

General Information These switches have 32mm diameter moulded wafers with 22 contact positions providing up to 12 switching positions. The stators are moulded from glass fibre loaded diallylphthalate. Optional features include concentric shafts, panel and spindle seals and rigid terminations for printed circuit connections.

Characteristics.

Electrical, Maximum working voltage 300Vac/dc.
 Contact rating:
 Current carrying 5amp continuous.
 Current breaking with a resistive/non-reactive load.
 60mA at 250Vdc.
 150mA at 250Vac (rms).
 500mA at 30Vac/dc (rms).
 Proof Voltage. 1000Vrms at sea level.
 Insulation resistance. Not less than 2 Gohms.
 (between any 2 parts requiring electrical insulation)
 Contact resistance (initial). 10 milliohms maximum.

100mA. max.	No. of Poles.	30° MU-MK	
	1 Pole.	2 to 12 ways	5 Pole.
2 Pole.	2 to 9 ways	6 Pole.	2 ways
3 Pole.	2 to 5 ways	7 Pole.	2 ways
4 Pole.	2 to 4 ways		

Index Mechanism The preferred mechanism used with the MK wafers is the Type MU providing indexing angles of 30°, 45° and 60°, (see Bulletin RW36 for full technical details). Torque ranges available are:-
 Light 7 to 14 x 10⁻² Nm (10 to 20 oz, ins.)
 Medium 14 to 28 x 10⁻² Nm (20 to 40 oz, ins.)
 High 28 to 35 x 10⁻² Nm (40 to 50 oz, ins.)
 Alternative Mechanisms Available

Contacts & Termination's.

Standard. - Silver plated brass.
 Alternatives. - Hard gold plated or silver alloy contacts are available at extra cost as are contacts with gold flash.
 Termination's. - 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 diallylphthalate (DAP)
 Rotor. - Polycarbonate.

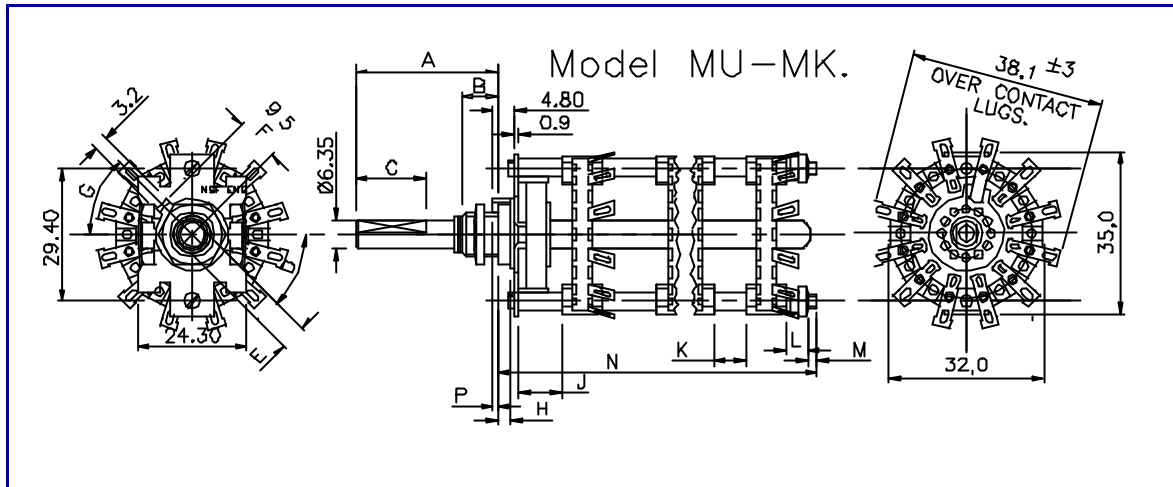
Finish. Index Springs, Stainless steel: other metal parts, passivated zinc plated. Finishes to order.

Mounting Details.

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

The alternative is optional in each case.
 Unless otherwise specified, each switch is supplied with an internal tooth steel lock washer.

Alternative Shafts. Concentric shafts - dual concentric shafts and mechanisms for dual switching applications, also



Dimensions Are In Millimetres

Key To Details

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|----|---|----|--|
| A. | Shaft length: optional ± 0.40 | H. | Bushing shoulder; standard 3,2 |
| B. | Bushing thread length: preferred standard 9.5; 6.35 available as an alternative. Special lengths if necessary | J. | Front spacer, minimum dimension:
MU-MA 9,5
A-MA 5.0. |
| C. | Flat length: length to specification. Tolerance ± 0.40 (0.016"). Special shaft terminations may be provided to special requirements. | K. | Other spacers: minimum dimensions.
Clips facing same direction NIL.
Clips facing away or flat clips NIL.
Clips facing each other 3.0 |
| 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. | L. | If no spacer 2,5. Any length spacer desired may be inserted at this point. |
| E. | Flat thickness: standard 5.55 ± 0.15 for grub screws; 4.95 ± 0.05 for push-on knobs. | M. | Thread extension: 3.0 (min) x M2 x 0,4 any length desired. |
| F. | Distance of locating lug from shaft, centre line to centre line. | P. | Standard locating lug lengths:
MU-MA, unsealed, projects 1.6 beyond mounting face
sealed, 0,05/0,15 below mounting face;
A-MA, projects 4,8 (0.187" beyond mounting face. |
| G. | Angle of locating lug: type MU mechanism; $45^\circ, 135^\circ, 225^\circ$ and 315° from horizontal centre line; type A mechanism also includes 0° and 180° as viewed. | | |

General Information These versatile miniature switches have 25.4 mm 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 termination's and momentary contact models.

Characteristics.

Electrical, Maximum working voltage,	300Vdc/ac (rms).
Contact rating, Current carrying	2amp continuous.
Current breaking with a resistive/non-reactive load.	150mA at 250Vac (rms)..
Proof Voltage.	1000Vrms at sea level.
Insulation resistance.	Not less than 500 megohms at 500Vdc. (between any 2 parts requiring electrical insulation)
Contact resistance (initial).	10 milliohms maximum at 100mV (rms). 100mA.max.
Mechanical.	
End stop strength.	0,8 ± 0,1 Nm (114oz.in.)
	Temperature range. -40°C. to +100°C.

Maximum Switching Per Wafer

No. of Poles.	36° MU-MA (b)	30° MU-MA (a)	45° MU-MA (c)	60° MU-MA (d)	15° MU-MG
	10 Positions.	12 Positions.			2 wafers
1 Pole.	2 to 10 ways	2 to 12 ways	2 to 8 ways	2 to 6 ways	providing 1 pole
2 Pole.	2 to 5 ways	2 to 7 ways	(fixed stop at	2 to 6 ways	24 way
3 Pole.	2 to 4 ways	2 to 5 ways	positions 3, 5,	2 or 3 ways	switching.
4 Pole.	2 or 3 ways	2 to 4 ways	and 7 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°, (see Bulletin RW36 for full technical details).

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.

Light	7 to 18 x 10 ⁻² Nm (10 to 26 oz, ins,)	Medium	14 to 32 x 10 ⁻² Nm (20 to 46 oz, ins,)
High	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 & Termination's.

Standard. Silver plated brass.
 Alternatives. - Hard gold plated or silver contacts are available at extra cost as are contacts with gold flash.
 Termination's. - 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 diallylphthalate (DAP)
 Rotor. - Polycarbonate.

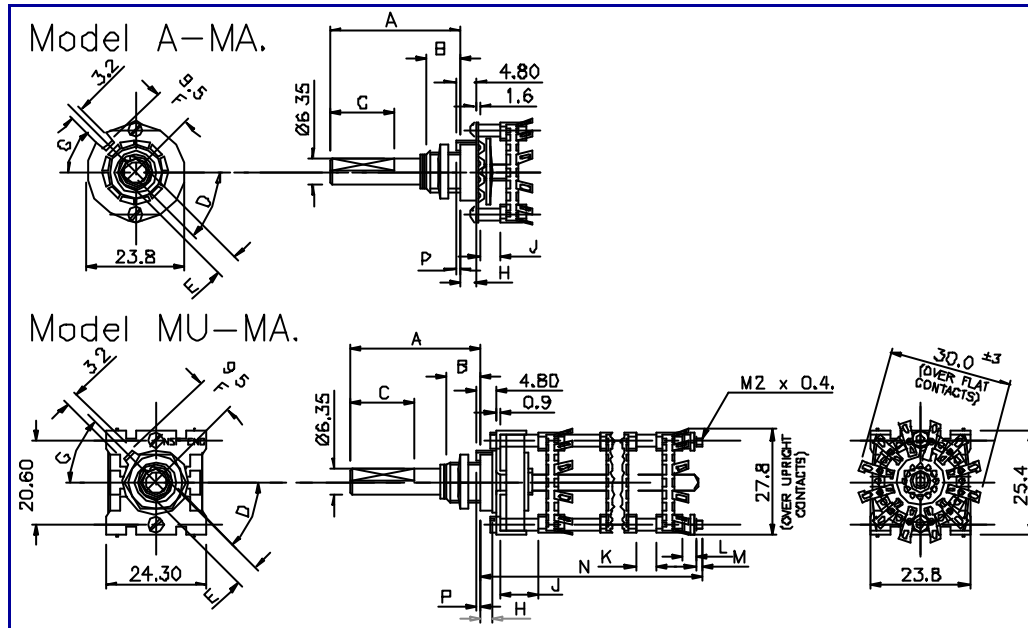
Finish.

Index Springs, Stainless steel: other metal parts, passivated zinc plated. Finishes to order.

Mounting Details.

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

- Variations.
1. 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.
 2. Concentric shafts - dual concentric shafts and mechanisms for dual switching applications. (Not available for 36° indexing).
 3. Insulated shafts.
 4. Electrostatic shields.
 5. Printed circuit termination's - 2 types are available giving a variation in mounting height of the wafer above the P.C.board.
 6. 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.



Dimensions Are In Millimetres

Key To Details

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|--|--|
| A. Shaft length: optional ± 0.40 (0.016") | H. Bushing shoulder; standard 3,2 (0.125") |
| B. Bushing thread length: preferred standard 9.5 (0.375"); 6.35 (0.250") available as an alternative. Special lengths if necessary | J. Front spacer, minimum dimension: MU-MA 9,5 (0.375"), A-MA 5 |
| C. Flat length: length to specification. Tolerance ± 0.40 (0.016"). Special shaft termination's may be provided to special requirements. | K. Other spacers: minimum dimensions.
Clips facing same direction NIL.
Clips facing away or flat clips NIL.
Clips facing each other 3 |
| 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. | L. If no spacer 2,4 . Any length spacer desired may be inserted at this point. |
| E. Flat thickness: standard 5.55 ± 0.15 for grub screws; 4.95 ± 0.05 for push-on knobs. | M. Thread extension: typically 3 x M2 x 0,4 any length desired. |
| F. Distance of locating lug from shaft, centre line to centre line. | P. Standard locating lug lengths:
unsealed, projects 1.6 beyond mounting face;
sealed, 0,05 / 0,15 below mounting face; |
| G. Angle of locating lug: type MU mechanism; $45^\circ, 135^\circ, 225^\circ$ and 315° from horizontal centre line; the alternative "A" type mechanism also includes 0° and 180° as viewed. | |