



Straight valves VDN2...

Angle valves VEN2...

Reverse angle valves VUN2...

Radiator Valves

NF norm, for 2-pipe heating systems

VDN2...
VEN2...
VUN2...

- x Valve bodies made of brass, mat nickel-plated
- x DN10, DN15 and DN20 (VDN2..., VEN2...)
- x Integrated preadjustment of k_v -values
- x Internally and externally threaded (Rp/R) conforming to ISO 7/1
- x Manual knob / protective cover included in the delivery
- x Can be combined with RTN... thermostatic actuators, SSA... motoric actuators or STA... thermal actuators, STS61 and electronic REH... radiator controllers

Use

The radiator valves are used in hot water heating plant for individual room or zone temperature control and limitation. They are basically recommended in all rooms, especially where heat gains or different temperature levels occur.

Type summary

Type reference straight	Type reference angle	Type reference reverse angle	DN	k_v -value [m^3/h] setting range	k_v -value [m^3/h] at a P-band of 2 K
VDN210	VEN210		10	0.09 ... 0.63	0.43
		VUN210		0.14 ... 0.60	
VDN215	VEN215		15	0.10 ... 0.89	0.52
		VUN215		0.13 ... 0.77	
VDN220	VEN220		20	0.31 ... 1.41	0.71

Order

When ordering, please give quantity, product name and type reference.

Example: 2 straight valves VDN220

Delivery

Valves and accessories are packed separately.

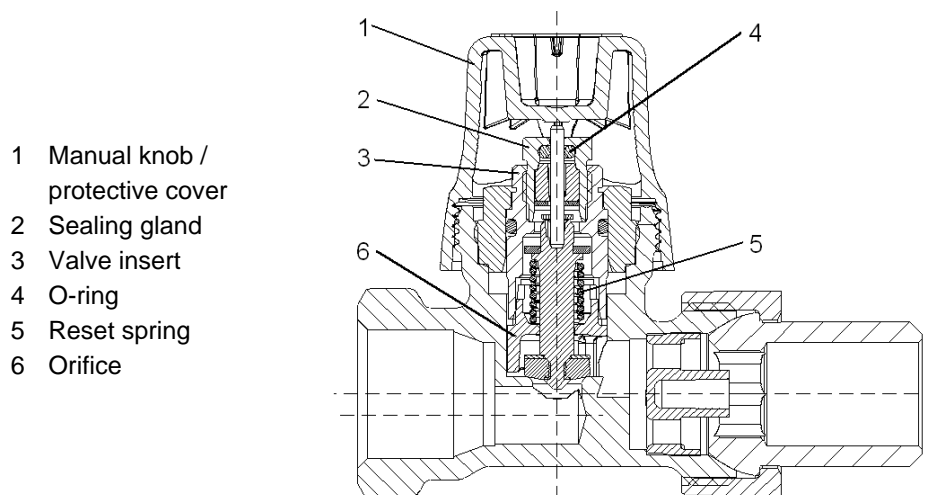
Equipment combinations

Product	Types	Data sheet
Thermostatic actuators	RTN...	N2111
Electronic radiator controller	REH90	N2131
Motoric actuators	SSA31... / SSA61... / SSA81...	N4893
Thermal actuators	STA21 / STA71	N4877
Thermal actuator	STS61 ¹⁾	N4880

¹⁾ Quasi-proportional control action, not recommended for parallel operation

Mechanical design / technical design

The flow rate can be preadjusted with an orifice. Full stroke is ensured irrespective of the preadjustment, which is made with the help of the protective cover.



Features and benefits

- x The valves conform to EN 215
- x The sealing gland can be replaced while the plant is under pressure (no tools required)

Accessories

AVN1
Sealing gland



ATN2
Protection against dismantling



ATN3
Manual knob
(RAL9016)



AVN...
Compression fittings



Engineering notes

The reference numbers for preadjustment are given in the table with the k_v -values (see page 4) and in the valve sizing charts (see pages 5 – 7).

1. Calculate the volumetric water flow \dot{V}_{100}

$$\dot{V}_{100} = \frac{Q_{100}}{1.163 \cdot \Delta T \cdot f_1} \quad [\text{m}^3/\text{h}]$$

Q_{100} = heat demand [kW]
 ΔT = temperature differential [K]
 1.163 = constant of water
 f_1 = correction factor = 1 for water

2. Define the pressure drop Δp_{v100} across the fully open valve

In most types of plant, a differential pressure Δp_{v100} of 0.05 to 0.2 bar is adequate.

3. Calculation of the nominal flow value k_v

$$k_v = \frac{\dot{V}_{100}}{\sqrt{\Delta p_{v100}}} \quad [\text{m}^3/\text{h}]$$

Δp_{v100} = differential pressure across the valve [bar]

Example:

Heat demand	Q_{100}	= 1.2 kW
Temperature differential	ΔT	= 20 K
Water volume	$\dot{V}_{100} = \frac{1.2}{1.163 \cdot 20}$	= 0.052 m ³ /h = 52 l/h
Required differential pressure across the valve	Δp_{v100}	= 0.1 bar
Flow	$k_v = \frac{0.052}{\sqrt{0.1}}$	= 0.17 m ³ /h

Solution

According to the chart (refer to «Valve sizing charts», or table with k_v -values), the preadjustment required for a VDN210 3/8" valve is 2.

Tips

- x Noiseless operation is ensured by a pump that provides no more pressure than is needed to transport the required amount of water
- x To keep the valve free from dirt particles, it is recommended to install a strainer

k_v-values

The k_v-value gives the volumetric water flow \dot{V}_{100} in m³/h at a pressure drop Δp_{v100} across the valve of 1 bar.

k_v-values [m³/h] at the different preset positions

Control range with SSA..., STA... actuators and STS 61	✓	✓	✓	✓	✓	✓	✗
Control range of thermostatic actuators RTN...	✓	✓	✓	✓	✓	✗	✓
Reference numbers for preadjustment	1	2	3	4	5	N	N¹⁾
VDN210 / VEN210	0.09	0.18	0.26	0.33	0.48	0.63	0.43
VDN215 / VEN215	0.10	0.20	0.31	0.45	0.69	0.89	0.52
VDN220 / VEN220	0.31	0.41	0.54	0.83	0.91	1.41	0.71
VUN210	0.14	0.28	0.38	0.49	0.53	0.60	0.43
VUN215	0.13	0.23	0.34	0.52	0.66	0.77	0.50

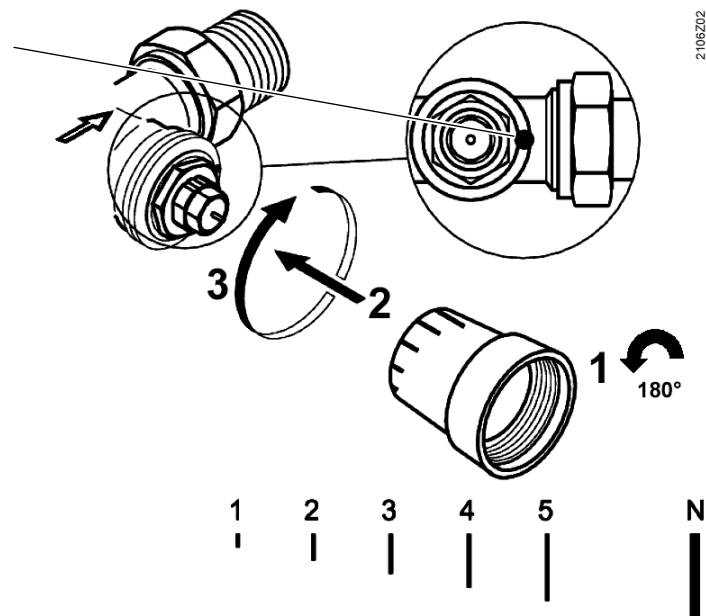
¹⁾ k_v-value at a P-band of 2 K

Setting the k_v-value

The k_v-values can be set on the valve's head in 5 steps + N (fully open) using the protective cover, which can be turned through 180°.

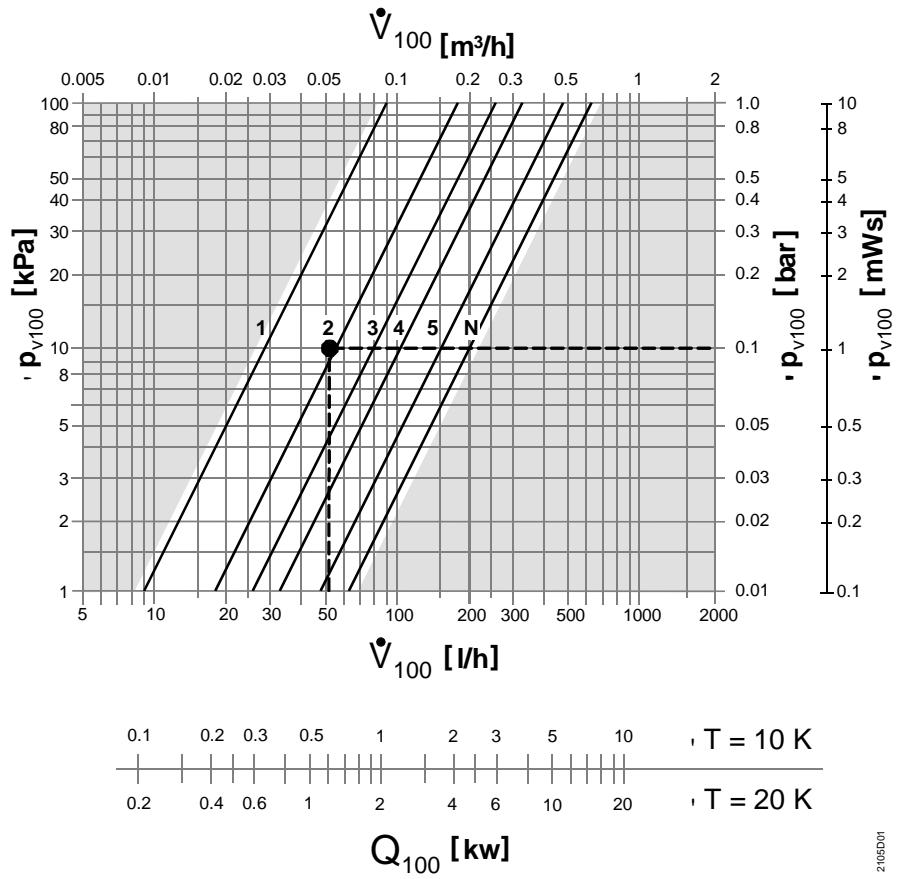


Observe marking on the valve's outlet side!



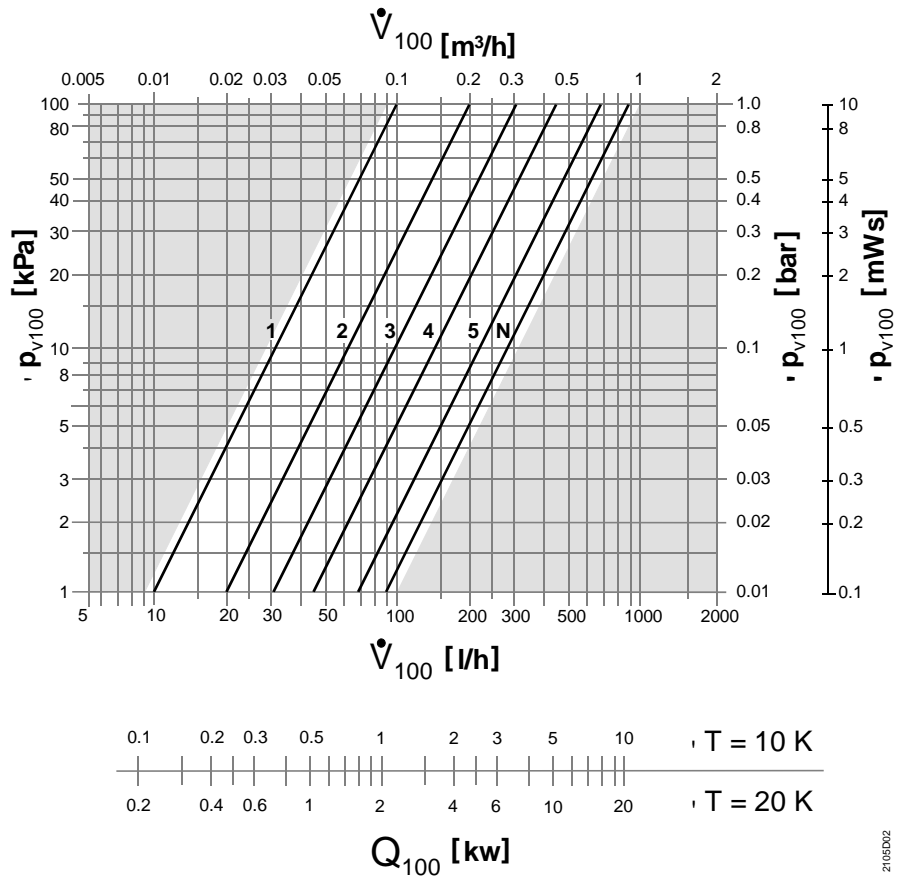
Valve sizing charts

VDN210
VEN210



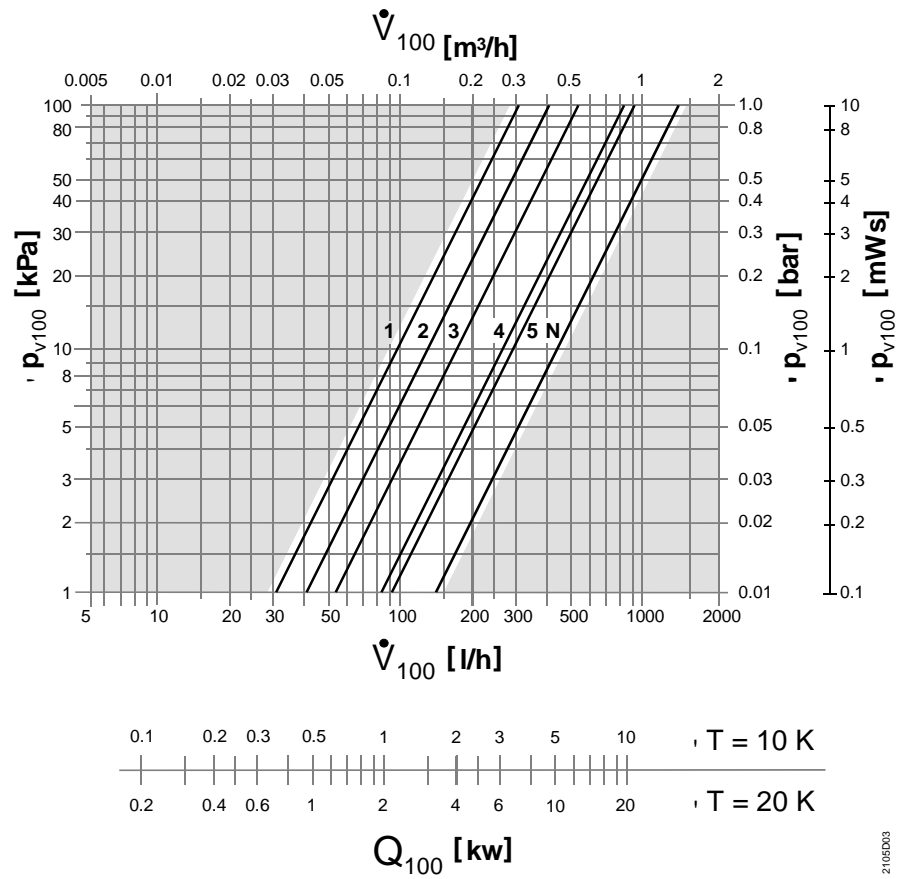
2105D01

VDN215
VEN215



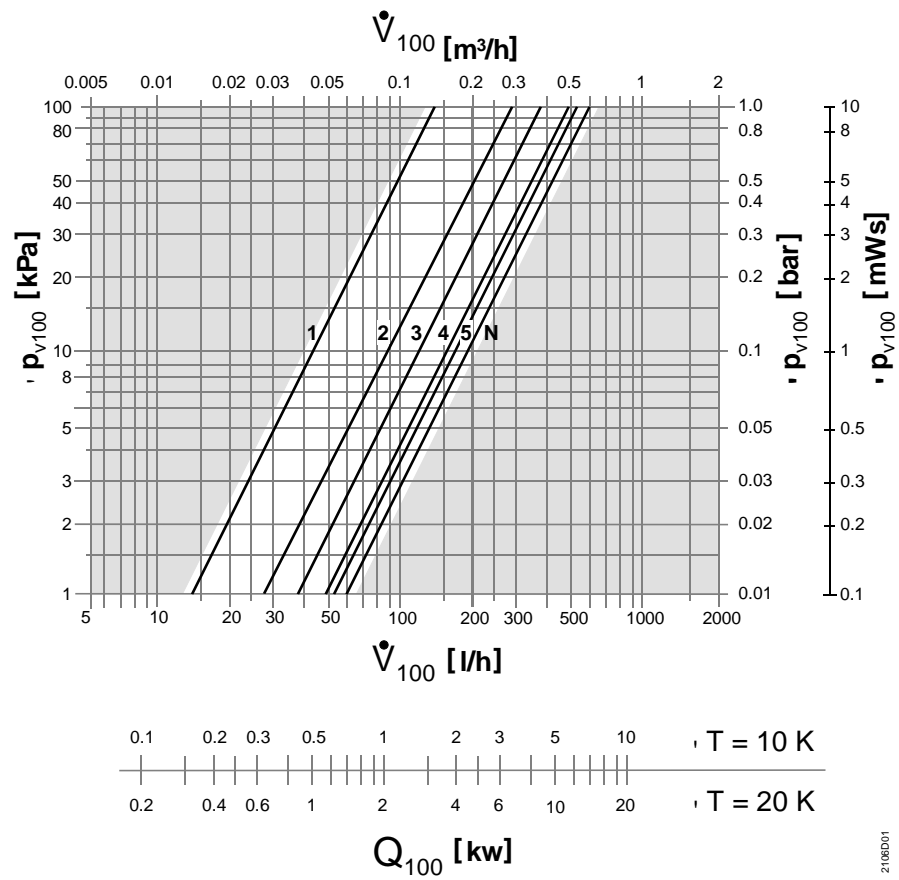
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VDN220
VEN220

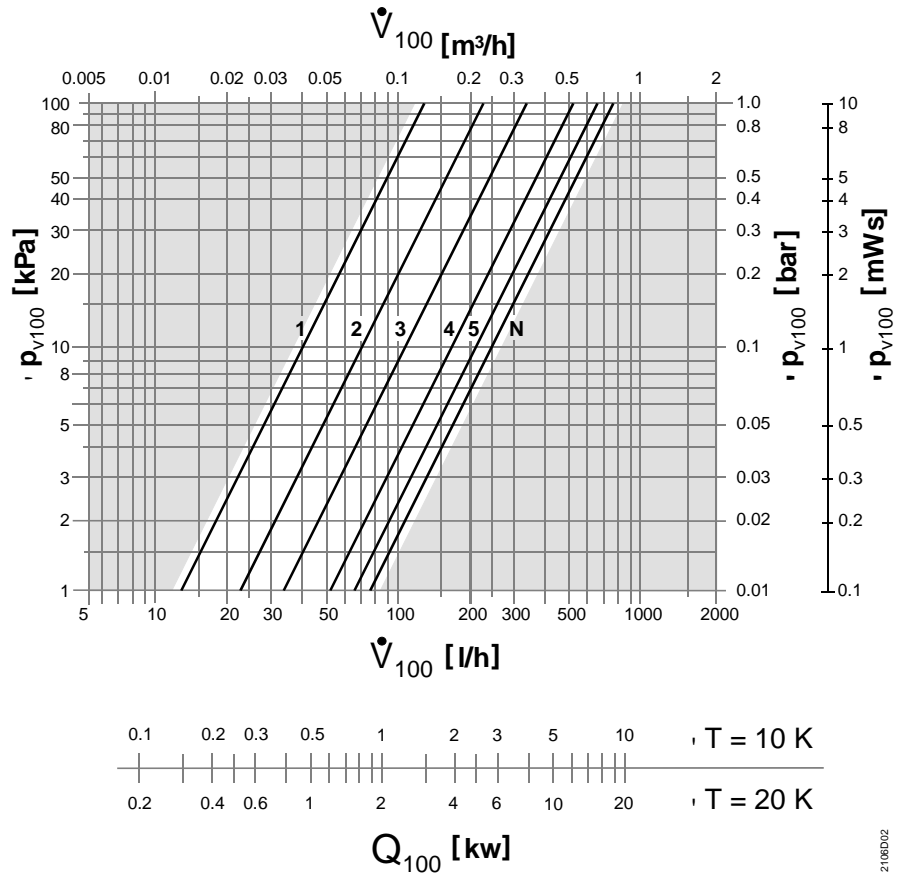


2106D03

VUN210



2106D01



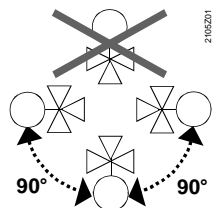
2106D02

Notes

Mounting

- x Mounting Instructions are printed on the package
- x The valves are supplied preadjusted to N (fully open)
- x To ensure correct functioning of the thermostatic heads and electronic actuators, observe the available mounting choices and mounting conditions

Orientation



Maintenance

The valves are maintenance-free.

Repair

In the event of leakage, the valve's sealing gland can be replaced. The valves cannot be repaired; the complete unit must be replaced.

Disposal



The valve must not be disposed of together with domestic waste. Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

Current local legislation must be observed.

Warranty

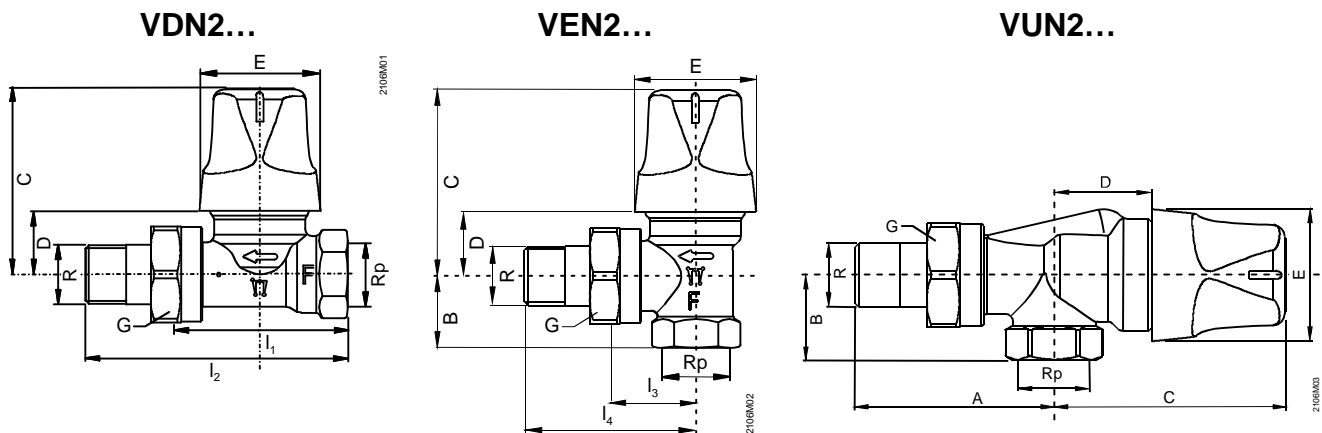
Application-related technical data are only warranted when used in connection with the Siemens controllers and actuators listed under «Equipment combinations».

When using the radiator valves with actuators of other manufacture, any warranty by Siemens Switzerland Ltd / HVAC Products becomes void.

Technical data

Functional data	PN class	PN 10		
	Suitable media	cold and hot water, water-glycol mixtures; recommendation: water treatment to VDI 2035		
	Medium temperature	1 ... 120 °C		
	Perm. operating pressure	1000 kPa (10 bar)		
	Differential pressure ' p_{max}	max. 60 kPa (0.6 bar)		
	Differential pressure ' p_{v100}	5 ... 20 kPa (0.05 ... 0.2 bar): recommended range		
	Stroke	min 1.2 mm		
Materials	Valve body	brass, mat nickel-plated		
	Fitting	brass, mat nickel-plated		
	Protective cover	polypropylene		
	O-ring	EPDM		
Dimensions / weight	Refer to «Dimensions»			
	Mounting length	EN 215		
	Thread	Rp internally threaded	to ISO 7/1	
		R externally threaded	to ISO 7/1	
G-thread		to ISO 228/1		

Dimensions



Type	DN	Dimensions [mm]								Thread [inch]			Weight [kg]	
		I ₁	I ₂	I ₃	I ₄	A	B	C	D	E	Rp	R		G
VDN210	10	50	75					53	18	35	3/8	3/8B	5/8	0.220
VDN215	15	55	82					53	18	35	1/2	1/2B	3/4	0.265
VDN220	20	65	98					53	18	35	3/4	3/4B	1	0.385
VEN210	10			24	49		20	53	18	35	3/8	3/8B	5/8	0.215
VEN215	15			26	53		23	53	18	35	1/2	1/2B	3/4	0.260
VEN220	20			30	63		26	53	18	35	3/4	3/4B	1	0.360
VUN210	10					51	22	60	25	35	3/8	3/8B	5/8	0.285
VUN215	15					57	27	61	26	35	1/2	1/2B	3/4	0.330