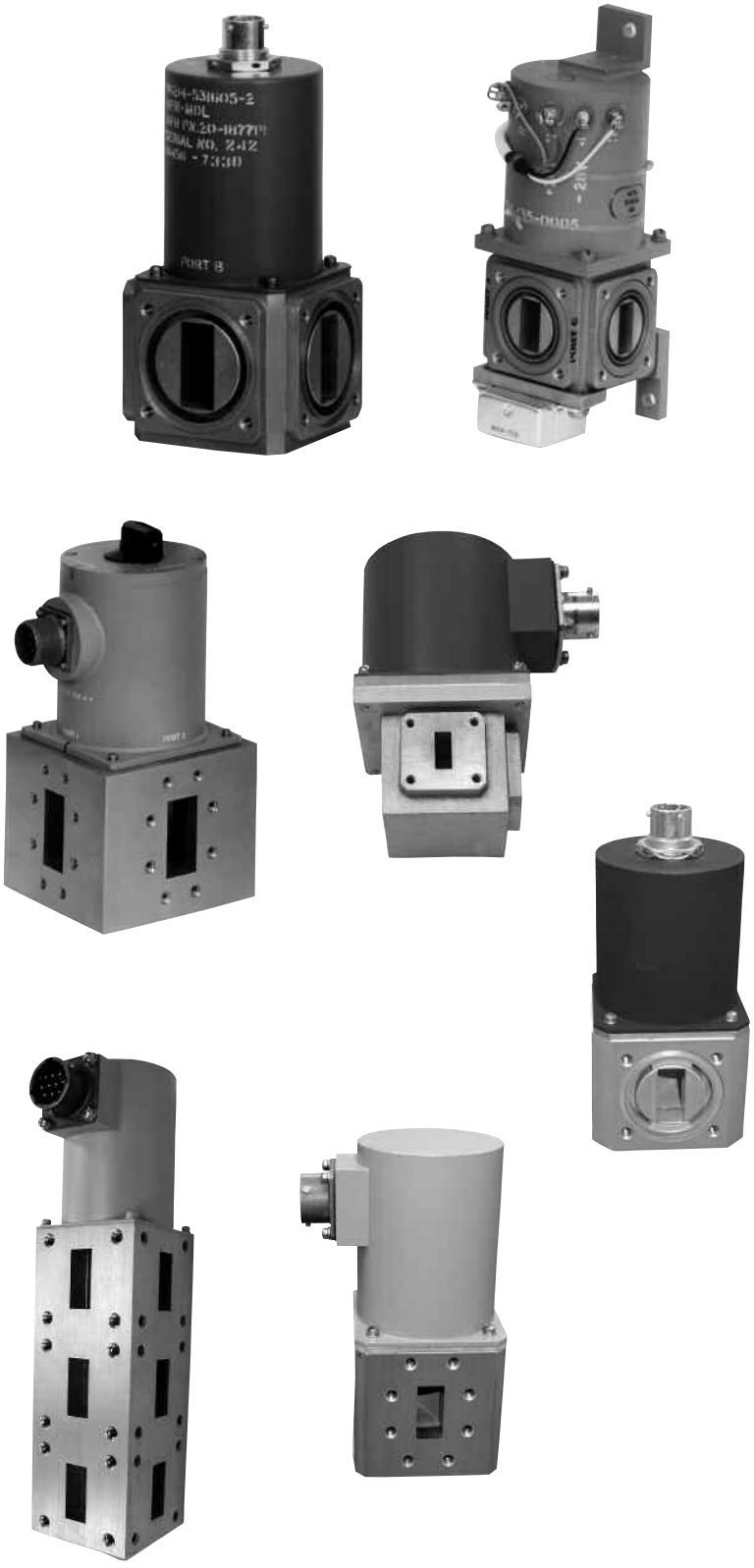
Section 4

Rotarty Switches



Introduction

Waveguide switches manufactured by MDL represent the culmination of many years of constant improvement and innovation. Over the years, and in diverse applications, MDL switches have proven to be reliable and to have long life. In addition, they have met the complete electrical and mechanical requirements specified. Each switch uses a non-contacting rotor design for low noise, high isolation, low VSWR, and long life. Each covers the full recommended waveguide frequency range. It can be pressurized and is capable of handling full waveguide power. The solenoid actuated drive mechanism is efficient and thoroughly reliable.

A wide range of options are available in the standard models. Moreover, custom-required features can be incorporated in special models.

Switches

W/G SIZE	FREQ. RANGE GHz	BASIC MODEL NO.	NO. OF PORTS[2] 3	NO. OF PORTS[2] 4	FLANGE TYPE[8] COVER	FLANGE TYPE[8] CHOKE	ISOL. MIN.	VSWR MAX.	INS. LOSS MAX.	RF CHARACTISTICS[3] RF POWER MAX. KW	SWITCH TIME (ms)[4]	OPER VOLT[5] 28V DC	OPER VOLT[5] 50V DC	OPER VOLT[5] 110V AC	MECH DIM
WR28	26.50-36.00	28SR16	YES	YES	YES	S/O	50	1.10:1	0.10	22	100	STD	N/A	N/A	FIG. 1
WR42	18.00-26.50	42SR16	YES	YES	YES	S/O	50	1.10:1	0.10	43	100	STD	S/O	S/O	FIG. 2
WR62	12.40-18.00	62SR36	YES	YES	YES	YES	60	1.10:1	0.10	120	100	STD	S/O	S/O	FIG. 3
WR90	8.20-12.40	90SR36	YES	YES	YES	YES	60	1.10:1	0.15	200	100	STD	S/O	S/O	FIG. 4
	8.20-12.40	90SR56	YES	YES	YES	YES	60	1.10:1	0.10	200KW/13KW Av.	100	STD	S/O	S/O	FIG. 5
WR102	7.05-11.00	102SR26	YES	YES	YES	YES	60	1.10:1	0.10	275	100	STD	S/O	S/O	FIG. 5
WR112	7.05-10.00	112SR36	YES	YES	YES	YES	60	1.10:1	0.10	350	100	STD	S/O	S/O	FIG. 5
WR137	5.80-8.20	137SR16	YES	YES	YES	–	60	1.10:1	0.10	560	150	STD	S/O	S/O	FIG. 6
WR187	3.95-5.85	187SR16	YES	YES	YES	YES	60	1.10:1	0.10	1,400	150	STD	S/O	S/O	FIG. 7
WR284	2.60-3.95	284SR16	YES	YES	YES	YES	60	1.10:1	0.10	2,200	150	STD	S/O	S/O	FIG. 8

Double Ridged Waveguide Switches

WRD750	8.00-16.00	D750SR16	YES	YES	YES	–	50	1.2:1	0.30	33.5	100	STD	S/O	S/O	FIG.9
WRD475	4.75-11.00	D475SR16	YES	YES	YES	–	50	1.3:1	0.30	83.7	100	STD	S/O	S/O	FIG. 10
WRD180	18.00-39.00	D180SR16	YES	YES	YES	–	40	1.6:1	0.70	5.8	100	STD	S/O	S/O	FIG. 11
WRD19	4.75-11.00	D19SR16	YES	YES	YES	–	50	1.3:1	0.30	33.5	100	STD	S/O	S/O	FIG. 12

KEY: *S/O = Special order*
N/A = Not available
STD = Standard
YES = Available as a standard option

All switches have a normal life of 100,000 cycles, but long life up to 500,000 cycles is available on special order.

All switches meet requirements of MIL-E-5400.

[1] *In fail-safe version the rotor returns to the initial position when current is removed. Holding current is required to keep the rotor in energized position.*

[2] *Three port switch is SPDT. Four port switch is DPDT. (Transfer).*

[3] *All switches can be pressurized to 45 PSI. the power shown is without pressurization. Typically 1.0 cu cm/min. leak rate.*

[4] *Defined as the time from application of the switching current until specified RF performance is reached in the 90° position.*

[5] *Current required for fail-safe type is 1.2 at 25°C for actuation and 0.5A at 25°C for hold WR137 thru WR284 2.0A. actuating. All AC drive circuits have diode limiters unless otherwise specified.*

[6] *See figure 1 on next page for indicating circuit. All DC connectors are Bendix PT02H-10-6P, unless otherwise specified.*

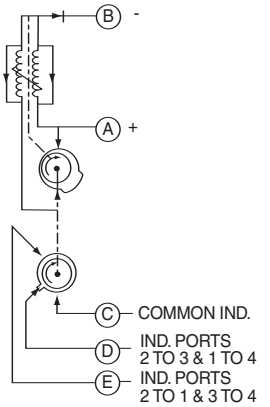
[7] *All switches are of aluminum construction with a chromate finish. Unless otherwise specified all switches are painted with a semi-gloss blue paint per FED-STD-595.*

[8] *Flanges conform to MIL-F-3922.*

[9] *Isolation greater than specified on special order.*

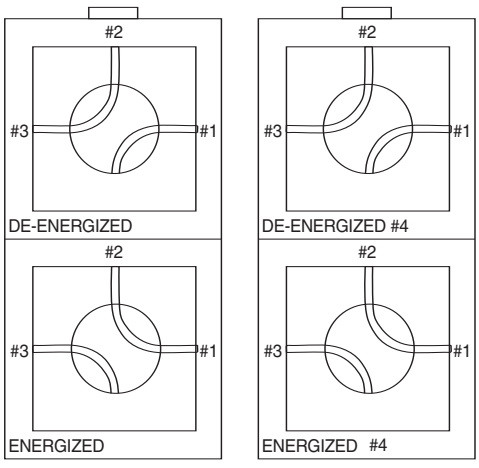
Indicating Circuits

FIGURE 1



SCHEMATIC WIRING DIAGRAM
SHOWN IN BE-ENERGIZED POSITION
CAUTION: DC POLARITY MUST BE OBSERVED

CONNECTOR OUT PORT 2



ACTUATION THREE PORTS

ACTUATION FOUR PORTS

SWITCHING SEQUENCE AS VIEWED FROM TOP

Switches

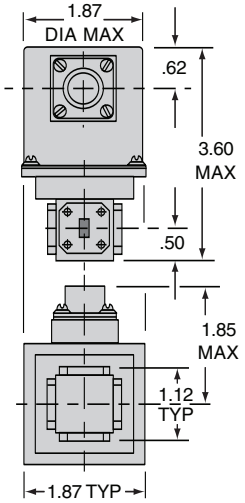


FIGURE 1

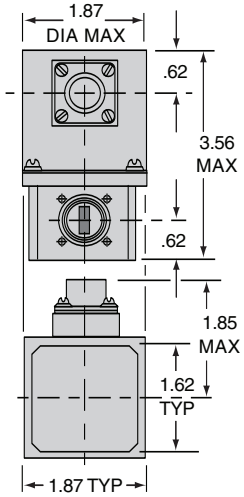


FIGURE 2

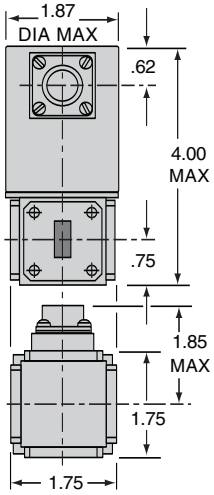


FIGURE 3

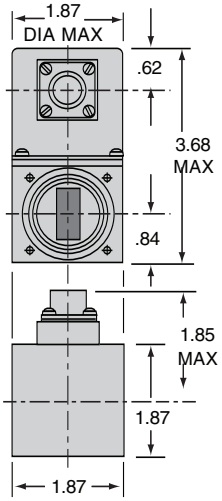


FIGURE 4

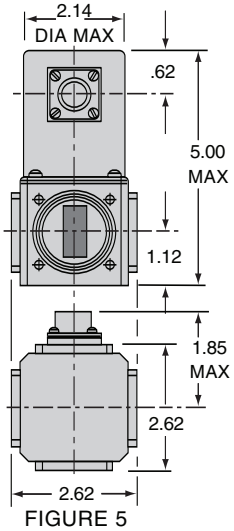


FIGURE 5

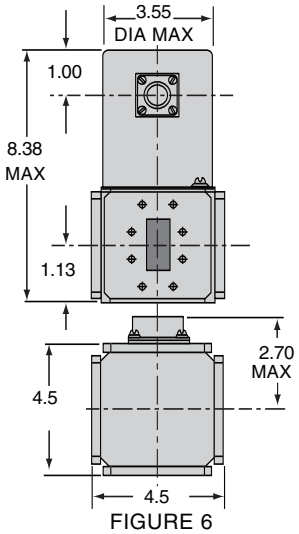


FIGURE 6

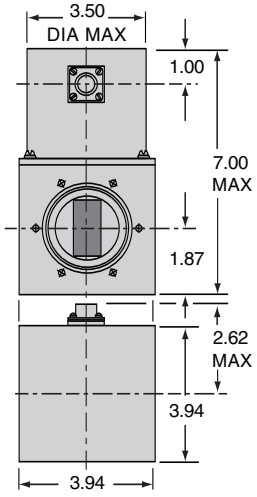


FIGURE 7

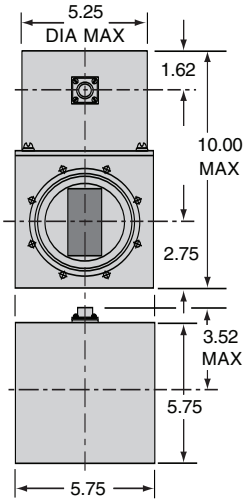


FIGURE 8

Double Ridge Switches

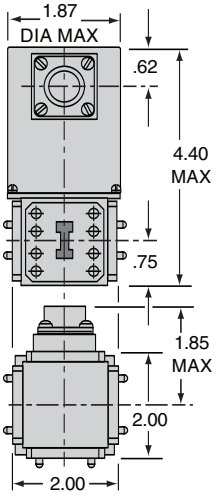


FIGURE 9

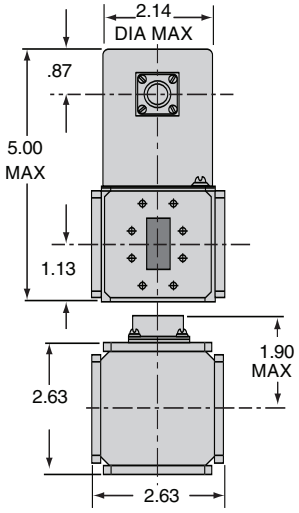


FIGURE 10

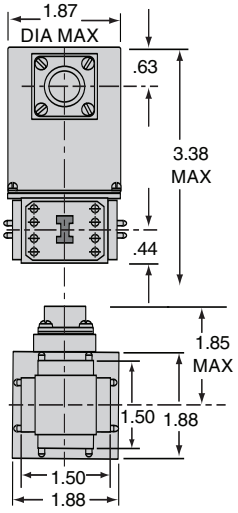


FIGURE 11

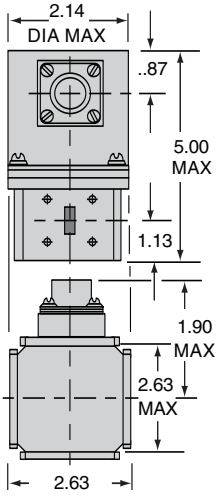


FIGURE 12

†Dimensions 3.94 to be 4.5 on WR137

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