

HB Series Single Pole Standard Precision Snap-acting Switches

Features/Benefits

- Low differential travel, high repeatability
- Long life—150,000 cycles typical
- Single and double pole circuitry
- Sealed actuator and case

Typical Applications

- Thermostats
- Motors
- Industrial controls



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Specifications

CONTACT RATING: From low level* to 20 AMPS @ 480 V AC;
see ELECTRICAL RATING option section for complete listings.

ELECTRICAL LIFE: 150,000 cycles at 20 AMPS @ 250 V AC.
consult Customer Service Center for typical life at other ratings.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

OPERATING FORCE: From 4 oz. to 26 oz. max. at actuator
button available.

MOUNTING SCREWS: Torque 3 in/lbs max.
(Note: Exceeding 3 in/lbs torque may change operating
characteristics and increase the possibility of cracking
switch case).

TERMINAL SCREWS: Torque 4 in/lbs max.

PANEL MOUNTING BUSHING: Torque 4-6 in/lbs max.

DEGREE OF PROTECTION: IP65; Dust-proof, water splash and
dew condensation.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @
20 V AC or DC max.

Materials

SWITCH HOUSING: Heat resistant/electrical grade phenolic.

INSERTS: Brass alloy.

ACTUATOR BUTTON: Moisture resistant phenolic.

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.
Fine silver for ratings greater than 1 AMP and motor load
ratings less than 1/2 HP @ 125 V AC. Silver alloy for motor
load ratings 1/2 HP @ 125 V AC or greater.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.
Fine silver welded to copper base for ratings greater than
1 AMP and motor load ratings less than 1/2 HP @ 125 V AC.
Silver alloy on copper base for motor load ratings 1/2 HP @
125 V AC or greater.

TERMINALS: Brass alloy, bright tin plated.

NOTE: Specifications and materials listed above are for switches with standard options.
For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in
catalog, consult Customer Service Center.

Series		Function		Contact Separation		Operating Force		Mounting Style		Circuitry	
HB Precision Snap-acting Switches		S SP		2 .020" 1 .010" 4 .040" 7 .070"		KG 18 oz./510 grams GF 4 oz./113 grams KA 9 oz./255 grams KC 13 oz./368 grams KH 20 oz./567 grams PB 26 oz./737 grams		S Standard		C SPDT	
Electrical Rating		Actuator		Terminations							
B4 20 A, 125, 250, 480 V AC; 0.25 A, 250 V DC; 0.5 A, 125 V DC		P0 Pin plunger		11 Flat base, solder, 4-40 screws							
A2 5 A, 125, 250 V AC		A0 Lever roller		41 Flat base, .250" quick connect							
B6 20 A, 125, 250, 480 V AC; 0.25 A, 250 V DC; 0.5 A, 125 V DC; 3/4 HP, 125 V AC; 1 1/2 HP, 250 V AC		D0 Stub plunger		55 Step base, cup washers, 6-32 screws							
F5 1 A, 125 V AC; 1 A, 30 V DC		F0 Reverse acting lever roller									
F9 22 A, 125, 277 V AC; 15 A, 480 V AC; 1/4 HP, 125 V AC; 1/2 HP, 250 V AC		J0 High overtravel plunger									
		R5 Perpendicular roller plunger									
		T0 Lever									
		TS Sealed Lever									
		Y0 Reverse acting lever									

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Dimensions are shown: mm
Specifications and dimensions subject to change

www.ckswitches.com

HB Series

Single Pole Standard Precision Snap-acting Switches

Sealed Actuator and Case

To provide reliable service under environmental conditions that might damage standard precision switches, various HB Series switch models are sealed against the entrance of airborne contaminants and/or splashing liquids. The clearance between the operating plunger and the cover is sealed with a silicone boot and the base cover joint is sealed with an epoxy adhesive. These models are designed to meet requirements of IP65 (dust proof, water splash and dew condensation). For additional information on sealed switches, consult our Customer Service Center.

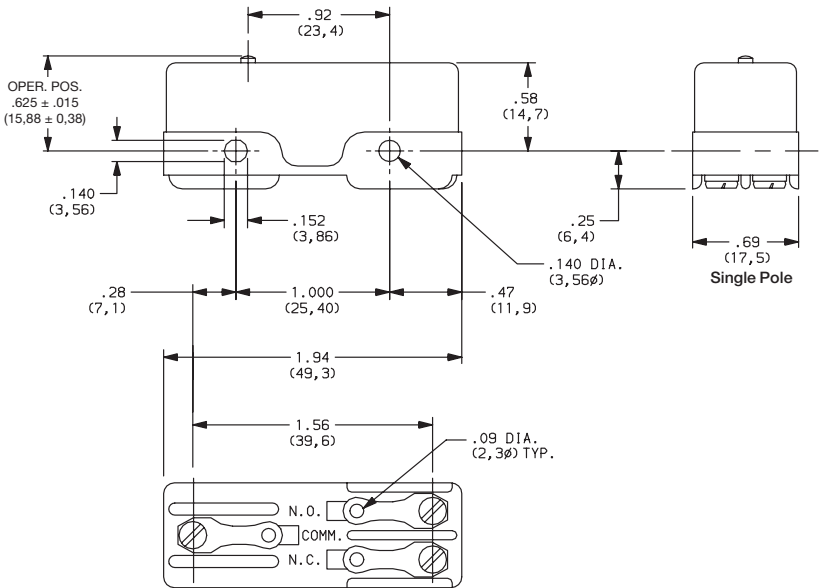
SERIES

HB PRECISION SNAP-ACTING SWITCHES

FUNCTION

S SINGLE POLE SWITCH

Snap-acting



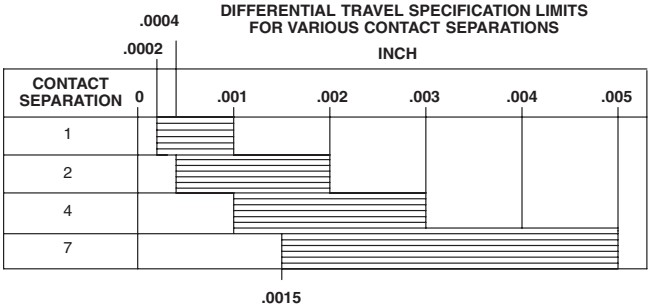
NOTE: To select switching function, see CIRCUITRY section, page J-52.

CONTACT SEPARATION

OPTION CODE	NOMINAL CONTACT SEPARATION (in./mm)
2	.020 (0,51)
1	.010 (0,25)
4	.040 (1,02)
7	.070 (1,78)

Switches with 1 AMP rating (option code 'F5') are available only with .020 contact separation (option '2').

Switches with 1/2 HP, 125 V AC rating or greater (option codes 'B5 and B6') are not available with .010 contact separation (option code '1').



Third Angle Projection

Dimensions are shown: Inch (mm)

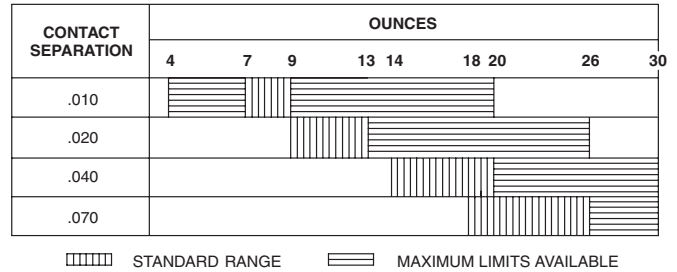
Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

OPERATING FORCE

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	STANDARD CONTACT SEPARATION (inch)
KG	18 510	.020
GF	4 115	.010
KA	9 255	.010
KC	13 370	.020
KH	20 570	.040
PB	26 740	.070

OPERATING FORCE SPECIFICATION LIMITS
FOR VARIOUS CONTACT SEPARATIONS



NOTE: All listed differential travel characteristics are based on standard operating force and contact separation. For any other force or contact separation, consult Customer Service Center.
Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	MOVABLE CONTACT	STATIONARY CONTACT	ELECTRICAL RATING
B4	Fine silver.	Fine silver welded to copper base.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMPS @ 250 V DC; 0.5 AMPS @ 125 V DC (UL).
A2			5 AMPS @ 125 & 250 V AC (UL).
B6	Precious metal alloy.	Precious metal alloy.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 3/4 HP @ 125 V AC; 1 1/2 HP @ 250 V AC (UL).
F5	Gold alloy.	Gold alloy.	Low level* to 1 AMP @ 125 V AC; 1 AMP @ 30 V DC (UL).
F9	Fine silver.	Fine silver welded to copper base.	22 AMPS @ 125 & 277 V AC; 15 AMPS @ 480 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 277 V AC (UL).

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (oz.)					
	4 GF	9 KA	13 KC	18 KG	20 KH	26 PB
A2	•	•	•	•	•	•
B4	x	•	•	•	•	•
B6	x	x	x	•	•	•
F5	x	x	•	•	•	•
F9	x	x	x	•	•	•

• AVAILABLE
x NOT AVAILABLE

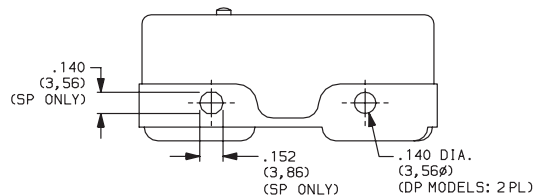
All models with all options
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching,
i.e., 0.4 VA max. @ 20 V AC or DC max.

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MOUNTING STYLE

S Standard



NOTE: Mounting holes will accept pins or screws of .139 dia. (3,53) max. on 1.000 ± .002 (25,4 ± 0,05) centers.

NOTE: Torque mounting screws 3 inlbs max.

ACTUATOR

OPTION CODE	NO. POLES	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
A0	SP	1	.86 (21,8)	1.120 ± .060 (28,45 ± 1,52)	.38 dia. (9,70)	1.03 (26,2)
D0	SP	3	.92 (23,4)	.844 ± .020 (21,44 ± 0,51)	—	—
F0	SP	2	.09 (2,3)	1.120 ± .050 (28,45 ± 1,27)	.38 dia. (9,70)	.74 (18,8)
J0	SP	4	.86 (21,8)	.860 ± .030 (21,84 ± 0,76)	—	—
P0	SP	5	.92 (23,4)	.625 ± .010 (15,88 ± 0,25)	—	—
R5	SP	6	.92 (23,4)	.62 (15,7)	.50 dia. (12,70)	0.61 (15,5)
T0	SP	7	1.310 (33,27)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
TS*	SP	7	1.47 (37,3)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
Y0	SP	8	.05 (1,3)	.720 ± .030 (18,29 ± 0,76)	.74 dia. (18,80)	2.65 (6,73)

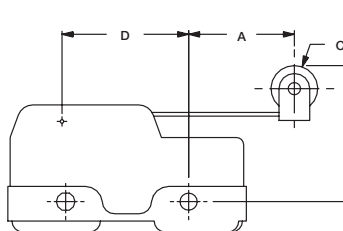


FIG. 1
Lever Roller

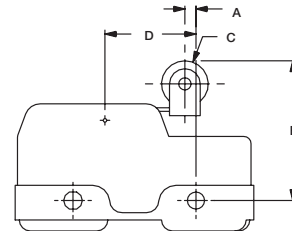


FIG. 2
Lever Roller

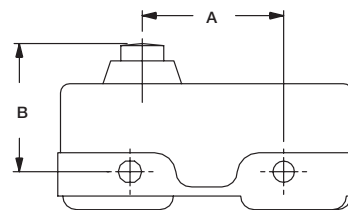


FIG. 3
Stub Plunger

* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

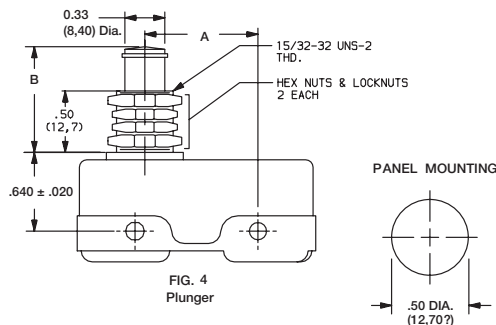


FIG. 4
Plunger

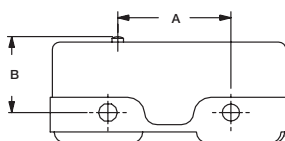


FIG. 5
Pin Plunger

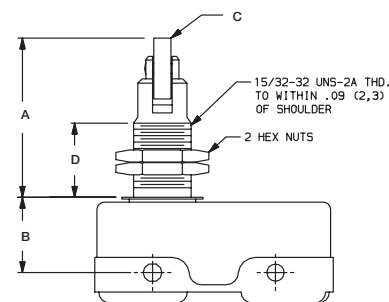


FIG. 6
Perpendicular Roller Plunger

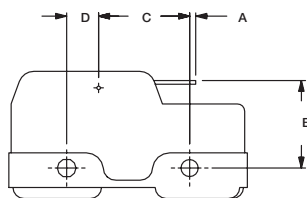


FIG. 8
Reverse Acting Lever

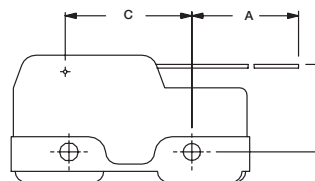
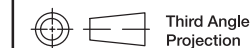


FIG. 7
Lever



Third Angle
Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

ACTUATOR

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM OPERATING FORCE (OZ./GRAMS)	GF	—	—	—	—	4 115	—	—	—	—
	KA	3 85	9.5 269	10 284	10 284	9 255	10 284	2 60	10 284	2 56
	KC	—	13 370	10 284	13 370	13 370	13 370	—	10 284	—
	KG	3.5 100	—	—	—	18 510	—	2.5 71	—	2.5 71
	KH	4 115	20 570	20 570	20 570	20 570	20 570	3 85	20 570	3 85
	PB	4.5 130	26 740	20 570	26 740	26 740	26 740	3.5 100	20 570	3.5 100
MINIMUM RELEASE FORCE (OZ./GRAMS)	GF	—	—	—	—	1 28	—	—	—	—
	KA	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	KC	1.7 48	4 110	3 85	4 110	4 110	4 110	—	3 85	—
	KG	.75 21	—	—	—	4 110	—	.5 14	—	.5 14
	KH	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	PB	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14

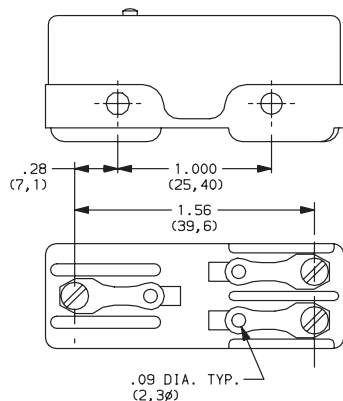
NOTE: For basic switch operating forces, see page J-71. * Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM DIFFERENTIAL TRAVEL (IN/MM)	GF	—	—	—	—	.0005 (0,013)	—	—	—	—
	KA	.020 (0,51)	.0005 (0,013)	.005 (0,13)	—	.0005 (0,013)	—	.047 (1,19)	.005 (0,13)	.047 (1,19)
	KC	—	.002 (0,05)	.008 (0,20)	—	.002 (0,05)	—	—	.009 (0,23)	—
	KG	.062 (1,57)	—	—	—	.003 (0,08)	—	.078 (1,98)	—	.078 (1,98)
	KH	.080 (2,03)	.003 (0,76)	.020 (0,51)	—	.003 (0,08)	—	.093 (2,36)	.020 (0,51)	.093 (2,36)
	PB	.125 (3,18)	.007 (0,18)	.030 (0,76)	—	.005 (0,13)	—	.156 (3,96)	.031 (0,79)	.156 (3,96)
MAXIMUM PRETRAVEL (IN/MM)	GF	—	—	—	—	.020 (0,51)	—	—	—	—
	KA	.312 (7,92)	.020 (0,51)	0.8 (2,0)	.015 (0,38)	.015 (0,38)	.015 (0,38)	.38 (9,7)	.09 (2,3)	.38 (9,7)
	KC	—	.020 (0,51)	0.8 (2,0)	.020 (0,51)	.020 (0,51)	.020 (0,51)	—	.09 (2,3)	—
	KG	.312 (7,92)	—	—	—	.025 (0,64)	—	.38 (9,7)	—	.38 (9,7)
	KH	.38 (9,7)	.025 (0,64)	0.9 (2,3)	.025 (0,64)	.025 (0,64)	.025 (0,64)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
	PB	.38 (9,7)	.030 (0,76)	0.9 (2,3)	.030 (0,76)	.030 (0,76)	.030 (0,76)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
MINIMUM OVERTRAVEL (IN/MM)	GF	—	—	—	—	.005 (0,13)	—	—	—	—
	KA	.156 (3,96)	.055 (1,40)	.06 (1,5)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	.06 (1,5)	.19 (4,8)
	KC	—	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	—	0.9 (2,3)	—
	KG	.156 (3,96)	—	—	—	.005 (0,13)	—	.19 (4,8)	—	.19 (4,8)
	KH	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)
	PB	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)

HB Series Single Pole Standard Precision Snap-acting Switches

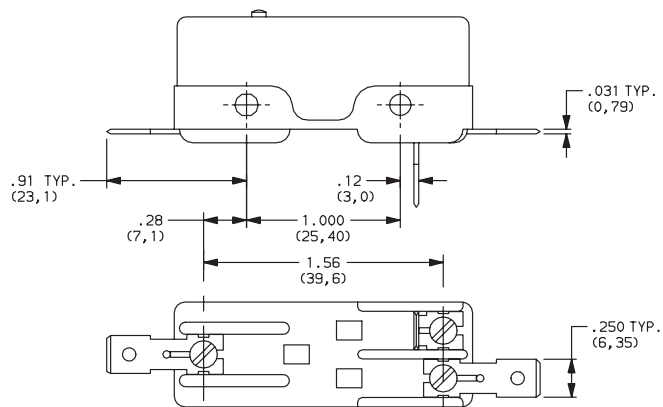
TERMINATIONS

11 FLAT BASE, SOLDER TERMINALS AND 4-40 SCREWS

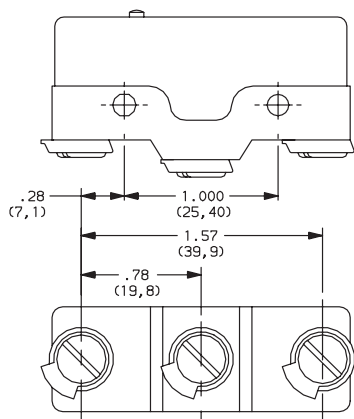


NOTE: Switches with flat base option have molded ribs that provide increased creep distance.

41 FLAT BASE, .250" QUICK CONNECT TERMINALS



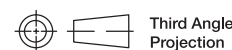
55 STEP BASE, 6-32 SCREWS AND CUP WASHERS



NOTE: Switches with step base option provide wide electrical clearance for screw terminal options.

CIRCUITRY

C DT (Double Throw, Normally Closed & Normally Open)



Third Angle
Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

C&K Switches:

[2HBFX985](#) [2HB374-1](#)