

Features:

- WWS offers miniature size at higher power rating
- High performance for low cost
- High power to size ratio
- High temperature silicone coating
- MWW/NMWW – completely molded construction with welded terminations
- Complete welded terminations
- Tinned copper leads
- Available in non-inductive styles
- Tighter tolerances may be available for non-inductive styles - contact Stackpole with requirements
- Higher operating temperatures available
- "B" packaging code denotes bulk packaging - contact Stackpole for package quantities
- WW/NWW/WWS meet UL94V-0
- RoHS compliant and halogen free



Electrical Specifications – WW, WWS, MWW								
Type / Code	MIL-R-26 Ref.	Power Rating (Watts)		TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance (*)			
		@ 125 °C	@ 70 °C		0.1%	0.5%	1%	5%
WW12	-	0.4	0.5	< 1 Ω = ± 90 ppm/°C 1 Ω to 10 Ω = ± 50 ppm/°C > 10 Ω = ± 20 ppm/°C	5 - 2 K	3 - 2 K		5 - 2 K
WW1	-	1	1.1		2 - 3 K			
WW1A	RW-70	1	1.3		1 - 5 K			
WW2	RW-69	1.5	2.1		1 - 10 K	0.5 - 10 K		
WWS2	-	2.5	2.6		1 - 10 K	0.5 - 10 K		
WW2A	-	2.5	2.6		1 - 10 K	0.5 - 10 K		
WW3	RW-79	3	3.2		1 - 22 K	0.5 - 22 K		
WWS3	-	3	3.2		3 - 10 K	1 - 10 K		
WW3A	-	3	3.4		1 - 30 K	0.5 - 30 K		
WW4	-	4	4.3		1 - 40 K	0.5 - 40 K		
WWS4	RW-79	4	4.3		1 - 22 K	0.5 - 22 K		
WW5	RW-67, RW-74	5	5.1		1 - 50 K	0.5 - 50 K		
WWS5	-	5	5.1		1 - 40 K	0.5 - 40 K		
WW7	-	6.5	7.2		1 - 70 K	0.5 - 70 K		
WWS7	RW-67, RW-74	6.5	7.2		1 - 50 K	0.5 - 50 K		
WW7B	-	7	7.7		1 - 70 K	0.5 - 70 K		
WW10	RW-78	10	11		1 - 100 K	0.5 - 100 K		
WWS10	-	10	11		1 - 70 K	0.5 - 70 K		
MWW1	RW-70	1	1.3		5 - 2 K			
MWW3	RW-79	3	3.2		3 - 20 K			
MWW5	RW-67, RW-74	5	5.5	2 - 40 K				
MWW10	RW-68, RW-74	10	11	2 - 80 K				

(*) Other resistance values available - contact Stackpole for details.

Electrical Specifications – Non-Inductive Styles						
Type / Code	MIL-R-26 Ref.	Power Rating (Watts)		TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance (*)	
		@ 125 °C	@ 70 °C		1% and 5%	
NWW12	-	0.4	0.5	< 1 Ω = ± 90 ppm/°C 1 Ω to 10 Ω = ± 50 ppm/°C > 10 Ω = ± 20 ppm/°C	10 - 1 K	
NWW1	-	1	1.1		2 - 1.5 K	
NWW1A	RW-70	1	1.3		1 - 2.5 K	
NWW2	RW-69	1.5	2.1		1 - 5 K	
NWWS2	-	2.5	2.6		1 - 5 K	
NWW2A	-	2.5	2.6		1 - 5 K	
NWW3	RW-79	3	3.2		1 - 11 K	
NWWS3	-	3	3.2		3 - 5 K	
NWW3A	-	3	3.4		1 - 15 K	
NWW4	-	4	4.3		1 - 20 K	
NWWS4	RW-79	4	4.3		1 - 11 K	
NWW5	RW-67, RW-74	5	5.1		1 - 25 K	
NWWS5	-	5	5.1		1 - 20 K	

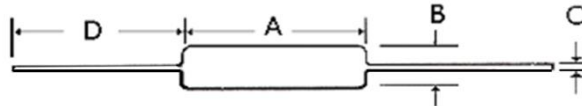
(*) Other resistance values available - contact Stackpole for details.

Electrical Specifications – Non-Inductive Styles (cont.)

Type / Code	MIL-R-26 Ref.	Power Rating (Watts)		TCR (ppm/°C)	Ohmic Range (Ω) and Tolerance ^(*)
		@ 125 °C	@ 70 °C		
NWW7	-	6.5	7.2	< 1 Ω = ± 90 ppm/°C 1 Ω to 10 Ω = ± 50 ppm/°C > 10 Ω = ± 20 ppm/°C	1 - 35 K
NWWS7	RW-67, RW-74	6.5	7.2		1 - 25 K
NWW7B	-	7	7.7		1 - 35 K
NWW10	RW-78	10	11		1 - 50 K
NWWS10	-	10	11		1 - 35 K
NMWW1	RW-70	1	1.3		5 - 1 K
NMWW3	RW-79	3	3.2		3 - 10 K
NMWW5	RW-67, RW-74	5	5.5		2 - 20 K
NMWW10	RW-68, RW-74	10	11		2 - 40 K

(*) Other resistance values available - contact Stackpole for details.

Mechanical Specifications

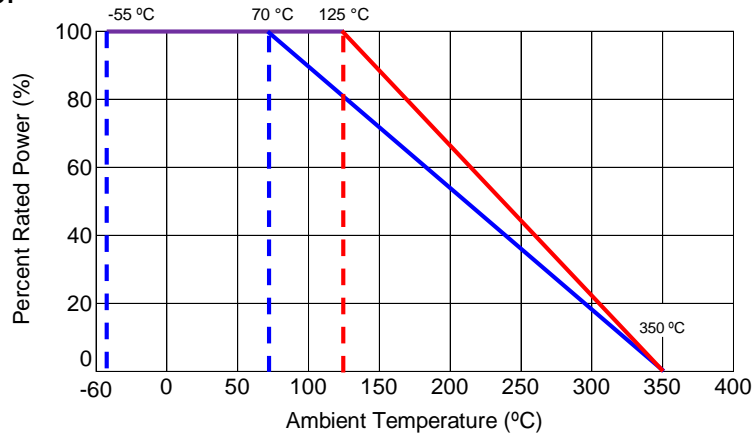


Type / Code	A	B	C	D (Bulk) ⁽¹⁾	Unit
WW12 / NWW12	0.312 ± 0.062	0.110 ± 0.031	0.025 ± 0.002	1.500 typ.	inches
	7.92 ± 1.57	2.79 ± 0.79	0.64 ± 0.05	38.10 typ.	mm
WW1, WWS2 / NWW1, NWWS2	0.375 ± 0.062	0.110 ± 0.031	0.025 ± 0.002	1.500 typ.	inches
	9.53 ± 1.57	2.79 ± 0.79	0.64 ± 0.05	38.10 typ.	mm
WW1A / NWW1A	0.420 ± 0.062	0.110 ± 0.031	0.025 ± 0.002	1.500 typ.	inches
	10.67 ± 1.57	2.79 ± 0.79	0.64 ± 0.05	38.10 typ.	mm
WW2, WWS3 / NWW2, NWWS3	0.370 ± 0.062	0.156 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	9.40 ± 1.57	3.96 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
WW2A / NWW2A	0.550 ± 0.062	0.156 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	13.97 ± 1.57	3.96 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
WW3, WWS4 / NWW3, NWWS4	0.560 ± 0.062	0.187 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	14.22 ± 1.57	4.75 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
WW3A / NWW3A	0.500 ± 0.062	0.218 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	12.70 ± 1.57	5.54 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
WW4, WWS5 / NWW4, NWWS5	0.700 ± 0.062	0.270 ± 0.031	0.036 ± 0.002	1.500 typ.	inches
	17.78 ± 1.57	6.86 ± 0.79	0.91 ± 0.05	38.10 typ.	mm
WW5, WWS7 / NWW5, NWWS7	0.875 ± 0.062	0.312 ± 0.031	0.036 ± 0.002	1.500 typ.	inches
	22.23 ± 1.57	7.92 ± 0.79	0.91 ± 0.05	38.10 typ.	mm
WW7 / NWW7	1.000 ± 0.062	0.312 ± 0.031	0.036 ± 0.002	1.500 typ.	inches
	25.40 ± 1.57	7.92 ± 0.79	0.91 ± 0.05	38.10 typ.	mm
WW7B, WWS10 / NWW7B, NWWS10	1.200 ± 0.062	0.312 ± 0.031	0.036 ± 0.002	1.500 typ.	inches
	30.48 ± 1.57	7.92 ± 0.79	0.91 ± 0.05	38.10 typ.	mm
WW10 / NWW10 ⁽²⁾	1.780 ± 0.062	0.375 ± 0.031	0.040 ± 0.002	1.500 typ.	inches
	45.21 ± 1.57	9.53 ± 0.79	1.02 ± 0.05	38.10 typ.	mm
MWW1 / NMWW1	0.385 ± 0.062	0.135 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	9.78 ± 1.57	3.43 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
MWW3 / NMWW3	0.560 ± 0.062	0.205 ± 0.031	0.032 ± 0.002	1.500 typ.	inches
	14.22 ± 1.57	5.21 ± 0.79	0.81 ± 0.05	38.10 typ.	mm
MWW5 / NMWW5	0.925 ± 0.062	0.330 ± 0.031	0.036 ± 0.002	1.500 typ.	inches
	23.50 ± 1.57	8.38 ± 0.79	0.91 ± 0.05	38.10 typ.	mm
MWW10 / NMWW10	1.965 ± 0.062	0.480 ± 0.031	0.040 ± 0.002	1.500 typ.	inches
	49.91 ± 1.57	12.19 ± 0.79	1.02 ± 0.05	38.10 typ.	mm

(1) See "Resistor Packaging Specification Document" for lead length dimension for tape and reel packaged product.

(2) Lead diameter (C) available in 0.036" / 0.91 mm.

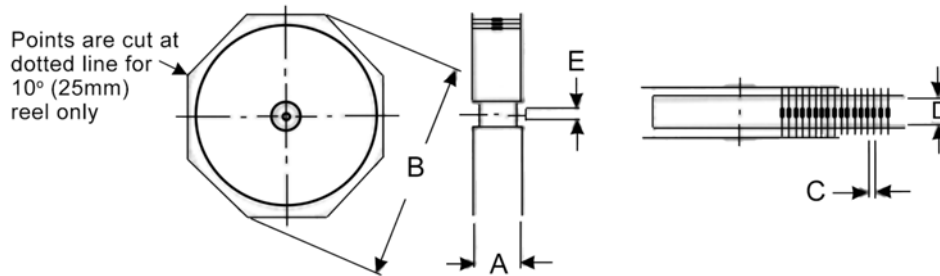
Power Derating Curve:



Performance Characteristics		
Test	Test Condition	Test Specification
Moisture Resistance	1000 hours, 95% R.H., 40 °C	1% max
Load Life	1000 hours, cycled power 1.5 hours ON, 0.5 hours OFF, 25 °C	1%
Temperature Cycling	5 cycles, -55 °C to 200 °C	0.5%
Short Time Overload	5 times rated power for 5 seconds	1%
Dielectric Withstand Voltage	Resistor leads are grounded and high potential probe is touched to the resistor body	500 V for (N)WW12, 1, 1A and 2S. 1000 V for all others

Operating Temperature Range: -55 °C to +350 °C

Lead-Tape Specifications

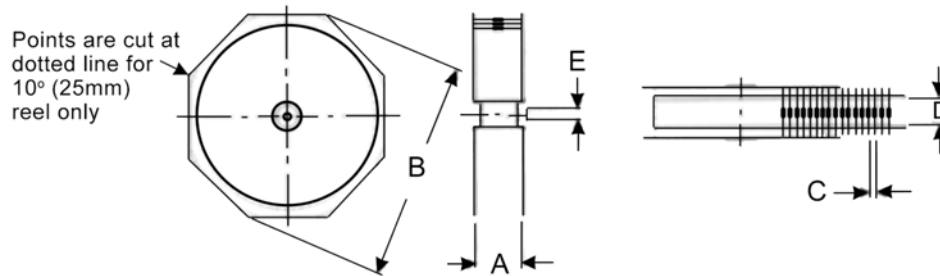


Type / Code	A max ⁽¹⁾	B max	C	D ⁽²⁾	Tape	Unit
WW12	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
WW1, WWS2 NWW1, NWS2	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
WW1A, NWW1A	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm

Dimension "E": This is a non-critical dimension that does not have a tolerance in the standard.
 Range of diameters is from 0.547 inches (13.90 mm) to 1.500 inches (38.10 mm).

- (1) Reference value only. The "A" dimension shall be governed by the overall length of the taped component. The distance between flanges shall be 0.059 inches (1.50 mm) to 0.315 (8.00 mm) greater than the overall component.
- (2) The given dimension "D" expresses the standard width spacing. A 26mm narrow spacing is available as option "N" packaging code.

Lead-Tape Specifications (cont.)



Type / Code	A max ⁽¹⁾	B max	C	D ⁽²⁾	Tape	Unit
WW2, WWS3 NWW2, NWS3	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
WW2A, NWW2A	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
WW3, WWS4 NWW3, NWS4	2.880 73.15	11.000 279.40	0.197 ± 0.020 5.00 ± 0.50	2.500 ± 0.079 63.50 ± 2.00	0.250 6.35	inches mm
WW3A, NWW3A	3.740 95.00	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
WW4, WWS5 NWW4, NWS5	2.500 63.50	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.500 ± 0.079 63.50 ± 2.00	0.250 6.35	inches mm
WW5, WWS7 NWW5, NWS7	3.740 95.00	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
WW7, NWW7	5.100 129.54	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
WW7B, WWS10 NWW7B, NWS10	5.100 129.54	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
WW10, NWW10	5.100 129.54	11.000 279.40	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
MWW1, NMWW1	3.311 84.10	13.504 343.00	0.197 ± 0.020 5.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
MWW3, NMWW3	3.484 88.50	13.504 343.00	0.394 ± 0.020 10.00 ± 0.50	2.063 ± 0.079 52.40 ± 2.00	0.250 6.35	inches mm
MWW5, NMWW5	3.850 97.80	13.504 343.00	0.394 ± 0.020 10.00 ± 0.50	2.874 ± 0.079 73.00 ± 2.00	0.250 6.35	inches mm
MWW10, NMWW10	4.764 121.00	13.504 343.00	0.394 ± 0.020 10.00 ± 0.50	4.310 ± 0.079 109.47 ± 2.00	0.250 6.35	inches mm

Dimension "E": This is a non-critical dimension that does not have a tolerance in the standard.

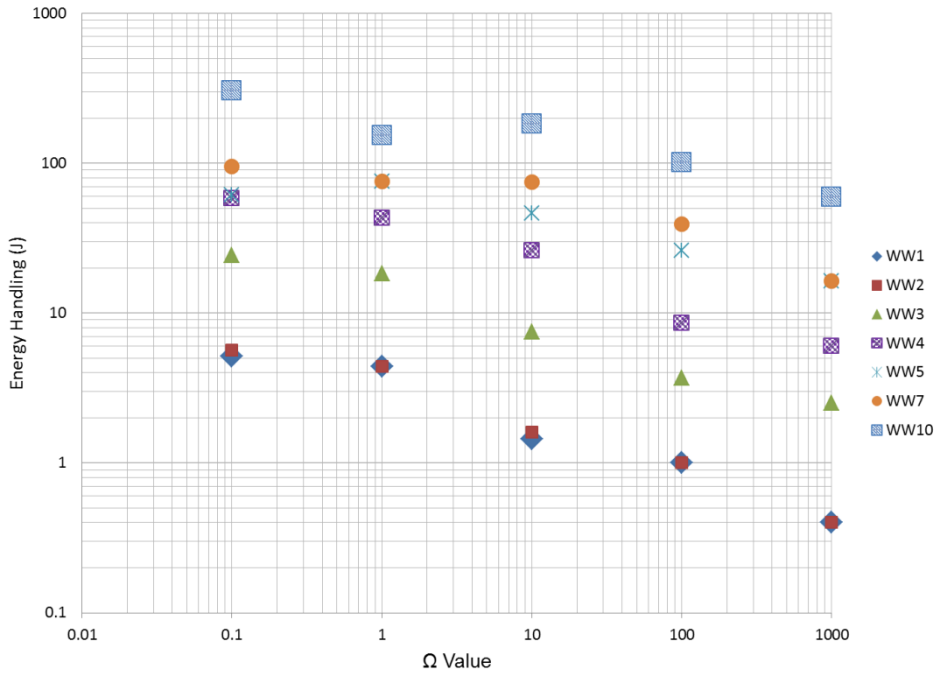
Range of diameters is from 0.547 inches (13.90 mm) to 1.500 inches (38.10 mm).

(1) Reference value only. The "A" dimension shall be governed by the overall length of the taped component.

The distance between flanges shall be 0.059 inches (1.50 mm) to 0.315 (8.00 mm) greater than the overall component.

(2) The given dimension "D" expresses the standard width spacing. A 26mm narrow spacing is available as option "N" packaging code.

Energy Handling Capability:
 (Typical performance - for reference only.)



RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union’s directive regarding “Restrictions on Hazardous Substances” (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status						
Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
MWW	General Purpose and Precision Leaded Wirewound Resistor - Molded	Axial	YES	100% Matte Sn	Jan-06	06/01
NWW	General Purpose and Precision Leaded Wirewound Resistor - Conformal Coated - Non-Inductive	Axial	YES	100% Matte Sn	Jan-06	06/01
WW	General Purpose and Precision Leaded Wirewound Resistor - Conformal Coated - Non-Inductive	Axial	YES	100% Matte Sn	Jan-06	06/01

“Conflict Metals” Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the “conflict region” of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

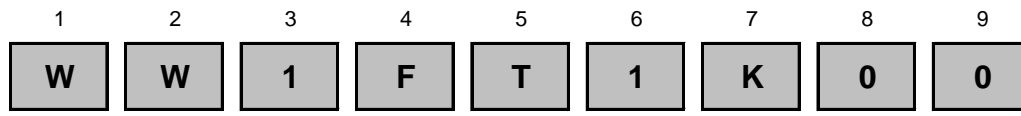
Compliance to “REACH”

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, “The Registration, Evaluation, Authorization and Restriction of Chemicals”, otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order



Product Series		Type / Code	Power Rating		Tolerance		Packaging			Resistance Value		
Code	Description		@ 125°C	@ 70°C	Code	Tol	Code	Description	Quantity			
WW	Standard	WW12 / NWW12	0.4 W	0.5 W	B	0.1%	T	11" Tape and Reel	WW12 / NWW12	2,500	Four characters with the multiplier used as the decimal holder. 0.5 ohm = R500 1 ohm = 1R00 10 Kohm = 10K0	
WWS	Mini	WW1 / NWW1	1 W	1.1 W	D	0.5%			WW1 / NWW1			
MWW	Molded	WW1A / NWW1A	1 W	1.3 W	F	1%			WWS2 / NWS2			
NWW	Non-Inductive	WW2 / NWW2	1.5 W	2.1 W	J	5%			WW1A / NWW1A			
NWS	Mini	WWS2 / NWS2	2.5 W	2.6 W					MWW1 / NMWW1	2,000		
	Non-Inductive	WW2A / NWW2A	2.5 W	2.6 W					WW2 / NWW2			
NMWW	Non-Inductive	WW3 / NWW3	3 W	3.2 W					WWS3 / NWS3			500
	Molded	WWS3 / NWS3	3 W	3.2 W					WW2A / NWW2A			
		WW3A / NWW3A	3 W	3.4 W					WW3 / NWW3			250
		WW4 / NWW4	4 W	4.3 W					WWS4 / NWS4			
		WWS4 / NWS4	4 W	4.3 W			MWW3 / NMWW3					
		WW5 / NWW5	5 W	5.1 W			WW3A / NWW3A	Contact Stackpole for package quantities.				
		WWS5 / NWS5	5 W	5.1 W			WW4 / NWW4					
		WW7 / NWW7	6.5 W	7.2 W			WWS5 / NWS5					
		WWS7 / NWS7	6.5 W	7.2 W	WW5 / NWW5							
		WW7B / NWW7B	7 W	7.7 W	WWS7 / NWS7							
		WW10 / NWW10	10 W	11 W	WW7 / NWW7							
		WWS10 / NWS10	10 W	11 W	WW7B / NWW7B							
		MWW1 / NMWW1	1 W	1.3 W	WWS10 / NWS10							
		MWW3 / NMWW3	3 W	3.2 W	MWW5 / NMWW5							
		MWW5 / NMWW5	5 W	5.5 W	WW10 / NWW10							
		MWW10 / NMWW10	10 W	11 W	MWW10 / NMWW10							
B	Bulk											