

**SERIES:** ACZ11 | **DESCRIPTION:** MECHANICAL INCREMENTAL ENCODER

## ELECTRICAL SPECIFICATIONS

| parameter               | conditions/description                                      | min | typ | max | units |
|-------------------------|---|-----|-----|-----|-------|
| output waveform         | square wave   |     |     |     |       |
| output signals          | A, B phase  |     |     |     |       |
| current consumption     | 10 mA   |     |     |     |       |
| output phase difference | T1, T2, T3, T4 $\geq$ 3.5 ms @ 60 rpm (see output waveform) |     |     |     |       |
| supply voltage          | 5 V dc max.   |     |     |     |       |
| output resolution       | 12, 15, 20, 30 ppr  |     |     |     |       |
| switch rating           | 12 V dc, 50 mA (ACZ11BRXE models only)                      |     |     |     |       |
| insulation resistance   | 300 V dc, 100 M $\Omega$                                    |     |     |     |       |
| withstand voltage       | 300 V ac  |     |     |     |       |

## MECHANICAL SPECIFICATIONS

| parameter                     | conditions/description                    | min      | typ       | max        | units          |
|-------------------------------|---|----------|-----------|------------|----------------|
| shaft load                    | axial                                     |          |           | 8          | kgf            |
| rotational torque             | with detent click<br>without detent click | 60<br>60 | 140<br>80 | 220<br>100 | gf·cm<br>gf·cm |
| push switch operational force | (ACZ11BRXE models only)                   | 300      |           | 900        | gf·cm          |
| push switch life              | (ACZ11BRXE models only)                   |          |           | 50,000     | cycles         |
| rotational life               |   |          |           | 30,000     | cycles         |

## ENVIRONMENTAL SPECIFICATIONS

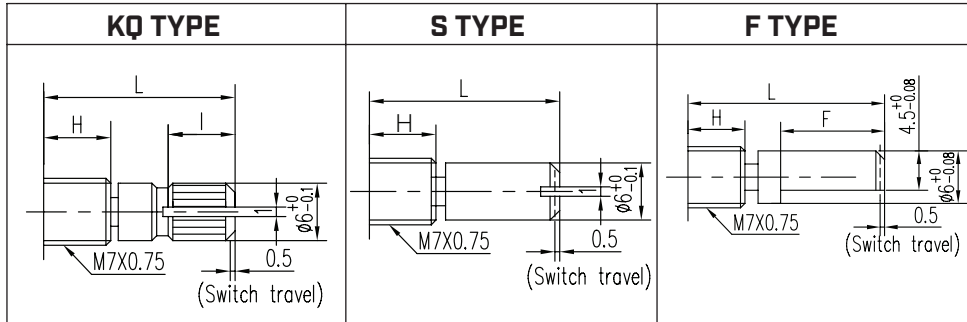
| parameter             | conditions/description          | min | typ | max | units        |
|-----------------------|---------------------------------|-----|-----|-----|--------------|
| operating temperature |                                 | -10 |     | 65  | $^{\circ}$ C |
| storage temperature   |                                 | -40 |     | 75  | $^{\circ}$ C |
| humidity              |                                 | 85  |     |     | % RH         |
| vibration             | 0.75 mm max. travel for 2 hours | 10  |     | 55  | Hz           |

## PART NUMBER KEY



Replacement Hardware:  
M7x0.75 Nut: 071-0068R  
Washer: 071-0069R

## SHAFT OPTIONS (VERSIONS WITH SWITCH)



**H=5**

|   | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15   | 20   | 25   |
| I | 6    | 8.5  | 12   |

**H=5**

|   | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |

**H=5**

|   | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |
| F | 8   | 10  | 12  |

**H=7**

|   | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15   | 20   | 25   |
| I | 5    | 8.5  | 10   |

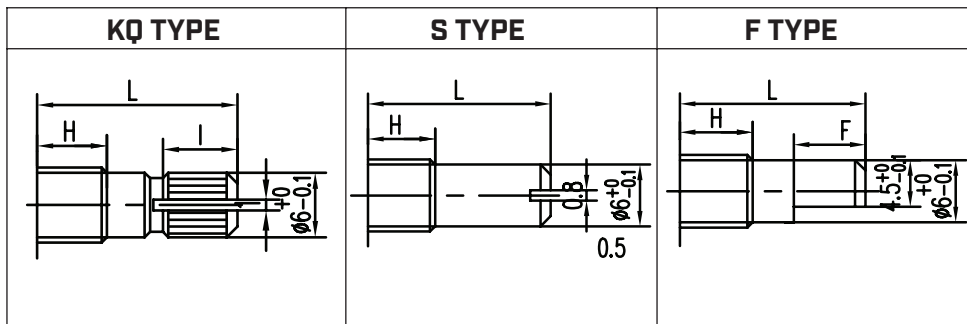
**H=7**

|   | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |

**H=7**

|   | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |
| F | 8   | 10  | 12  |

## SHAFT OPTIONS (VERSIONS WITHOUT SWITCH)



**H=5**

|   | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15   | 20   | 25   |
| I | 7    | 10   | 12   |

**H=5**

|   | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |

**H=5**

|   | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |
| F | 8   | 10  | 12  |

**H=7**

|   | 15KQ | 20KQ | 25KQ |
|---|------|------|------|
| L | 15   | 20   | 25   |
| I | 5    | 10   | 10   |

**H=7**

|   | 15S | 20S | 25S |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |

**H=7**

|   | 15F | 20F | 25F |
|---|-----|-----|-----|
| L | 15  | 20  | 25  |
| F | 8   | 10  | 12  |

## OUTPUT WAVEFORM



CW direction (@ 60 rpm)

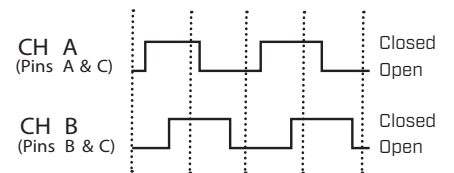
## DETENT POSITIONS

Model 12C & 20C



CW direction →

Model 15P30C



CW direction →

## SLIDING NOISE

$t =$  Masking time to avoid chatter (5mS)  $V_1 = V_2 = 1V$  max.



## SUGGESTED FILTER

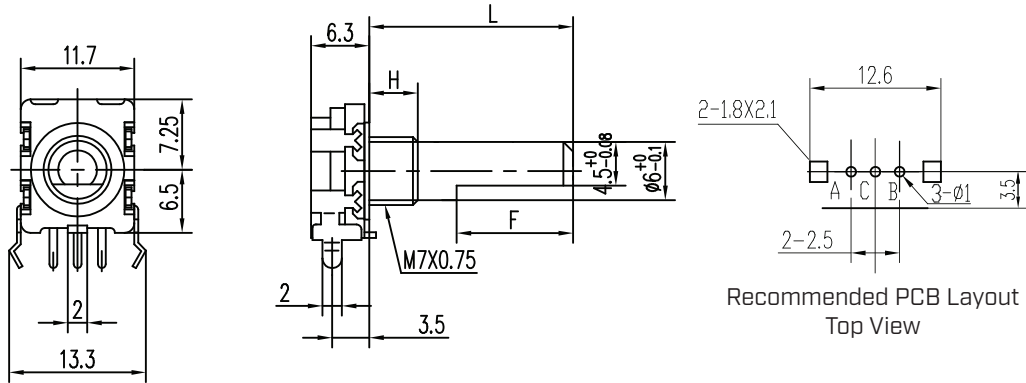


$R1, R2, R3, R4 = 10k\Omega$   
 $C1, C2 = 0.01\mu F$

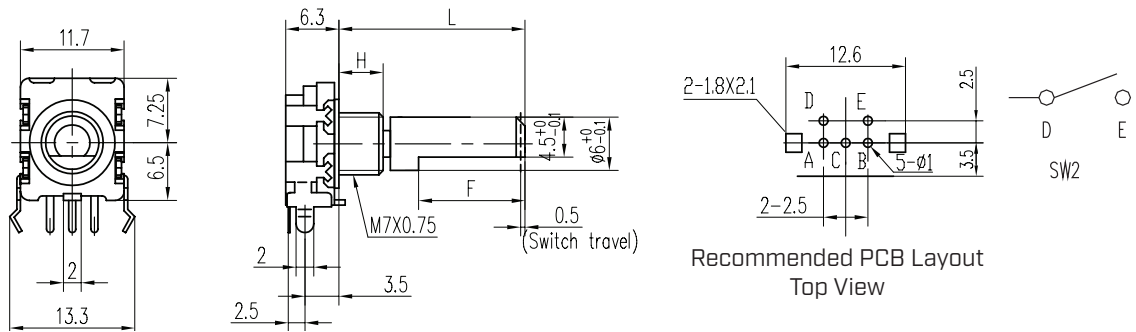
## MECHANICAL DRAWING (HORIZONTAL)

units: mm  
 tolerance:  
 $X \leq 10$ :  $\pm 0.3$  mm  
 $10 < X \leq 30$ :  $\pm 0.5$  mm  
 Unless otherwise noted

### ACZ11NBRXE



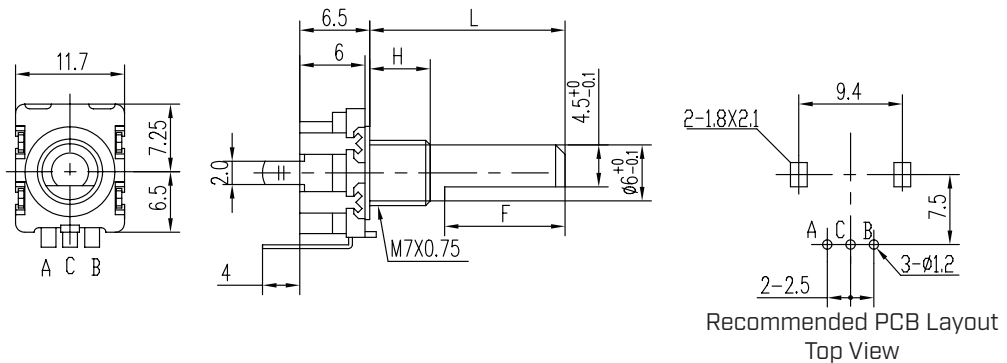
### ACZ11BRXE



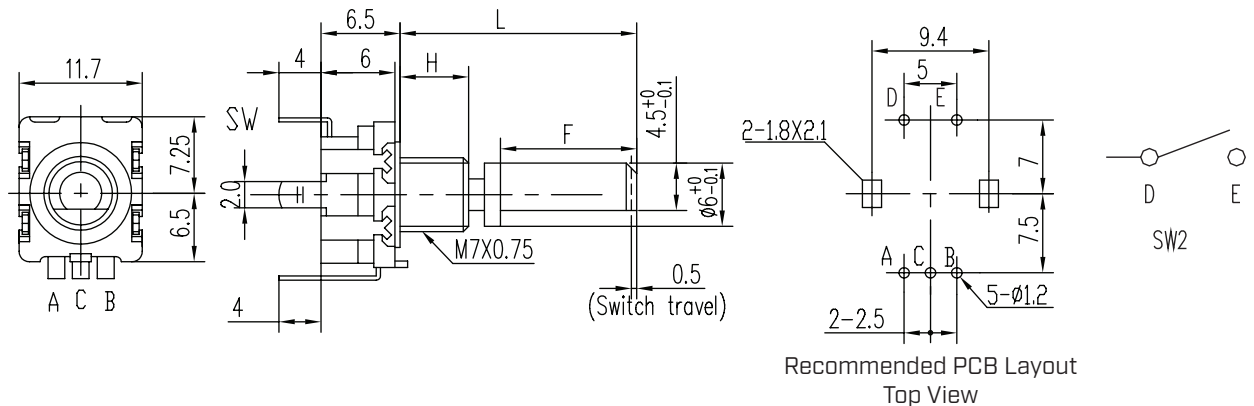
## MECHANICAL DRAWING (VERTICAL)

units: mm  
 tolerance:  
 $X \leq 10$ :  $\pm 0.3$  mm  
 $10 < X \leq 30$ :  $\pm 0.5$  mm  
 Unless otherwise noted

### ACZ11NBRXE



### ACZ11BRXE



## REVISION HISTORY

| rev. | description                                    | date       |
|------|--|------------|
| 1.0  | initial release                                | 10/30/2009 |
| 1.01 | brand update                                   | 10/04/2019 |
| 1.02 | updated datasheet                              | 06/15/2020 |
| 1.03 | updated drawings; logo, datasheet style update | 09/08/2022 |

The revision history provided is for informational purposes only and is believed to be accurate.



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