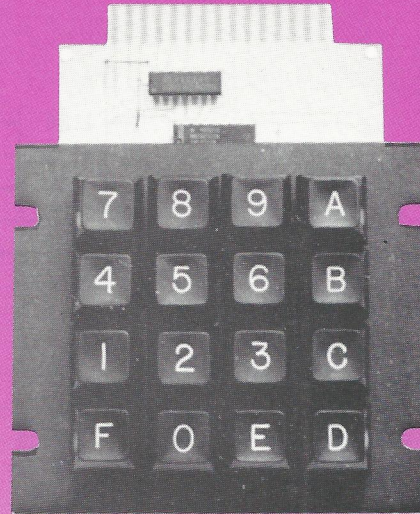
KEYPADS



9016 SERIES — FULL TRAVEL KEYS



9016 1-of-16 or X-Y Matrix Keypad



9016 Hexadecimal Keypad

GRI, an industry leader in standard and custom keypads and keyboards for over 20 years presents the 9016 keypads.

Availability includes an un-encoded 1-of-16 model, an un-encoded X-Y matrix model, and an encoded hexadecimal model.

“1-of-16” model: this is an un-encoded keypad in which one side of each keyswitch is common and the other side is terminated at the card edge connector. It is designed for use with customer-supplied encoding or interface circuitry where each key is examined independently. No logic circuitry is used, and no power is required.

X-Y Matrix model: this model is wired so that a keyswitch depression connects one of the four “X” lines to one of the four “Y” lines. The X and Y lines are terminated at the card edge connector. No logic circuitry is used, and no power is required.

Hexadecimal model: This model encodes the keystroke into a hexadecimal format: O-F (binary 0000 to 1111). Positive logic and positive strobe signals are provided, as is the keyswitch debounce function. +5 volt power and ground are required.

All three models are available in versions to meet MIL-std 883B requirements.

Standard keycaps are black ABS plastic with white engraving. Custom color keycaps and custom engraving legends and colors are available.

**See the ordering instructions on the reverse side
for option availability**



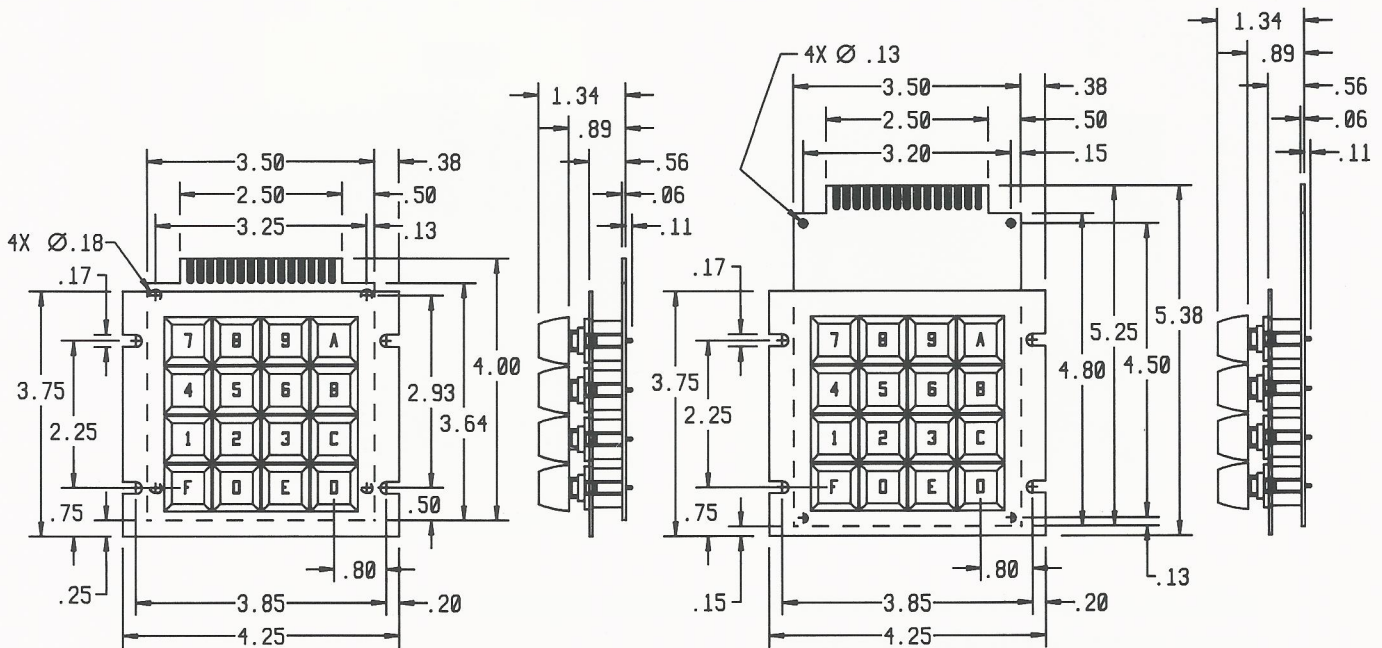
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KEYPADS

9016 SERIES — FULL TRAVEL KEYS



MODEL 9016
1 OF 16 OR X-Y MATRIX KEYPAD
(ALL DIMENSIONS ARE IN INCHES)

MODEL 9016
HEXADECIMAL KEYPAD
(ALL DIMENSIONS ARE IN INCHES)

HOW TO SPECIFY

**POWER:**

0 - no power required,
mandatory on X-Y and
1-of-16 models
1 - +5 volt regulated,
mandatory on Hex model

KEYCAP COLOR:

1 - Black with White letters
3 - Custom

INTERFACE:

A - 1 of 16
B - X/Y Matrix
C - Parallel Hexadecimal

ENCLOSURE:

0 - None
1 - Metal

COMMERCIAL/MILITARY:

1 - Mechanical switches
2 - Reed switches, conformal coating,
MIL-spec electronics on
Hexadecimal Model.

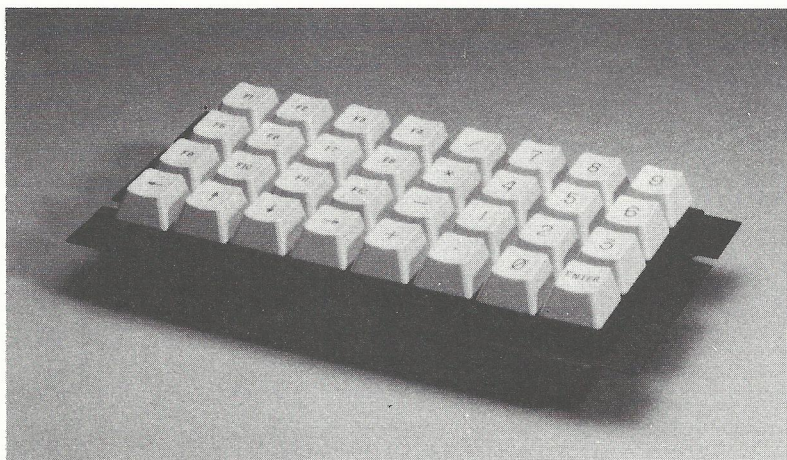


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Model 3032 ASCII, XT/AT

Compact 32 Key Keypad



FEATURES

- 32 keys, ergonomic design
- Compact size, low profile, DIN compatible
- Uses KBM-DIN switch with gold contacts, tactile feedback, and life of 10 million operations
- Available with IBM XT/AT/EAT, RS-232, RS-422, or TTL Serial interfaces with jumper selectable baud rates
- Ruggedized metal enclosure; custom keycaps, key legends and/or keycodes; and six foot coiled cable with DIN connector (P/N: 3032-XTAT-CABL) available as options

SPECIFICATIONS

Voltage	+5 \pm 0.25 VDC reg.	Dimensions	7.0x3.6x1.5 in.
Current	300 mA	Weight	10 oz.
Interfaces	IBM XT/AT/EAT, RS-232, RS-422, TTL Serial	Operating force	1.23 \pm 0.35 oz.
Connector	5 pin single in- line 0.1" centers	Pretravel	0.100 \pm 0.005 in.
		Total Travel	0.157 \pm 0.020 in.
		Keycaps	ABS plastic, double shot

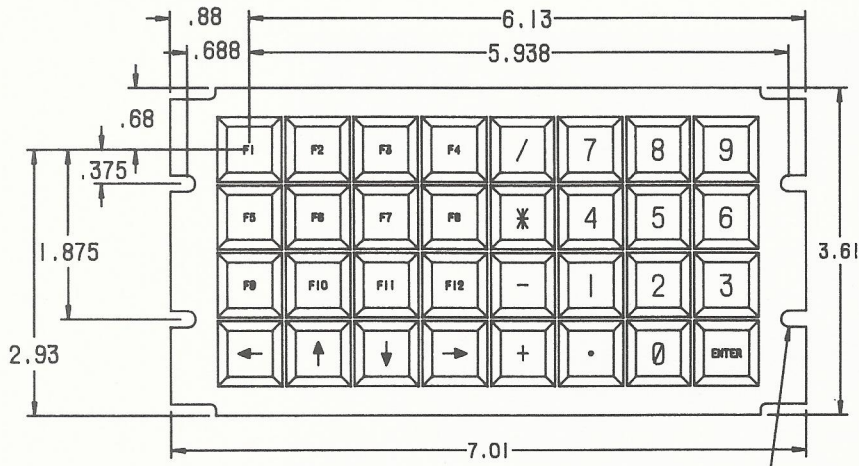


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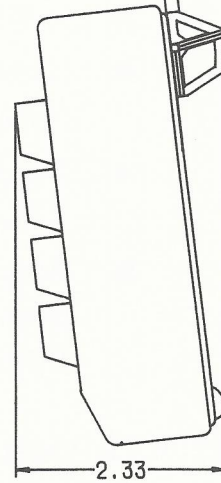
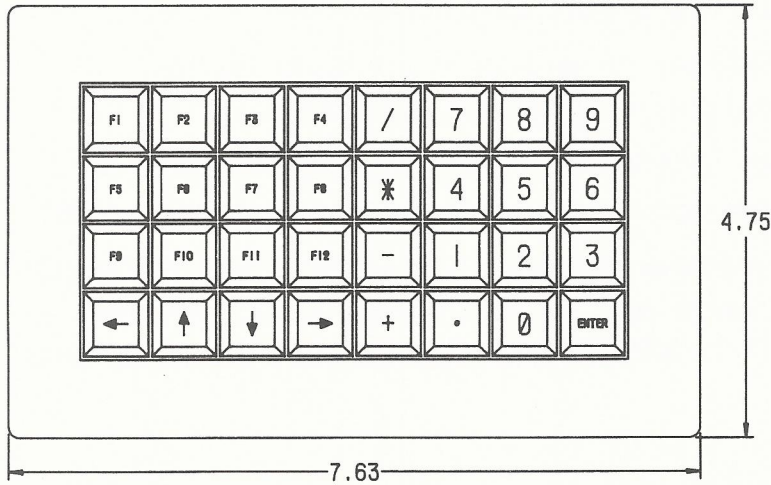
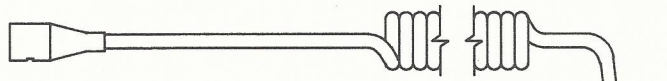
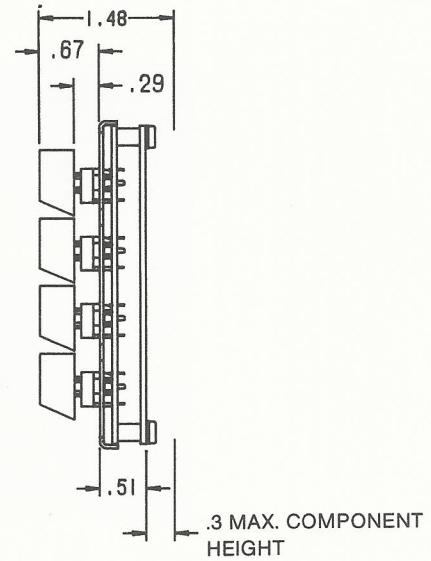
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Model 3032 ASCII, XT/AT

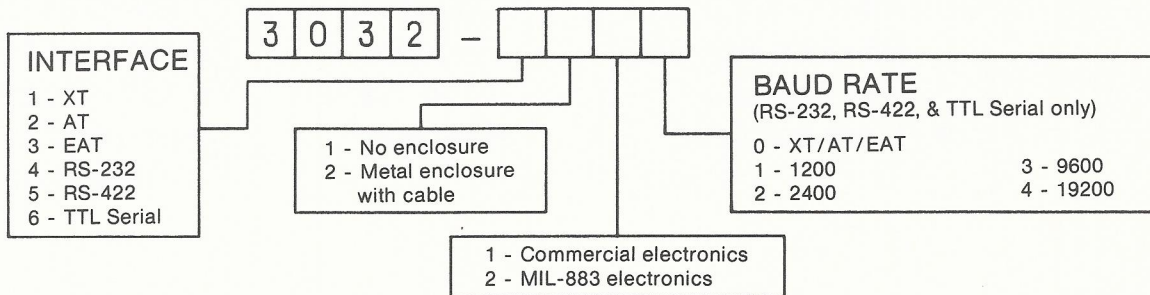
DIMENSIONS



#8 MOUNTING HARDWARE RECOMMENDED



ORDERING INFORMATION



BULLETIN KB-36



GEORGE RISK INDUSTRIES, INC.

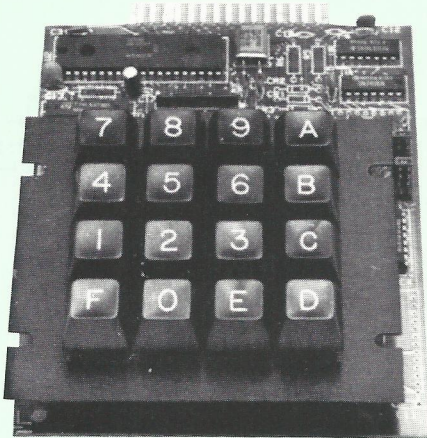
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 308-235-4645



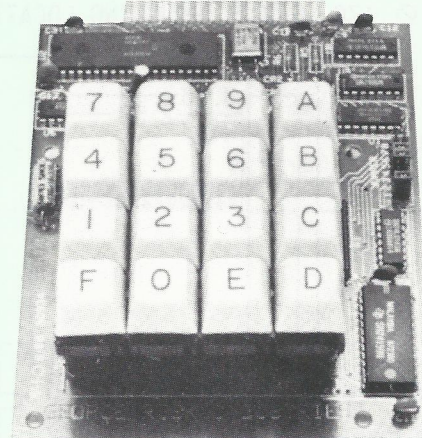
KEYPADS



9016 ASCII SERIES — FULL TRAVEL KEYS



**9016 with KBM switches,
mounting frame and ABS
keycaps**



**9016 with KB illuminated
switches, Alignment Blocks,
and Lexan keycaps**

GRI, an industry leader in standard and custom keypads and keyboards for over 20 years, presents the 9016 ASCII-encoded keypads. These 16-key models offer greater versatility and more options than have been previously available. The 9016's are economically priced and are available "off-the-shelf."

These keypads include an economical model with GRI's KBM series mechanical switches, a mounting frame and ABS plastic keycaps. Keyswitch life expectancy is rated at 10 million operations. This version is also available with GRI's KBR series reed switches for higher reliability. The KBR switch has a rated life expectancy of 30 million operations. Because it uses a hermetically sealed reed switch, it is impervious to dust, dirt and moisture.

Also available for the 9016 is the GRI KB switch: this reed switch is available in both non-illuminated and illuminated versions. Illumination can be by either incandescent bulbs or LED's. The rated life expectancy is 50 million operations. The KB switch versions use GRI's unique Alignment Blocks instead of a mounting frame.

Interface options include parallel; serial TTL, RS-232, RS-422; and IBM-PC/XT, AT and Enhanced AT*. Data interface options, such as either positive or negative strobe, auto-repeat and selectable parity make the 9016 perfectly suited to almost any interface requirement.

These versatile keypads can also be specified to incorporate components to meet MIL-spec 883B requirements.

These versatile keypads are economically priced and delivery is "off-the-shelf."

See the ordering guide on the reverse side for option availability.

* IBM, PC, XT, and AT are registered trademarks of the International Business Machines Corporation.



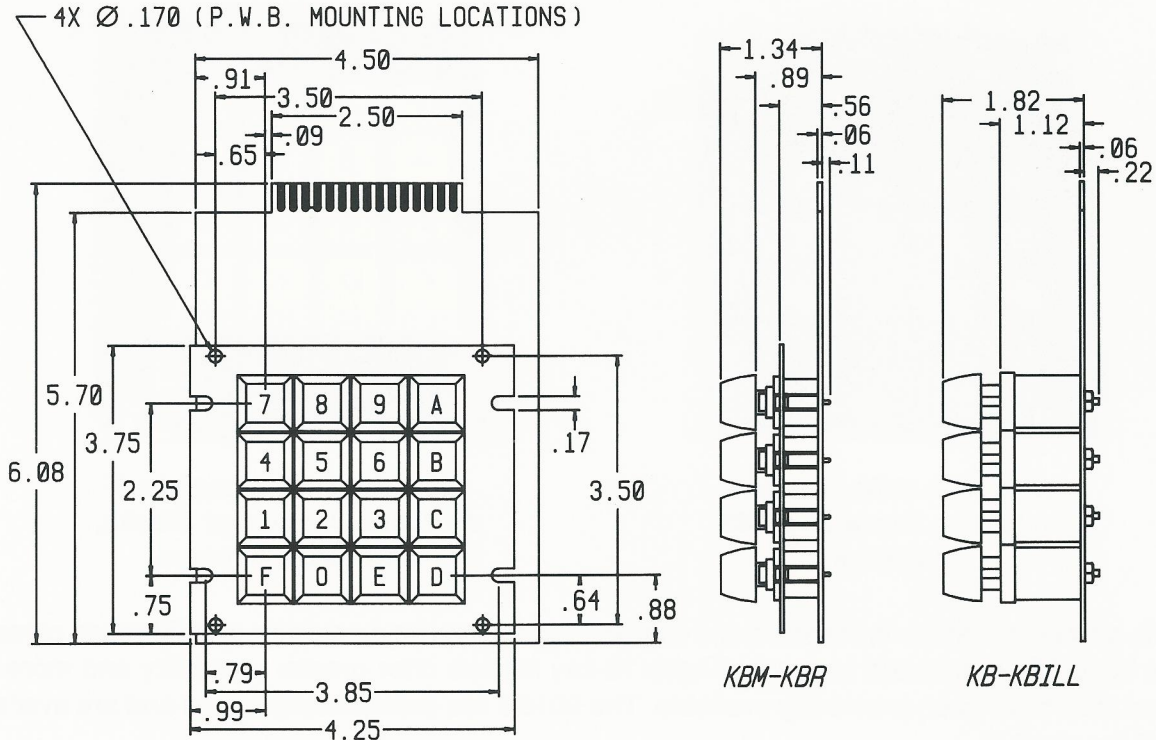
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FAX (308) 235-2609

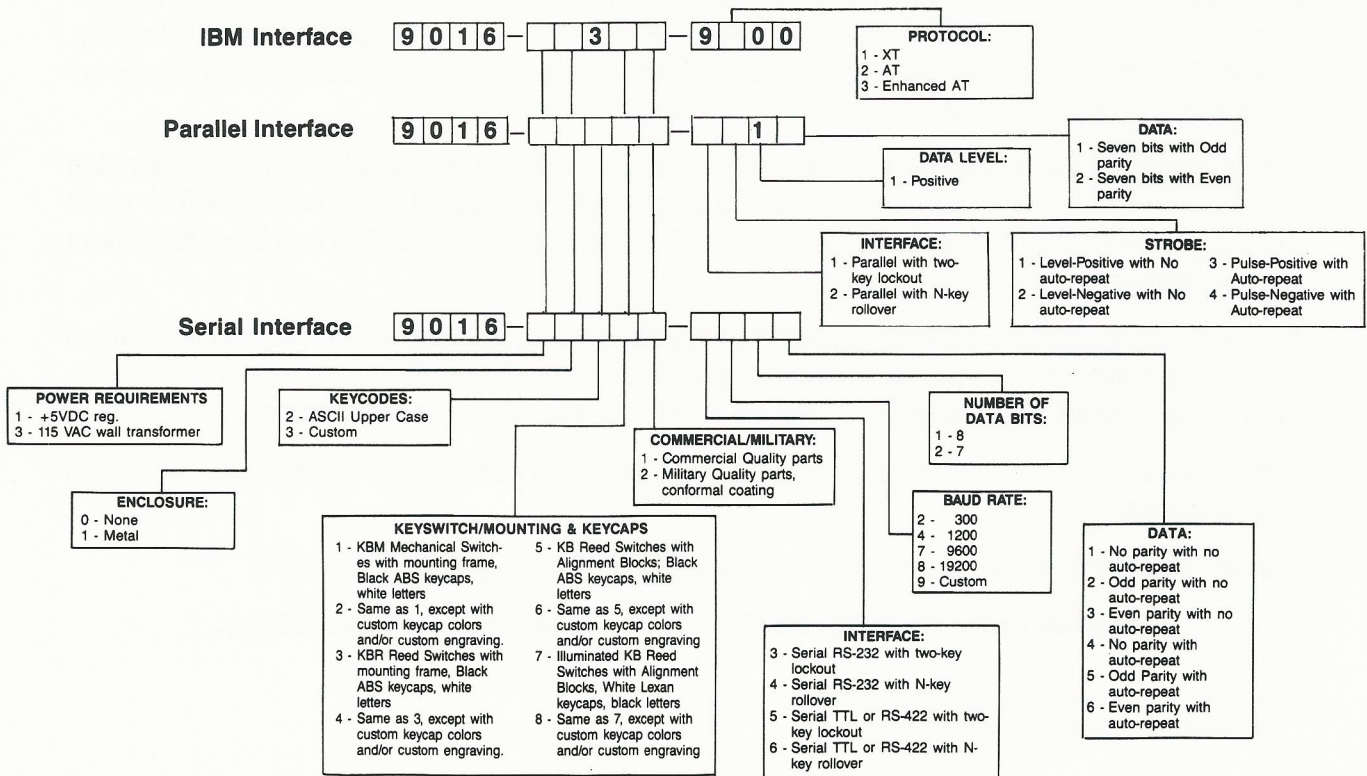


KEYPADS

9016 ASCII SERIES — FULL TRAVEL KEYS



HOW TO SPECIFY



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HERMETICALLY
SEALED
CONTACTS

EXPLOSION
PROOF

IDEAL FOR
DRY CIRCUIT
APPLICATIONS

LIFE EXPECTANCY
IN THE
MILLIONS

LOW CONTACT
BOUNCE

LOW CONTACT
RESISTANCE

REED TYPE

PUSH BUTTON SWITCHES

SEALED AGAINST ALL
HOSTILE ENVIRONMENTS



GEORGE RISK INDUSTRIES, INC.



FOR REED AND MERCURY-WETTED PUSH BUTTON SWITCHES

FEATURES

- **Hermetically sealed contacts**
- **Low contact resistance**
- **Life expectancy in the millions**
- **Momentary action**
- **Low bounce characteristics**
- **Terminals weldable and solderable**
- **Ideal for dry circuits or higher current applications**

DEVELOPING THE STANDARD LINE

The complete line of GRI switches is the result of several year's work with a number of specialized applications. Requirements have demanded a great amount of development effort and the design of highly specialized production methods.

DESIGN VERSATILITY

GRI Push Button Switches are unique because their reed type contacts are actuated by a permanent magnet anchored to the actuating plunger. This leads to a number of outstanding performance characteristics which can open new doors in system design.

1. Contacts are sealed in inert gas and are isolated from all sources of environment.
2. GRI Switches lend themselves readily to circuit versatility. By using permanent magnets in coordination with many unique contact arrangements, many entire circuit functions are now performed.
3. On all multiple-pole switches, each pole is completely isolated.

GENERAL SPECIFICATIONS

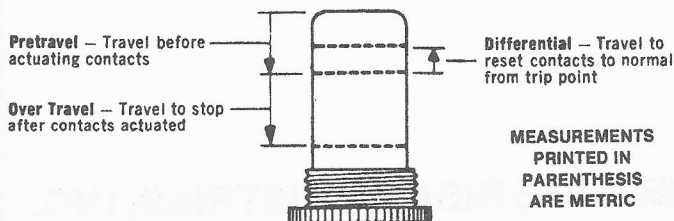
ELECTRICAL	DRY REED
Operating Temperature Range	-55° to +150°C
Dielectric Strength	500 VAC
Insulation Resistance	10 ⁸ Megohms
Contact Bounce	500 Microseconds maximum
Contact Resistance	200 Milliohms maximum
Life Expectancy	20 million operations at full load; 50 million operations at half load (Resistive Load at recommended VDC)

Each Pole Isolated

MECHANICAL

Mounting Position	Any Plane; Except Series MV and MH 30° out of plane
Switch Contact Atmosphere	Inert Gas
Internal Terminal Construction	Welded
External Switch Terminals	"A" Nickel Alloy, weldable or solderable

TECHNICAL INFORMATION



OPERATION

GRI Push Button Switches utilize magnetic lines of force as the only linkage between the mechanical actuation and the switch contacts. A permanent magnet attached to the plunger provides the force that closes the reed switch contacts, facilitating low push button pressure with high contact pressure.

The Reed Switch consists of two identical ferromagnetic reeds, sealed in a glass tube. When magnetic flux, from the permanent magnet, is sufficient, the reeds flex and make contact. When the magnetic influence is removed the reeds return to their normal positions, opening the circuit.

Mercury-Wetted Reed Switches operate on the same magnetic principles. However, the reed contacts are coated with a film of mercury. A pool of mercury at the base of the glass envelope wets the contact surfaces by capillary action. These units may be operated in vertical or horizontal position according to types.

Mercury coated contacts handle greater electrical loads, eliminate contact bounce, and are superior to dry switches for dry circuits and applications where stable contact resistance is critical. These switches normally have contact resistance within 10% of the initial value during life.

Enclosures resist all sources of environment. Each contact is isolated in a glass envelope unaffected by dust, oxidation or corrosion for a life span of millions of operations. Individual or multi-pole switches are assembled with their permanent magnet in an anodized aluminum or plastic case.

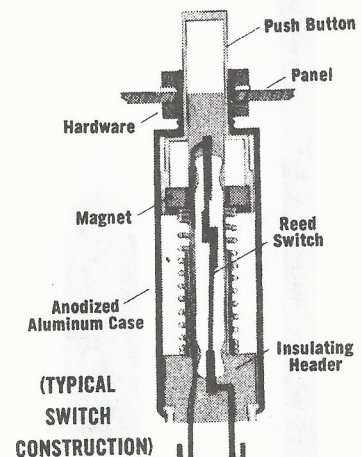
Precautions in selection and application of these switches should be exercised.

Selection—The ampere and voltage ratings given in the selection tables are singular maximum ratings, neither of which is to be exceeded, but never used in combination with each other at the maximum shown. The Volt Amps, and Watts listed in the selection tables are the allowable maximums, reached in any combination of Amps, and Volts, but neither to exceed the maximums listed.

Application—Due to the response of these switches to magnetic forces, heavy magnetic ferric materials around the area of the switches will affect their operation. Extremely high outside magnetic fields near the switches will require shielding. Inductive loads are not recommended.

MERCURY WETTED REED CONTACTS

Operating Temperature Range	-35°C to +150°C
Dielectric Strength	500 VAC
Insulation Resistance	10 ⁸ Megohms
Contact Bounce	None
Contact Resistance	50 Milliohms
Life Expectancy	20 million operations at full load; 50 million operations at half load (Resistive Load at recommended VDC)



CONTACT BOUNCE—Contact vibration measured in Microseconds or Milliseconds until positive contact closure.

PRE-TRAVEL—Distance the plunger travels from free position to operating position.

OVER-TRAVEL—Movement of actuator from operating position to final position at end of actuating stroke after switch is fully depressed.

RELEASE POSITION—Position of actuator when all contacts snap from the operated position to the free position.

DIFFERENTIAL TRAVEL—Distance actuator travels in returning from operating position to release position.

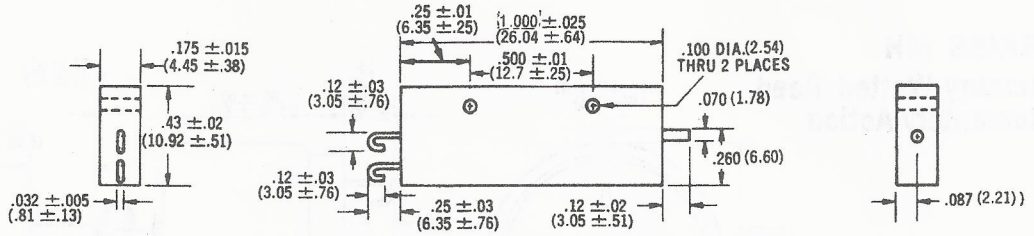
TOTAL TRAVEL—Sum of pre-travel and over-travel.

OPERATING PRESSURE—The force required to depress the switch button.



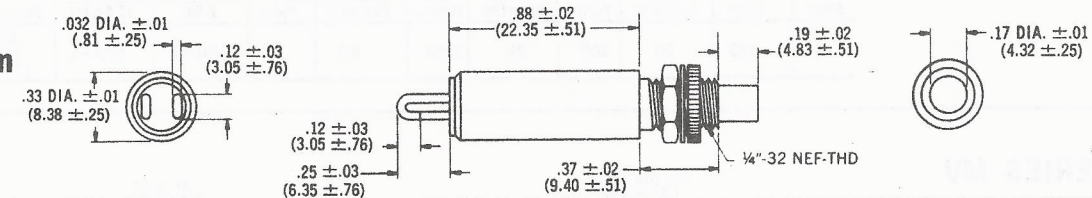
GEORGE RISK INDUSTRIES, INC.
PUSHBUTTON SWITCHES
 (DRY REED TYPE)

SERIES B
Momentary Action



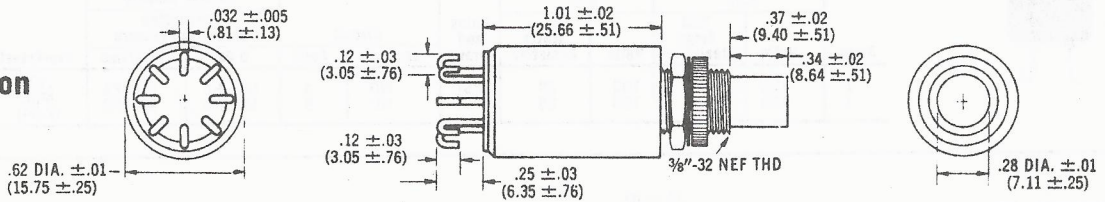
Amps	Maximum Ratings				Poles and Throws	Circuit		Catalog Number Pushbutton Operating Pressure		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	8 Oz.	17 Grams			
	Volts	Volt Amps Resistive	Volts	Watts Resistive								
.5	125	12	125	10	SPST	NO	A	BC-HA	BC-FA	.062	.031	.062
.5	125	12	125	10	SPST	NC	B	BC-HB	BC-FB	Min. (1.57)	Max. (0.79)	Max. (1.57)

SERIES D
Momentary Action



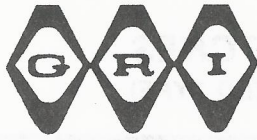
Amps	Maximum Ratings				Poles and Throws	Circuit		Catalog Number Pushbutton Operating Pressure		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	8 Oz.	17 Grams			
	Volts	Volt Amps Resistive	Volts	Watts Resistive								
.5	125	12	125	10	SPST	NO	A	DC-HA	DC-FA	.062	.031	.125
.5	125	12	125	10	SPST	NC	B	DC-HB	DC-FB	Min. (1.57)	Max. (.79)	Max. (3.17)
.250	125	4	28	3	SPDT	NO-NC	C	DB-HC	DB-FC			

SERIES G
Momentary Action



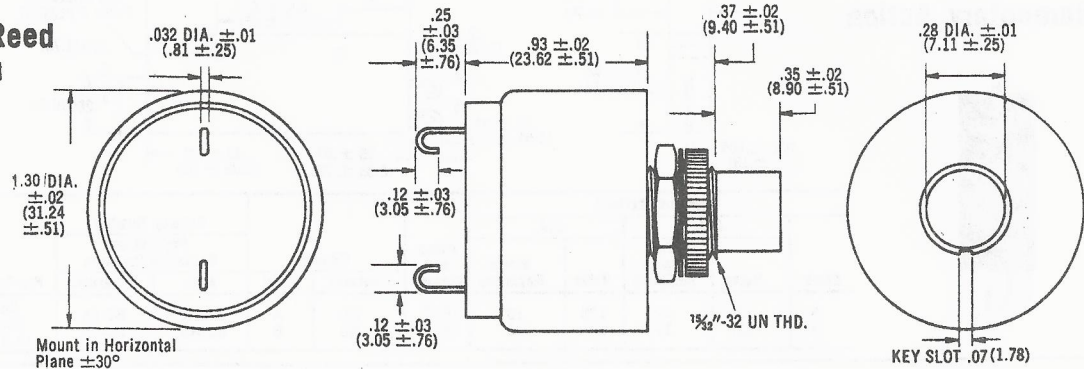
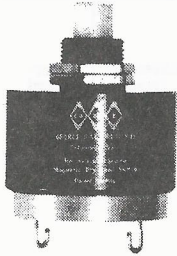
Amps	Maximum Ratings				Poles and Throws	Circuit		Catalog Number Pushbutton Operating Pressure		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	8 Oz.	17 Grams			
	Volts	Volt Amps Resistive	Volts	Watts Resistive								
.5	125	12	125	10	SPST	NO	A	GC-HA	GC-FA	.08 Min. (2.03)	.04 Approx. (1.2)	.125 Max. (3.17)
.5	125	12	125	10	SPST	NC	B	GC-HB	GC-FB			
.5	125	12	125	10	DPST	NO	A	GC-HA2	GC-FA2			
.5	125	12	125	10	DPST	NC	B	GC-HB2	GC-FB2			
.5	125	12	125	10	3PST	NO	A	GC-HA3	GC-FA3			
.5	125	12	125	10	3PST	NC	B	GC-HB3	GC-FB3			
.5	125	12	125	10	4PST	NO	A	GC-HA4	GC-FA4			
.5	125	12	125	10	4PST	NC	B	GC-HB4	GC-FB4			
.250	125	4	28	3	SPDT	NO-NC	C	GB-HC	GB-FC			
.250	125	4	28	3	DPDT	NO-NC	C	GB-HC2	GB-FC2			

MEASUREMENTS PRINTED IN PARENTHESIS ARE METRIC



(MERCURY WETTED & DRY REED TYPE)

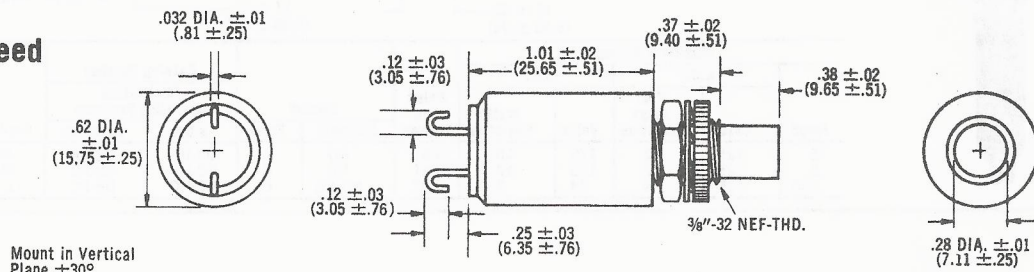
SERIES MH
Mercury Wetted Reed
Momentary Action



MOUNTING POSITION — HORIZONTAL

Amps	Maximum Ratings				Poles and Throws	Circuit		Catalog Number		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	Pushbutton Operating Pressure				
	Volts	Volt Amps Resistive	Volts	Watts Resistive				8 Oz.	17 Grams			
1	125	30	100	28	SPST	NO	A	MHI-HA	MHI-FA	.125 Min. (3.17)	.062 Approx. (1.57)	.020 Min. (5.08)

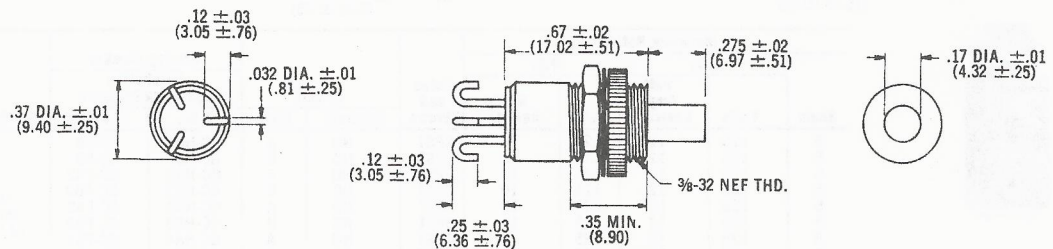
SERIES MV
Mercury Wetted Reed
Momentary Action



MOUNTING POSITION — VERTICAL

Amps	Maximum Ratings				Poles and Throws	Circuit		Catalog Number		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	Pushbutton Operating Pressure				
	Volts	Volt Amps Resistive	Volts	Watts Resistive				8 Oz.	17 Grams			
1	125	30	100	28	SPST	NO	A	MVI-HA	MVI-FA	.100 Min. (2.54)	.062 Max. (1.57)	.125 Max. (3.17)
1	125	30	100	28	SPST	NC	B	MVI-HB	MVI-FB			

SERIES R
Dry Reed
Momentary Action

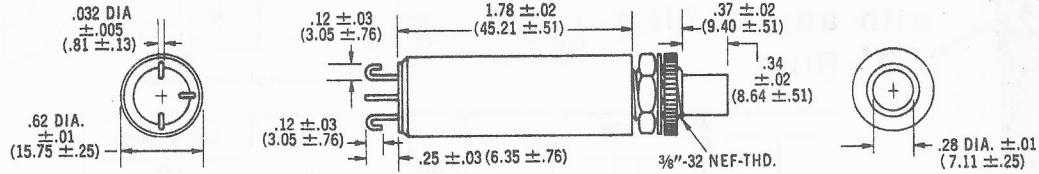


Amps	Maximum Ratings				Poles and Throws	Circuit		8 Oz. Pushbutton Operating Pressure	Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form				
	Volts	Volt Amps Resistive	Volts	Watts Resistive							
.250	150	12	150	4	SPST	NO	A	RB-HA	.062 Min. (1.57)	.031 Max. (0.79)	.062 Max. (1.57)
.250	150	12	150	4	SPST	NC	B	RB-HB			
.250	125	4	28	3	SPDT	NO-NC	C	RB-HC			



(DRY REED TYPE)

**SERIES W
Momentary Action**



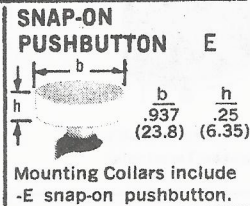
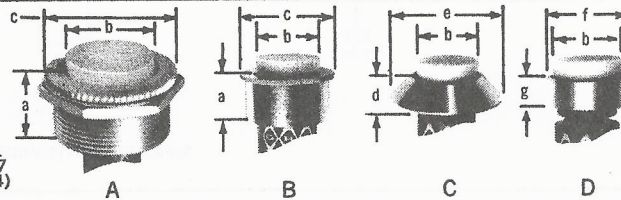
Amps	Maximum Ratings				Poles and Throws	Circuit			Catalog Number		Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	Pushbutton Operating Pressure					
	Volts	Volt Amps Resistive	Volts	Watts Resistive				8 Oz.	17 Grams				
3	250	100	250	100	SPST	NO	A	WI-HA	WI-FA	.08 Min. (2.03)	.04 Max. (1.2)	.125 Max. (3.17)	
3	250	100	250	100	SPST	NC	B	WI-HB	WI-FB				
1	250	15	250	15	SPST	NO	A	WE-HA	WE-FA				
1	250	15	250	15	SPST	NC	B	WE-HB	WE-FB				
.250	200	10	200	10	SPDT	NO-NC	C	WB-HC	WB-FC				

MEASUREMENTS PRINTED IN PARENTHESIS ARE METRIC

MOUNTING COLLARS

MATERIAL: Valox
COLOR: Metallic Grey

a	b	c	d	e	f	g
.75 (19.05)	.937 (23.8)	1.40 (35.6)	.40 (10.2)	1.72 (43.7)	1.06 (26.9)	.37 (9.4)



ORDERING INFORMATION

NOTE: All switch series are supplied with white plunger unless otherwise specified. For other standard colors, add the following suffix:

- 10 Black
- 11 Red
- 12 Green
- 13 Blue

Mounting collars "A" thru "D" include an "E" snap-on pushbutton. Buttons are interchangeable in the field in the following groups.

Series (G, MH, MV, & W) (D, J, R), (T). No special tools are required.

When ordering mounting collars or E buttons separately, specify series switch on which they will be mounted.

Mounting collars include "E" snap-on pushbuttons. Add the following suffix to designate color of button:

- 09 White
- 10 Black
- 11 Red
- 12 Green
- 13 Blue

NOTE: Specify color number when ordering.

MOUNTING COLLARS

For Series G, W, MV, J, R = -A -B -C -D
For Series T = -AT -BT -CT -DT
For Series MH = -AMH -BMH -CMH -DMH

Unless otherwise specified, mounting collars are not fastened to the switches at factory.

SNAP ON PUSHBUTTON

For Series G, W, MV, MH = -E
For Series R, J = -EJR
For Series T = -ET

ORDERING EXAMPLES

GC-HA4-C13 = Series G .5 amp, 8 oz. operating force, 4PST with -C style mounting collar with blue snap-on pushbutton.

GB-HC10 = Series G .250 amp, 8 oz. operating pressure or force, SPDT-Break make, with black actuating plunger.

GB-HC-E10 Same as above except with standard white plunger and black "E" Cap.

RB-HB = Series R .250 amp, 8 oz. operating force, SPST-NC with white actuating plunger. Does not include "E" Cap.

RB-HA11 = Series R .250 amp, 8 oz. operating force SPST-NO with red actuating plunger.

RB-HA-E11 = Series R .250 amp, 8 oz. operating force SPST-NO with white plunger and red "E" button.

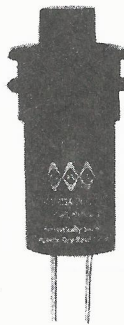


GEORGE RISK INDUSTRIES, INC.

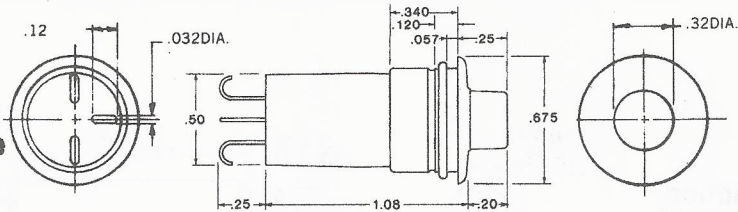
PUSHBUTTON SWITCHES

(DRY REED TYPE)

**SERIES V
Momentary Action**



Panel Mounts with adjustable "O" Ring



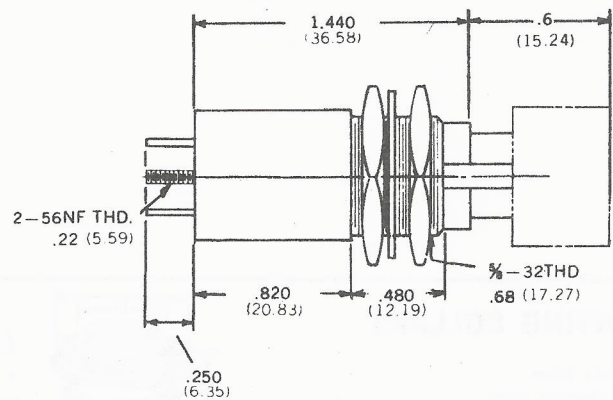
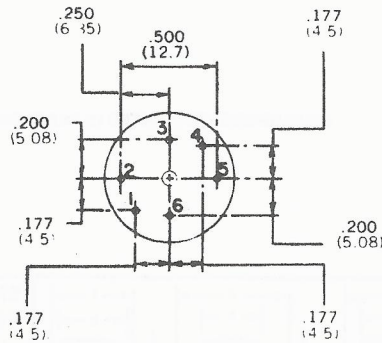
Amps	Maximum Ratings				Poles and Throws	Circuit			Catalog Number	Pre-Travel	Differential Travel	Over-Travel
	A.C.		D.C.			Contacts	Form	8 Oz. Pushbutton Operating Pressure				
	Volts	Volt Amps Resistive	Volts	Watts Resistive								
.5	150	12	150	10	SPST	NO	A	VC-HA	.062 Min.	.031 Max.	.062 Max.	
.250	150	4	150	3	SPST	NC	B	VB-HS				
.250	125	4	28	3	SPDT	NO-NC	C	VB-HC				

SERIES KBPS

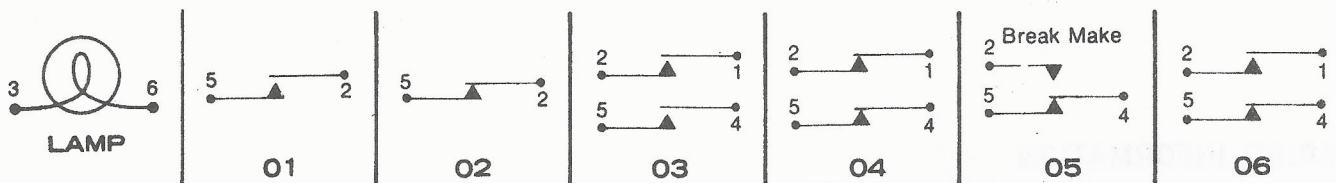


KBPH also available (Hooked Terminals)

**Momentary Action
ILLUMINATED AND NON-ILLUMINATED**



MEASUREMENTS PRINTED IN PARENTHESIS ARE METRIC



TYPICAL ORDERING PATTERN

KBPS or KBPH - XX - X - XX.X - XX - XXXX

Switch Forms	Keycaps	Lamp Voltage	Operating Pressure	Keycap Color
01 SPST-NO	-F	Note: 1	-01 2.5 oz. (71)	09 = White
02 SPST-NC	-G	5.0	-02 5.0 oz. (142)	09A = Off-White
03 DPST-NO	-H	12.0	-03 8.0 oz. (227)	09BL = Ill. White
04 DPST-NC	-B	14.0	-04 15.0 oz. (425)	10 = Black
05 SPDT-BM		28.0		11 = Red/Orange
06 DPST-NO-NC				11A = Fire Engine Red
				11BL = Ill. Fire Engine Red
				11C = Brick Red/Brown
				12 = Dark Green
				12BL = Ill. Green
				13 = Dark Blue
				13A = Med. Blue
				13BL = Ill. Light Blue
				13CL = Ill. Dark Blue
				14 = Dark Grey
				14A = Med. Grey
				14B = Light Grey
				15 = Tan/Gold
				16 = Brown
				17 = Yellow/Gold
				17AL = Ill. Canary Yellow

Pre-Travel062 (1.57) min
Differential Travel062 (1.57) max
Total Travel200 ±.010 (5.08 ±.25)

NOTE:
1. XX.X Designates Lamp Socket With No Bulb 00.0 no bulb no socket
2. Measurements for Keycaps are found on back page

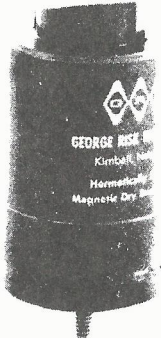
Numbers which include "L" must be used with illuminated switches.



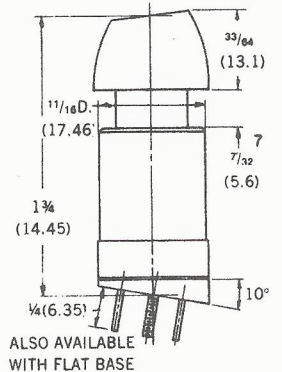
(DRY REED TYPE)

ILLUMINATED AND NON-ILLUMINATED

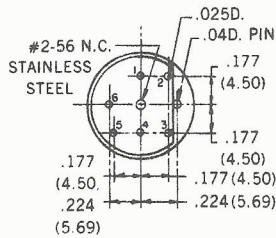
SERIES KB
Momentary



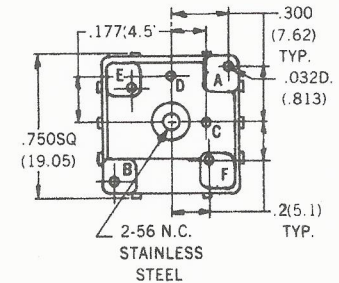
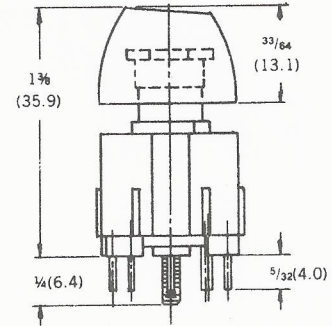
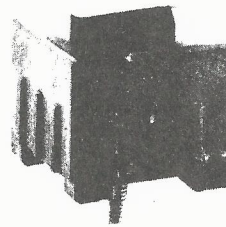
Also available with flat base.



ALSO AVAILABLE WITH FLAT BASE



SERIES KBLP
Momentary



All standard switch forms shown below

FEATURES

- Magnetic dry reed type
- Hermetically sealed contacts
- P.C. board mount
- Dry circuits through .25 amps
- High reliability through millions of operations

ELECTRICAL SPECIFICATIONS

Contact Rating: —3 watts resistive. 4 V.A. non-inductive. .25 A, 125V. max. rating.
Contact Bounce: 500 microseconds max.
Contact Resistance: 200 milliohms max.
Insulation Resistance: 10⁸ Megohms
Operating Temperature: —55 to +150 degrees C.
Life Expectancy: 50 million operations

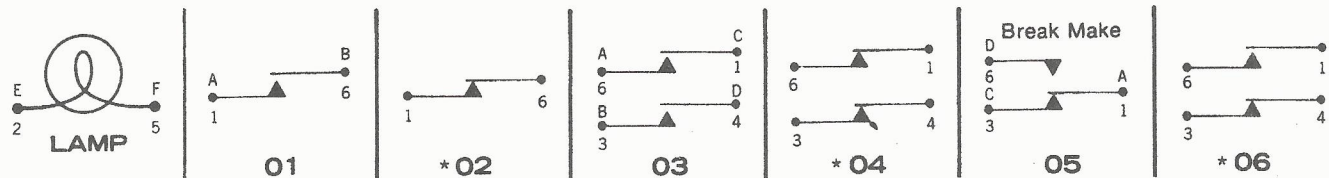
MECHANICAL SPECIFICATIONS

Switch Case: Self extinguishing plastic —ABS
External Switch Terminals: Weldable or solderable

	KB	KBLP
Pre-travel min062 (1.57)	.062 (1.57)
Over travel020 (0.51)	.020 (0.51)
Total travel	3/16 (4.76)	5/32 (3.97)

STANDARD SWITCH FORMS

Numbers for Series KB
Letters for Series KBLP



TYPICAL ORDERING PATTERN

KB or KBLP — XX — XXX — XX.X — XX — XXXX — XX

Form	Keycap	Lamp Voltage Note: 1	Operating Pressure:	Keycap Color	Mounting Type
01	-II	05.0	-01 2.5 oz. (71)	09 = White	SL
*02	-IJ -L	12.0	-02 4.0 oz. (113)	09A = Off-White	FL
*03	-IJT -M**	12.0	-03 6.0 oz. (170)	09BL = Ill. White	
*04	-J -N**	14.0		10 = Black	13A = Med. Blue
*05	-JJ **-NN	28.0		11 = Red/Orange	13BL = Ill. Light Blue
*06	-JT -NNN**			11A = Fire Engine Red	13CL = Ill. Dark Blue
	-JTT -BM			11BL = Ill. Fire Engine Red	14 = Dark Grey
	-F -R			11C = Brk Red/Brown	14A = Med. Grey
	** -GM -KBG*			12 = Dark Green	14B = Light Grey
	** -HM -B			12BL = Ill. Green	15 = Tan/Gold
	-NNN			13 = Dark Blue	16 = Brown
	-BM				17 = Yellow/Gold
	-R				17AL = Ill. Canary Yellow
	-KBG				
	-B				

NOTE:
 1. XX.X Designates Lamp Socket With No Bulb 00.0 no bulb no socket
 2. Measurements for Keycaps are found on following page

*Not available in KBLP Series
 **Not recommended for illumination.

Numbers which include "L" must be used for illuminated switches

Full travel magnetic dry reed keyboard switch



FEATURES

- Life 50 million keystrokes
- Magnetic dry reed type
- Hermetically sealed contacts
- LED Illuminated

SPECIFICATIONS

MECHANICAL

Operating force	Optional
Pretravel	0.080 ±0.005 In.
Total travel	0.187 ±0.020 In.

ELECTRICAL

Current	5 mA
Voltage	12 VDC
Contact resistance	200 mOhm max.
Bounce	500 uSec. max.
Circuit	Optional
Illuminated Current	8.3 mA - 40 mA (color dependent)

ENVIRONMENTAL

Life	50,000,000 cycles
Operating temperature	-35° - +85°C
Storage temperature	-55° - +125°C
Humidity	0 - 95% non condensing

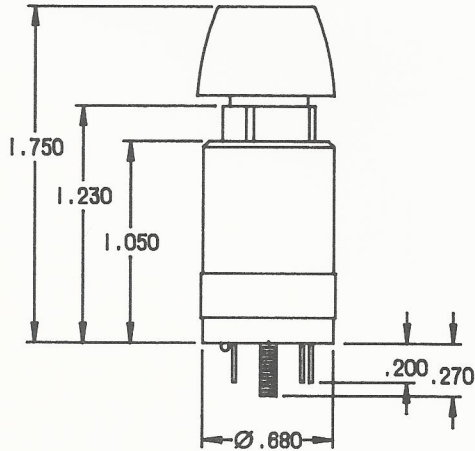


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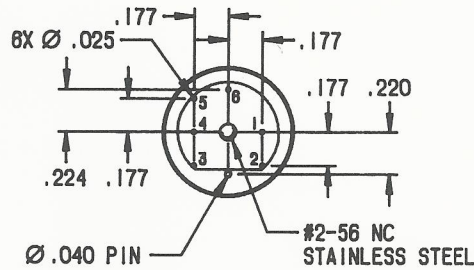
GRI PLAZA • KIMBALL, NEBRASKA 69145-1599
TEL: 800-445-5218 FAX: 308-235-2609
800-523-1227
308-235-4645

KB-LED

DIMENSIONS

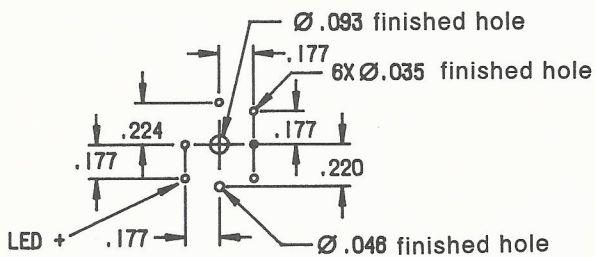


BOTTOM VIEW

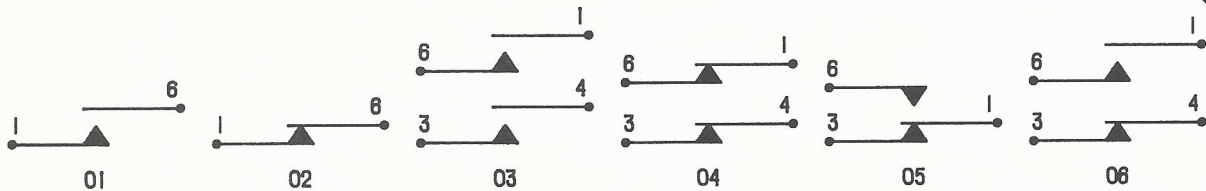
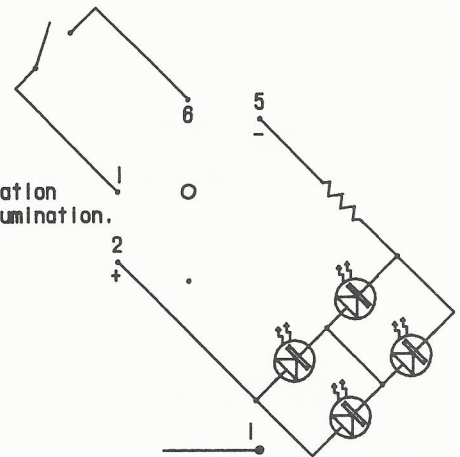


Only used terminals are installed.

P.W.B. LAYOUT AND SCHEMATIC

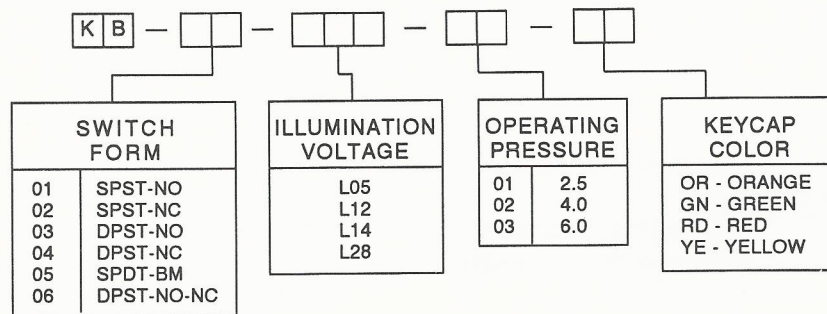


-01 Configuration with LED illumination.



ORDERING INFORMATION

How To Specify



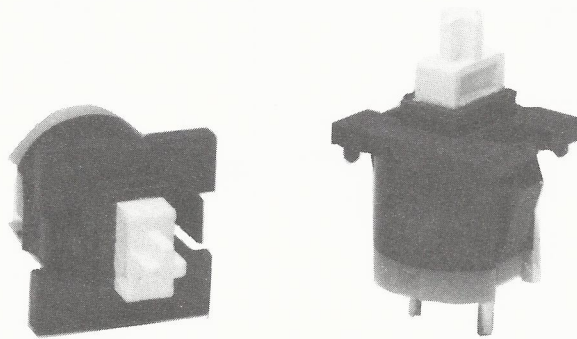
BULLETIN S-21



GEORGE RISK INDUSTRIES, INC.

GRI PLAZA • KIMBALL, NEBRASKA 69145-1599
 TEL: 800-445-5218 FAX: 308-235-2609
 800-523-1227
 308-235-4645

Full travel keyboard switch with gold contacts



FEATURES

- Life 10 million keystrokes
- Gold plated contacts
- Momentary action or alternate action (locking)
- Various style keycaps available

SPECIFICATIONS

MECHANICAL

Operating force	3.5 ±0.8 Oz.
Pretravel	0.03 ±0.01 In.
Total travel	0.12 ±0.01 In.

ELECTRICAL

Current	1 mA
Voltage	24 VDC
Contact resistance	100 mOhm max.
Bounce	5 mSec. max.
Circuit	S.P.S.T. Normally open

ENVIRONMENTAL

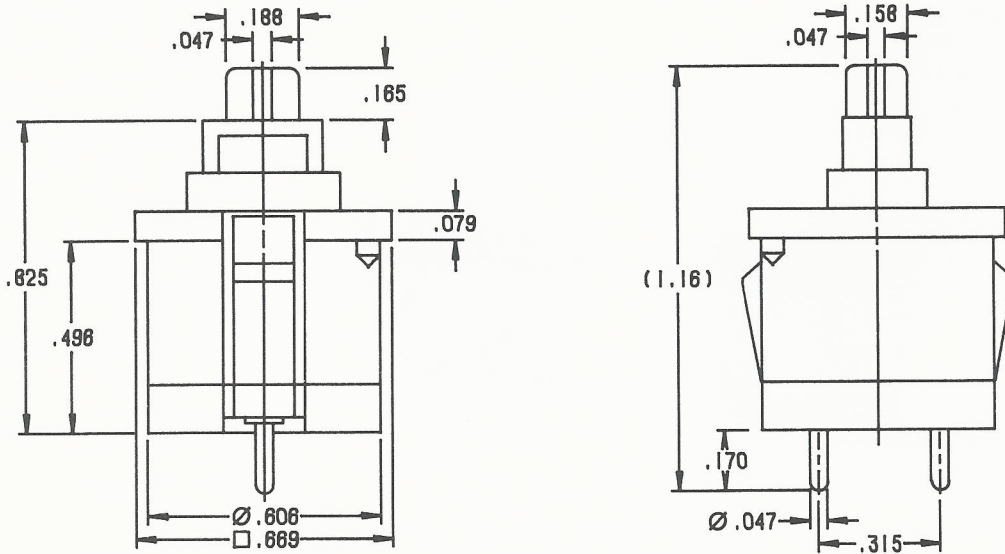
Life	10,000,000 cycles
Operating temperature	-10° - +60°C
Storage temperature	-30° - +80°C
Humidity	0 - 95% non condensing



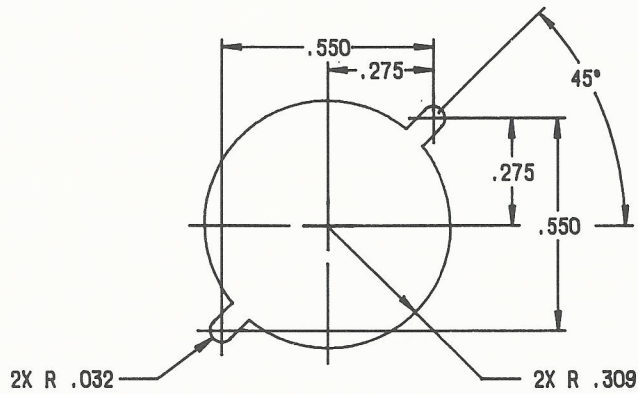
GEORGE RISK INDUSTRIES, INC.

GRI PLAZA • KIMBALL, NEBRASKA 69145-1599
TEL: 800-445-5218 FAX: 308-235-2609
800-523-1227
308-235-4645

DIMENSIONS



MOUNTING PANEL CUTOUT



Recommended panel thickness: .050 IN.

P.W.B. LAYOUT AND SCHEMATIC



ORDERING INFORMATION

Part Number Momentary Action: KBM-01-01
 Alternate Action: KBM-01-01-AA

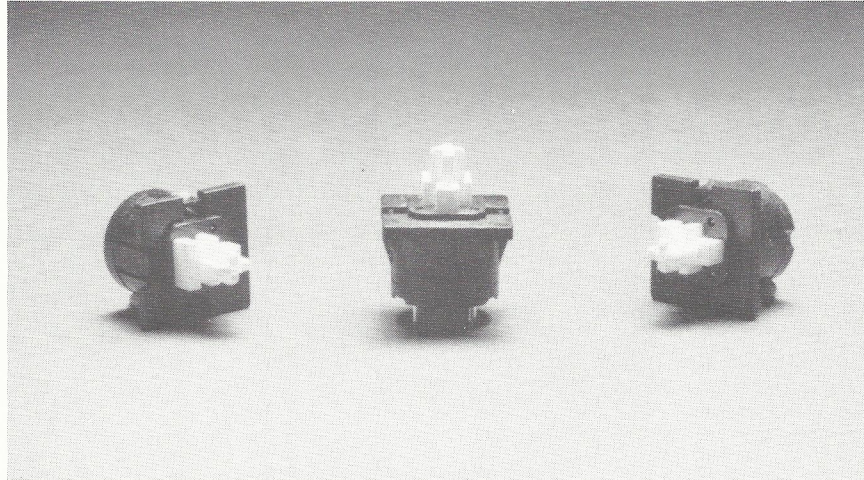
BULLETIN S-16



GEORGE RISK INDUSTRIES, INC.

GRI PLAZA • KIMBALL, NEBRASKA 69145-1599
 TEL: 800-445-5218 FAX: 308-235-2609
 800-523-1227
 308-235-4645

Low profile keyboard switch with mechanical contacts



FEATURES

- Life three million keystrokes
- Low profile
- Self cleaning contacts
- Various style keycaps available

SPECIFICATIONS

MECHANICAL

Operating force	3.5 \pm 0.8 Oz.
Pretravel	0.045 \pm 0.01 In.
Total travel	0.01 \pm 0.02 In.

ELECTRICAL

Current	1 mA
Voltage	24 VDC
Contact resistance	5 Ohm max. (250 mOhm initial)
Bounce	5 mSec. max.
Circuit	S.P.S.T. Normally open

ENVIRONMENTAL

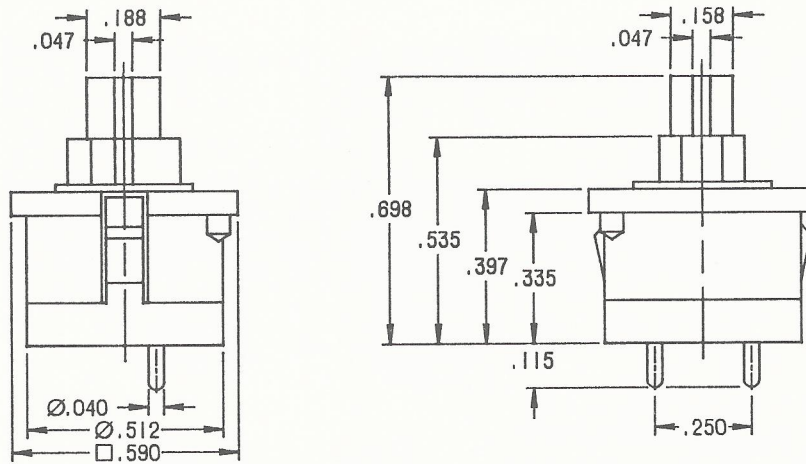
Life	3,000,000 cycles
Operating temperature	-10° to +60° C
Storage temperature	-30° to +80° C
Humidity	0 - 95%RH, non condensing



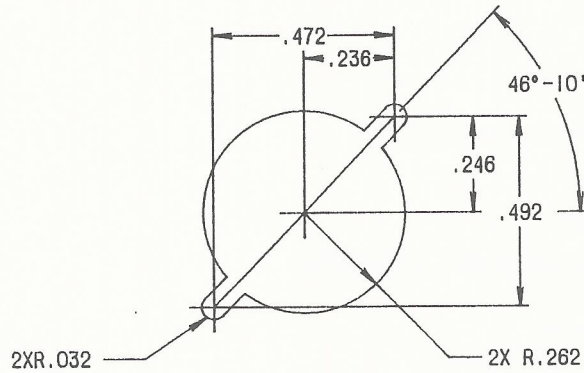
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DIMENSIONS

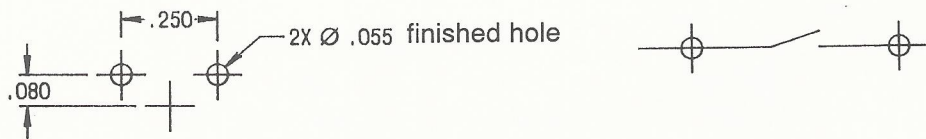


MOUNTING PANEL CUTOUT



Recommended panel thickness: .050 IN.

P.W.B. LAYOUT AND SCHEMATIC



ORDERING INFORMATION

Part Number

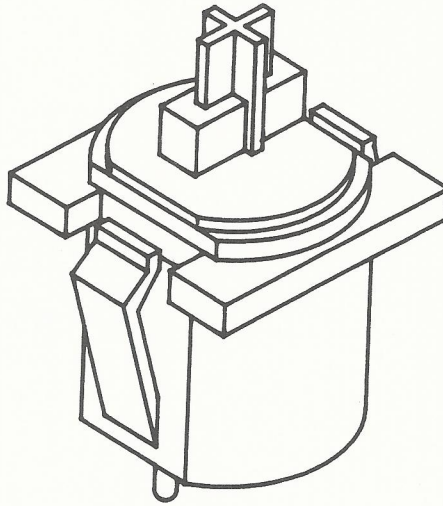
KBM-LP

Bulletin S-20



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FEATURES

- Life 30 million keystrokes
- Momentary action
- Various style keycaps available

SPECIFICATIONS

MECHANICAL

Operating force	3.5 ±0.8 Oz.
Pretravel	0.03 ±0.01 In.
Total travel	0.12 ±0.01 In.

ELECTRICAL

Current	5 mA
Voltage	24 VDC
Contact resistance	150 mOhm max.
Bounce	1 mSec. max.
Circuit	S.P.S.T. Normally open

ENVIRONMENTAL

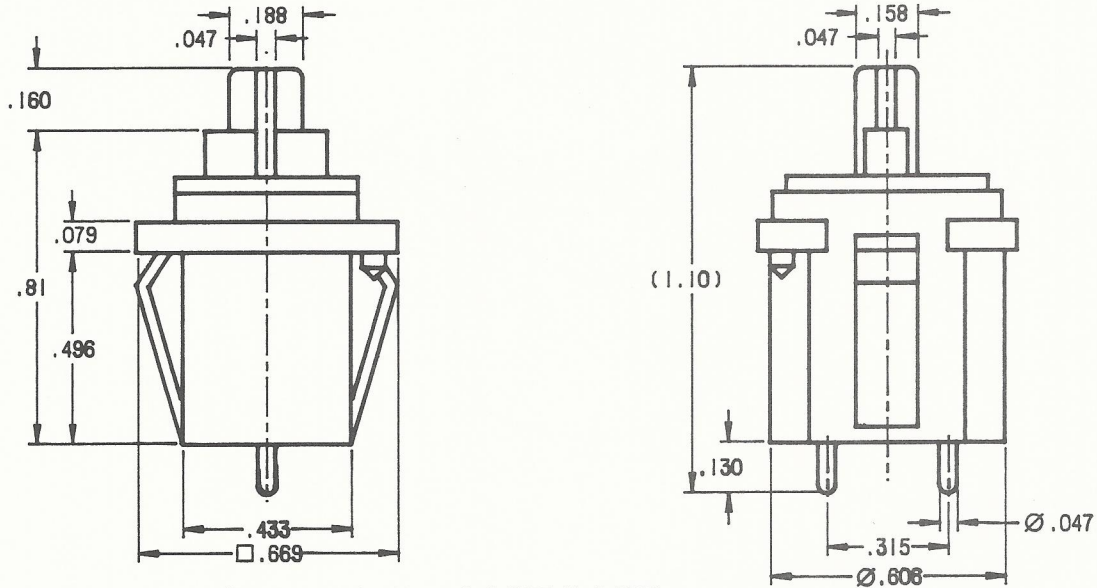
Life	30,000,000 cycles
Operating temperature	-10° - +60°C
Storage temperature	-30° - +80°C
Humidity	0 - 95% non condensing



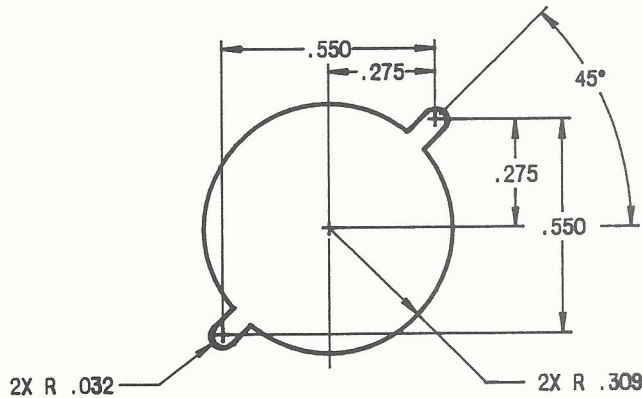
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DIMENSIONS

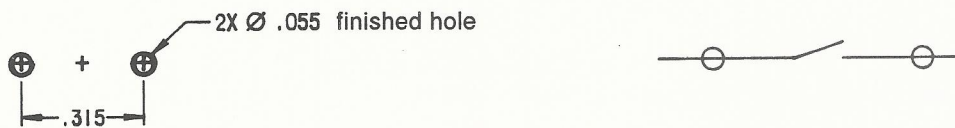


MOUNTING PANEL CUTOUT



Recommended panel thickness: .050 IN.

P.W.B. LAYOUT AND SCHEMATIC



ORDERING INFORMATION

BULLETIN S-22

Part Number KBR-01-01-B



GEORGE RISK INDUSTRIES, INC.

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