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PRECISION

WIREWOUND RESISTORS

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mills RESISTOR COMPANY

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# MILLS PRECISION WIREWOUND RESISTORS

## GENERAL

The Mills Resistor Company offers the finest in precision wirewound resistors. High quality and high reliability are established as design standards and insured by careful, tested manufacturing techniques, together with rigid Quality Control. The result is a resistor capable of performance in the aerospace environment and with the precision required for computer or laboratory uses.

Design and manufacturing features include tension-free winding, non-inductive winding, and temperature cycling to minimize drift under environmental conditions. Internal connections are spot welded for maximum mechanical and electrical reliability. Vacuum encapsulation processes are used for all except the MR-900 series. MR-900 series parts are available, however, in hermetically sealed metal containers.

A wide series of standard sizes and values are shown here, designed for the widest possible applications. Rigid design, manufacture, and quality standards insures their ability to perform under the most severe conditions. Non-standard sizes, values, and designs are readily available, as are networks. Contact the Marketing Department for further information.

## SPECIFICATIONS

Accuracy: 0.005% to 1.0%. Tolerance down to 0.002% in most cases.

Stability: 0.01% per year maximum drift. MR-300 series available to 0.002% per year.

Temperature Coefficient: 10 PPM/°C maximum from -55°C to +125°C. 5 PPM to 10 PPM available on request. 0 PPM to 5 PPM available over a limited temperature range.

Ratio Match: 0.001% at 25°C or a specified temperature (except MR-500 series).  
0.01% from -55°C to +125°C. MR 500 Series: 0.1% from -55°C to 125°C.

## CATALOG NOTES

All resistance values are in ohms. K indicates 1000's of ohms, M is megohms.

Voltage ratings indicate maximum operating voltage.

Part numbers are completed by adding a letter denoting the desired lead.

Lead Codes: A - Axial leads. Size indicates AWG lead size.

R - Radial leads. Size indicates AWG lead size.

L - Lugs. Unless otherwise specified, all resistors with lugs have a No. 6 screw clearance hole for mounting.

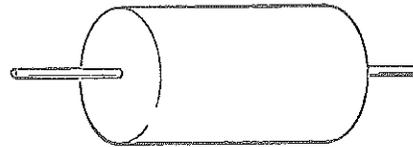
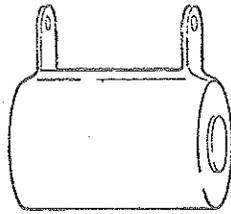
Wire lead lengths - 2-inch minimum on A, AR, and R types  
1-inch minimum on PC types.

Leads are tinned copper. They are also available in tinned brass or nickel.

## NOTES ON NETWORKS

Networks for such applications as voltage dividers, D to A converters, DC and AC operational amplifiers, and others, including high-speed applications, are available and can be furnished in epoxy cases, or hermetically sealed metal enclosures. Let us know your specific need.

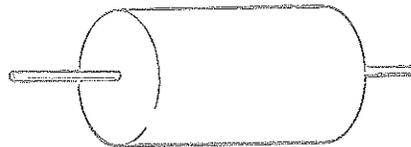
## MR 100 SERIES



Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ±.030	Length ±.060	Leads	
						Type	Size
MR-100-1	.15	700K	100	.187	.375	A	#22
MR-100-2	.25	1.5M	300	.250	.500	A	#22
MR-100-3	.30	2.75M	400	.250	.750	A	#22
MR-100-4	.35	3.00M	500	.375	.625	A	#20
MR-100-5	.50	4.00M	400	.375	.828	A	#20
MR-100-6	.50	5.00M	400	.50	.50	A, L	#20
MR-100-7	.60	6.00M	400	.50	.625	A, L	#20
MR-100-8	1.00	8.00M	800	.50	1.00	A, L	#20
MR-100-9	1.50	10.00M	900	.50	1.50	A, L	#20
MR-100-10	2.00	15.00M	1000	.50	2.00	A, L	#20
MR-100-11	2.00	20.00M	800	.750	1.25	A, L	#20

\* Part number is completed by adding a letter to denote the lead configuration.

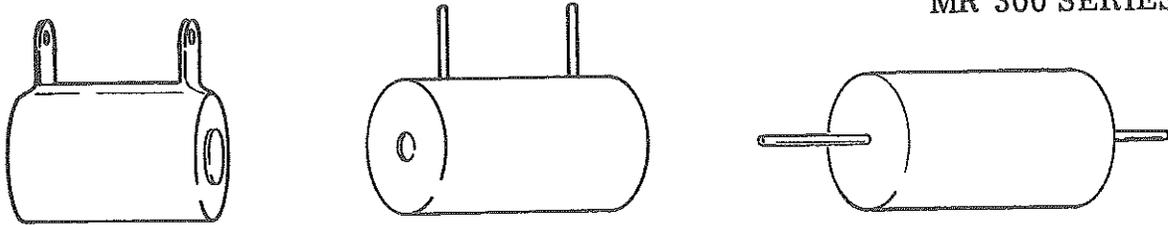
## MR 200 SERIES



A low-reactance design for high-speed pulse or minimum-phase shift applications.

Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ±.030	Length ±.060	Leads	
						Type	Size
MR-200-1	.25	1.5M	300	.25	.500	A	#22
MR-200-2	.25	900K	300	.375	.500	A	#20
MR-200-3	.30	2.75M	400	.25	.750	A	#22
MR-200-4	.50	4.0M	400	.375	.828	A	#20
MR-200-5	.50	5.0M	400	.50	.50	A	#20
MR-200-6	1.00	8.0M	800	.50	1.00	A	#20
MR-200-7	1.50	10.0M	900	.50	1.50	A	#20
MR-200-8	2.00	15.0M	1000	.50	2.00	A	#20

## MR 300 SERIES



Designed for very high stability in instruments or other laboratory uses.

Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ± .030	Length ± .060	Leads	
						Type	Size
MR-300-1	.15	500K	100	.187	.375	A	#22
MR-300-2	.25	1.0M	300	.250	.500	A,R	#22
MR-300-3	.25	2.0M	300	.375	.500	A	#20
MR-300-4	.30	2.5M	400	.250	.750	A,R	#20
MR-300-5	.50	3.5M	400	.375	.828	A,R,L	#20
MR-300-6	.50	4.0M	400	.50	.50	A,R,L	#20
MR-300-7	1.00	7.0M	800	.50	1.00	A,R,L	#20
MR-300-8	1.50	8.0M	900	.50	1.50	A,R,L	#20
MR-300-9	2.00	10.0M	1000	.50	2.00	A,R,L	#20

### Specifications:

Accuracy .005% to 1.0%  
Stability .002% per year

Precise ratio matched sets are also available. Consult the Marketing Department.

## MINIATURE AND PRINTED CIRCUIT RESISTORS

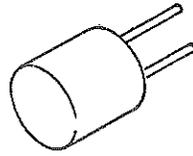
### MR 500 SERIES



Miniature Resistors for space saving and low-power applications.

Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ± .010	Length ± .025	Leads	
						Type	Size
MR-500-1	.04	100K	50	.080	.210	A	#26
MR-500-2	.05	125K	100	.080	.375	A,AR	#24
MR-500-3	.04	100K	50	.125	.125	A	#24
MR-500-4	.05	125K	100	.100	.210	A,AR	#24
MR-500-5	.10	125K	50	.125	.187	A	#24
MR-500-6	.10	125K	100	.125	.250	A,AR	#24
MR-500-7	.10	400K	100	.125	.375	A,AR	#22
MR-500-8	.12	500K	100	.185	.250	A	#22

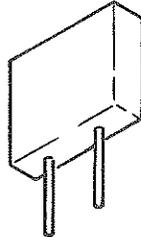
## MR 600 SERIES



For Printed circuit applications

Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ± .015	Length ± .031	Leads	
						Spacing	Size
MR-600-1	.10	125K	100	.250	.250	.150	#22
MR-600-2	.15	300K	100	.250	.312	.150	#22
MR-600-3	.250	1.3M	300	.375	.500	.200	#22
MR-600-4	.300	1.6M	300	.250	.750	.150	#22

## MR 700 SERIES

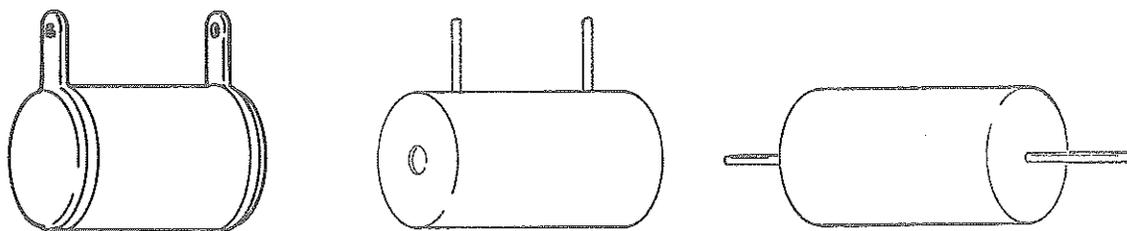


For High Density needs

Part No.*	Wattage	Maximum Resistance	Voltage	Height ± .020	Length ± .020	Width ± .020	Leads	
							Spacing	Size
MR-700-1	.125	1M	150	.250	.250	.125	.125	#20
MR-700-2	.200	2M	150	.250	.500	.125	.250	#20

# CERAMIC BOBBIN RESISTORS

## MR 900 SERIES



For-high accuracy applications where environmental requirements are not extreme.

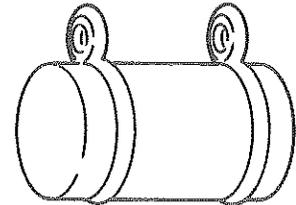
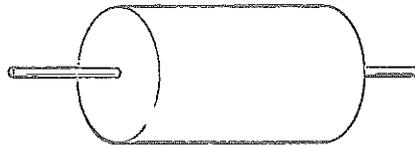
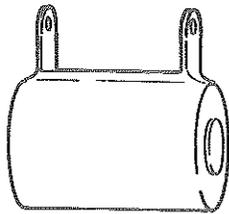
Part No.*	Wattage	Maximum Resistance	Voltage	Diameter ± .030	Length ± .060	Leads		Axial Mtg. Hole
						Type	Dim	
MR-900-1	.25	500K	100	.250	.250	R	#22	#2
MR-900-2	.25	1.0M	100	.250	.312	R	#22	#2
MR-900-3	.25	1.75M	100	.250	.400	R	#22	#2
MR-900-4	.25	3.5M	200	.250	.750	R	#22	#2
MR-900-5	.50	7.0M	400	.375	.750	R	#20	#6
MR-900-6	.50	6.0M	300	.500	.437	R,L	#20	#6
MR-900-7	.50	10.0M	300	.500	.562	R,L	#20	#6
MR-900-8	1.00	20.0M	600	.500	1.00	R,L	#20	#6
MR-900-9	1.50	25.0M	1000	.750	1.25	R,L	#20	#6

Temperature range is -55°C to 85°C.

High temperature varnish is used to impregnate the windings to provide protection against moisture.

MILITARY STYLE RESISTORS, PER MIL-R-93D

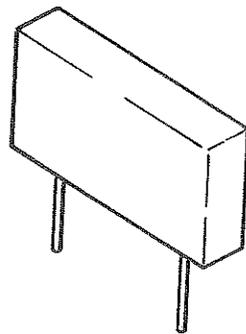
MR 93 SERIES



Part No.	MIL-R-93D Style	Wattage	Maximum Resistance	Minimum Resistance	Voltage	Diameter ±.031	Length ±.062	Leads	
								Type	Size
MR-93-16	RB-16	.33	1.0M	.1	300	.562	.625	L	
MR-93-17	RB-17	.50	2.0M	.1	600	.562	1.00	L	
MR-93-18	RB-18	.75	3.0M	1.0	600	.750	1.25	L	
MR-93-19	RB-19	1.0	6.0M	5.11	900	1.00	2.10	L	
MR-93-52	RB-52	.5	1.5M	.1	600	.375	1.0	A	#20
MR-93-53	RB-53	.33	750K	.1	300	.375	.750	A	#20
MR-93-54	RB-54	.25	511K	.1	300	.250	.750	A	#20
MR-93-55	RB-55	.15	226K	.1	300	.250	.500	A	#20
MR-93-56	RB-56	.125	127K	.1	300	.250	.344	A	#20
MR-93-08	RB-08	.25	511K	.1	300	.500	.500	L	
MR-93-57	RB-57	.75	2.0M	.1	600	.500	1.00	A	#20
MR-93-58	RB-58	1.0	3.0M	.1	900	.500	1.50	A	#20
MR-93-59	RB-59	1.25	5.0M	.1	1200	.500	2.00	A	#20
MR-93-70	RB-70	.25	300K	.1	150	.375	.500 ±.031	P.C.	#20 #200
MR-93-71	RB-71	.125	100K	.1	300	.250	.312 ±.031	P.C.	#22 #200
MR-93-72	RB-72	1.25	3.0M	.1	900	.500	1.50	L	
MR-93-73	RB-73	1.50	5.0M	.1	1200	.500	2.00	L	

Temperature Coefficient is ±20 PPM/°C from -65°C to +125°C.

Special Temperature Coefficients, more rigid resistance tolerance and special leads are all available on request.



**Mills Resistor Company**  
**3840 Catalina St. Los Alamitos, Calif. 90720**  
**(213) 598-2454**