Engineering Bulletin No RW25
Rotary Wafer Switches - Model MU-MA

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.

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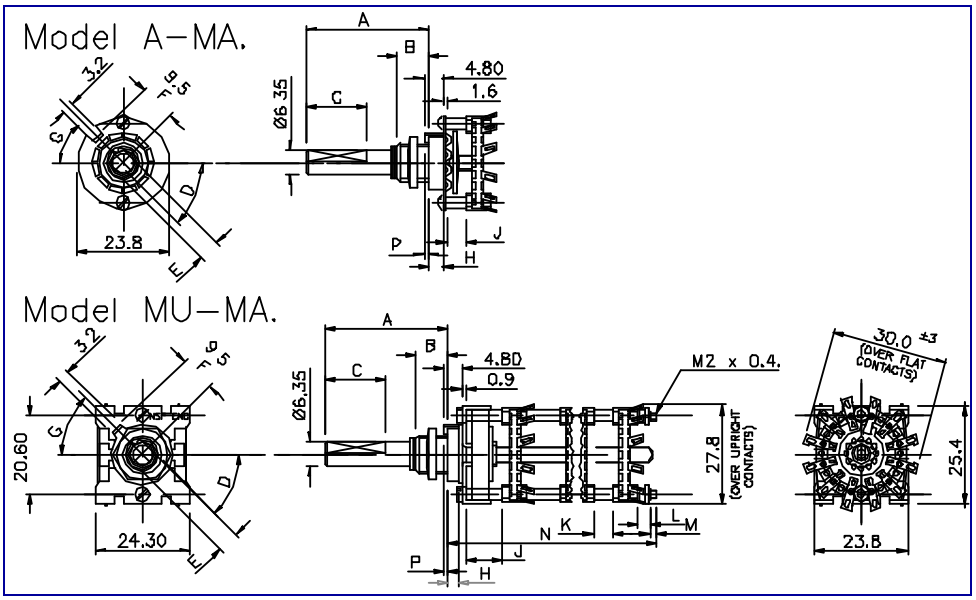
Variations.

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

A. Shaft length: optional ± 0.40 (0.016")

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 termination's may be provided to special requirements.

D. Angle of flat: to specification ± 2°; 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, centre line to centre line.

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.
   Clips facing same direction NIL.
   Clips facing away or flat clips NIL.
   Clips facing each other 3

L. If no spacer 2,4 . Any length spacer desired may be inserted at this point.

M. Thread extension: typically 3 x M2 x 0,4 any length desired.

P. Standard locating lug lengths:
   unsealed, projects 1.6 beyond mounting face;
   sealed, 0,05 / 0,15 below mounting face;

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Engineering Bulletin No RW44
Rotary Wafer Switch - Slimline Indexing Mechanism

General Information

These slim indexing mechanisms provide a reduced dimension behind the panel compared with the standard mechanisms.

Features,

Lower noise from the indexing with energy absorbing moulded components.
Exceptional electrical insulation.
Low capacitance.
Quiet operation with low friction factor.
Hygienic and corrosion resistance.
High strength moulded bush.
No additional lubrication from enclosed indexing mechanism.

New feature,

A recent improvement to the action on the 30° mechanism has improved the **positive action** or feel of the switch providing a more precise indexing which is almost impossible to tease indexed positions. To order this option please specify positive action version.

Specification.

Materials :-
Shaft and index wheel, Adjustable stop plate and Index housing :- Glass Filled Nylon.
Plunger :- Polyacetal.
Index springs :- Spring Music Wire
Torque :- Standard, 13 oz.ins.
Life :- 20,000 cycles.
Stops :- One fixed stop in the housing with a rear adjustable stop plate.
Struts :- Standard 2mm. dia. maximum length 54mm.
Shaft :- Round, standard :- flats, to order.
Maximum number of wafers per switch :- 3 (depending on total number of poles perswitch).
Maximum number of poles per switch :- 8
Special switching requirements will be considered on request.
Sealing :- Not available.

Maximum Switching.

No. of Poles.	30° Index.MA	30° Index.PCA	30° Index. A	36° Index.MA
	12 Positions.	12 Positions.	12 Positions.	10 Positions.
1 Pole.	2 to 12 ways	2 to 12 ways	2 to 12 ways	2 to 10 ways
2 Pole.	2 to 7 ways	2 to 6 ways	2 to 6 ways	2 to 5 ways
3 Pole.	2 to 5 ways	2 to 3 ways	2 to 5 ways	2 to 4 ways
4 Pole.	2 to 4 ways	2 ways only	2 to 4 ways	2 or 3 ways
5 Pole.	2 to 3 ways	-	2 ways only	-
6 Pole.	2 ways only	-	2 ways only	-
7 Pole.	2 ways only	-	-	-

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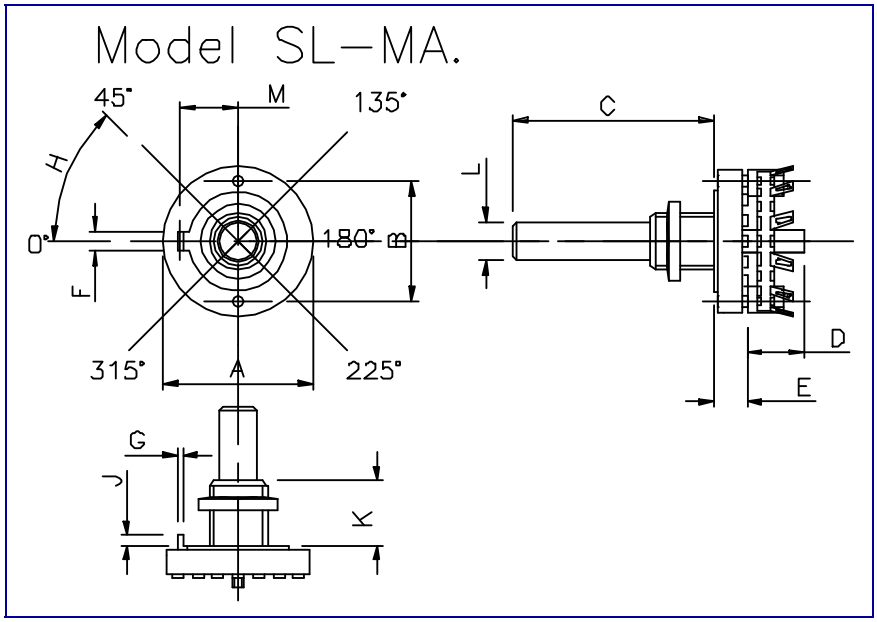

Dimensions Are In Millimetres

Key To Details

A. Diameter of mechanism ;- 25,4mm

B. Strut centres ;- 20,6mm

C. Front shaft ;- 48,6mm maximum

D. Rear shaft ;-28,9mm

E. Mounting face to first wafer ;-
MA model 6,3mm
PCA model and A models 9,5mm

F. Locating lug width ;- 3,2mm

G. Location lug thickness ;- 1,5mm

H. Angle of locating lug :- standard, 0 and 180 degrees ;
to order, 45°, 135°, 225° and 315°

J. Locating lug depth ; 2,4mm.
Protrudes 1,7mm from mounting face.

K. Bushing thread length ; 10mm thread M10 x 0,75.

L. Shaft diameter ; 6mm

M. Distance of locating lug from centre line through
shaft ; 9,5mm.

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