

MU-MA Rotary Wafer Switch



General Specifications:

These versatile miniature switches have 25.4mm diameter moulded wafers and are available in 2 versions, 36° indexing - having 18 clip positions and 30° indexing - having 22 such positions. 15°, 45° and 60° indexing are variations of the latter. Optional features include concentric shafts, panel and spindle seals, printed circuit terminations and momentary contact models.

- **Maximum Working Voltage:** 300 Vdc / ac (rms)
- **Contact Rating - Current Carrying:** 2 amp continuous
- **Current Breaking with a Resistive / Non-reactive load:** 150mA at 250 Vac (rms)
- **Proof Voltage:** 1000 Vrms at sea level
- **Insulation Resistance:** Not less than 500 megohms at 500 Vdc (between any 2 parts requiring electrical insulation)
- **Contact Resistance (initial):** 10 milliohms maximum at 100 mV (rms). 100mA max
- **Mechanical End Stop Strength:** 0.8 ± 0.1Nm (114oz Ins)

Maximum Switching Per Wafer

No of Poles	36° MU-MA	30° MU-MA	45° MU-MA	60° MU-MA	15° MU-MG
1 Pole	2 to 10 ways	2 to 12 ways	2 to 8 ways (fixed stop at positions 3, 5 & 7 ways)	2 to 6 ways	2 wafers (providing 1 pole 24 way switching)
2 Pole	2 to 5 ways	2 to 7 ways		2 to 6 ways	
3 Pole	2 to 4 ways	2 to 5 ways		2 or 3 ways	
4 Pole	2 or 3 ways	2 to 4 ways		2 or 3 ways	
5 Pole	-	2 to 3 ways		2 ways only	
6 Pole	-	2 ways only		On-off	
7 Pole	-	2 ways only		-	

Index Mechanism:

The type 'MU' mechanism provides indexing angles of 30°, 36°, 45° and 60°. The low friction moulded cam followers in the assembly ensures a smooth indexing action. Balance pressure springs provide consistent and readily reproducible total switch torque values within the following ranges:

<u>Light</u>	7 to 18 x 10 ⁻² Nm (10 to 26 oz Ins)
<u>Medium</u>	14 to 32 x 10 ⁻² Nm (20 to 46 oz Ins)
<u>High</u>	28 to 56 x 10 ⁻² Nm (40 to 80 oz Ins)

Type 'A' indexing mechanism may also be used as an alternative where a simpler, space saving mechanism is required. The switch then becomes model A-MA, 30° indexing only.

Contacts:

Standard - Silver plated brass
 Alternatives - Hard gold plated or silver contacts are available at extra cost as are contacts with gold flash

Terminations:

Forward, standard: Straight, alternative

Rotor Blades:

Standard - Shorting (make before break MBB)
 Alternative - Non-shorting (break before make BBM)

Insulation:

Stator - Moulded glass fibre loaded Diallyl Phthalate (DAP)
 Rotor - Polycarbonate

Finish:

Index springs stainless steel, other metal parts passivated zinc plated. Finishes to order.

Mounting Details:

<u>Imperial (standard)</u>	<u>Metric (alternative)</u>
Bush 3/8" x 32 TPI (Whit)	M10 x 0.75
Shaft 0.25" dia	6 mm dia
Nut 0.525" A/F	14 mm A/F

The alternative is optional in each case. Unless otherwise specified, each switch is supplied with a lock washer.

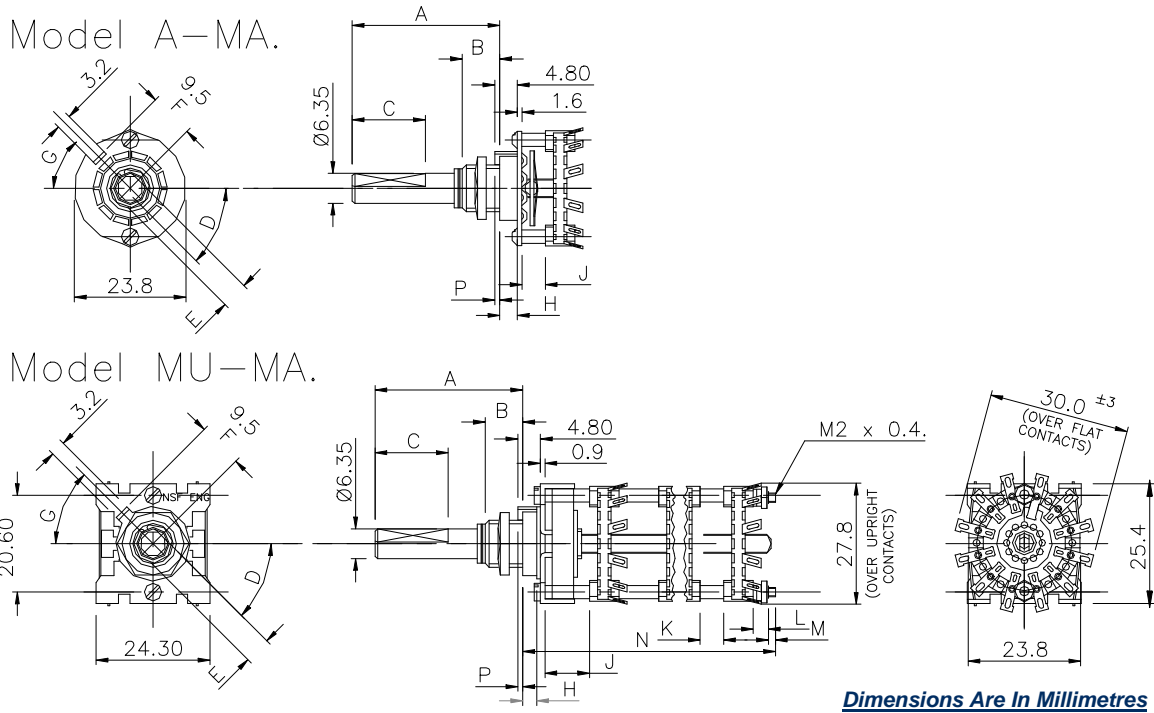
Caution: Our range of rotary wafer switches use polycarbonate rotors, the rotor blade/moving contact is secured to the rotor using a staking process to deform moulded locating pips. Please be aware that the use of some solvents and excessive heat as may be present from a heat gun could cause the following issues and should be avoided. In the case of solvent abuse the retaining pips may become brittle and break off resulting in the blades becoming detached and similarly the application of heat >140°C can cause the deformed moulding to reassert itself again causing failure of the blade retention.

Please Note: In line with continued development we reserve the right to amend specification without prior notice (Rev1 08/14)

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Dimensions Are In Millimetres

Key To Details

- A Shaft Length:** Optional ± 0.40 (0.016") / (25mm if not specified)
- B Bushing Thread Length:** Preferred standard 9.5 (0.375"), 6.35 (0.250") available as an alternative
Special lengths if necessary
- C Flat Length:** Length to specification; tolerance ± 0.40 (0.016")
Special shaft terminations may be provided to special requirements
- D Angle of Flat:** To specification $\pm 2^\circ$; specify position of flat, with switch shaft in **fully anti-clockwise**
position when viewed from front or knob end
- E Flat Thickness:** Standard 5.55 ± 0.15 for grub screws
 4.95 ± 0.05 for push-on knobs
- F Distance of Locating Lug From Shaft:** Measured centre line to centre line; 9.5mm standard
- G Angle of Locating Lug:** Type 'MU' mechanism; 45° , 135° , 225° and 315° from horizontal centre line
The alternative 'A' type mechanism also includes 0° and 180° as viewed
- H Bushing Shoulder:** Standard 3.2 (0.125")
- J Front Spacer:** Minimum dimension; MU-MA 9.5 (0.375"), A-MA 5
- K Other Spacers:** Minimum dimensions;
With clips facing same direction NIL
With clips facing away or flat clips NIL
With clips facing each other 3
- L Spacer Length:** If no spacer 2.4; any length spacer required may be inserted at this point
- M Thread Extension:** Typically 3 x M2 x 0.4; any length required
- P Standard Locating Lug Lengths:** Unsealed, projects 1.6 beyond mounting face; sealed 0.05/0.15 below mounting face.

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Variations:

- Biased indexing is available giving momentary contact on positions 8 to 7, 5 to 4, 4 to 3, 3 to 2 and 2 to 1 as well as 3 position biased to centre.
- Concentric shafts - dual concentric shafts and mechanisms for dual switching applications (not available for 36° indexing).
- Insulated shafts
- Electrostatic shields
- Printed circuit terminations: 2 types are available giving a variation in mounting height of the wafer above the PC board.
- Adjustable stops: 2 types are available:
 - Front - can be set without dismantling the switch and are available on models MU-MA (a), (d) and A-MA with imperial bush.
 - Rear - for use with all other indexing variations both Imperial and Metric versions.
- Panel and spindle seals can be fitted 1cm³/hr. The latter are not available on concentric shaft models.

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