

# SR Ring & Counterweight

GK-9838

## The countermeasures against snow accretion on overhead lines

SR (Snow-Resistant) rings and Counterweights are both countermeasures Furukawa Electric Group has developed and **FEPS** (Furukawa Electric Power systems Co., Ltd.) provides for preventing heavy snow accretion on overhead transmission lines (Fig. 1). The combination of the two have been widely employed for decades in Japan as a standard countermeasure against snow accretion in the area where snow fall is expected.



**Fig.1 Effect of SR Rings & CWs**

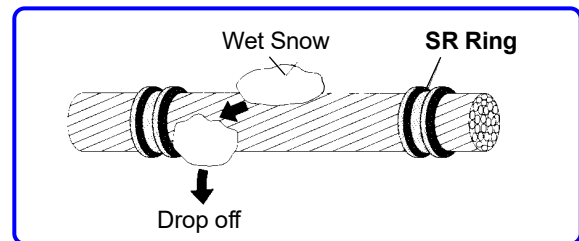
### SR Rings for urging accreted snow to drop off

SR Rings (Fig.2) are the optimum countermeasure for reducing the amount of snow accretion on an overhead line. Attaching them at a certain interval onto a stranded wire urges lumps of wet snow to drop off by restraining them from sliding spirally around the strands (Fig.3).

Various types of SR rings are available according to the conditions of overhead lines as shown in Table 1. Over 60 different sizes are available to apply to various wire sizes. A few examples are shown in Table 2. Other sizes without our current lineup will be ready to offer, on demand.



**Fig.2 SR Ring**



**Fig.3 Effect of SR Rings**

**Table 1 Types of SR Rings and Operating Conditions**

Description	Code	Operating Conditions
Snow Resistant Ring (normal type)	SR	Max temp 180°C, Gmax 15kV/cm or less
Corona Free Snow Resistant Ring	ESR	Max temp 180°C, Gmax 17kV/cm or less
Wide Corona Free Snow Resistant Ring	ESRW	Max temp 180°C, Gmax 19kV/cm or less
Thermo Free Snow Resistant Ring	TSR	Max temp 240°C, Gmax 15kV/cm or less
Extra Thermo Free Snow Resistant Ring	XTSR	Max temp 290°C, Gmax 15kV/cm or less
Conductive, Thermo Free Snow Resistant Ring	ETSR	Max temp 240°C, Gmax 17kV/cm or less
Low Noise Snow Resistant Ring	LNSR	Max temp 180°C, Gmax 17kV/cm or less

**Table 2 SR Rings Configurations and Dimensions**

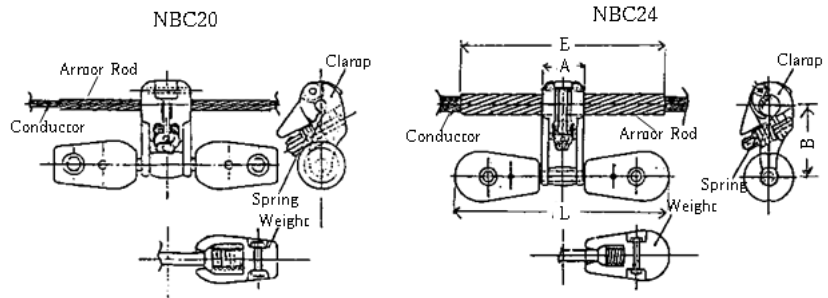
Configuration	SR					ESR			ESRW			TSR·XTSR			ETSR			LNSR		
	W	t	L	W	t	L	W	t	L	W	t	L	W	t	L	W	t	L		
Size	O.D. (mm)	W (mm)	t (mm)	L (mm)	W (mm)	t (mm)	L (mm)	W (mm)	t (mm)	L (mm)	W (mm)	t (mm)	L (mm)	W (mm)	t (mm)	L (mm)	W (mm)	t (mm)	L (mm)	
dimensions	A810	38.4	10.0	5.0	900	13.0	4.2	900	20.0	4.4	900	10.0	5.0	900	13.0	4.2	900	13.0	4.2	900
	A610	34.2	10.0	5.0	800	13.0	4.2	800	20.0	4.4	800	10.0	5.0	800	13.0	4.2	800	13.0	4.2	800
	A410	28.5	10.0	4.0	600	13.0	4.2	600	20.0	4.4	600	10.0	4.0	600	13.0	4.2	600	13.0	4.2	600
	A330	25.3	8.0	4.0	600	13.0	4.2	600	20.0	4.4	600	8.0	4.0	600	13.0	4.2	600	—	—	—
	A240	22.4	8.0	4.0	500	13.0	4.2	500	20.0	4.4	500	8.0	4.0	500	13.0	4.2	500	—	—	—
	A160	18.2	8.0	4.0	400	11.0	3.8	400	20.0	4.0	400	8.0	4.0	400	11.0	3.8	400	—	—	—

Notes 1) Size: conductor area, O.D.: outer diameter, L: spacing interval

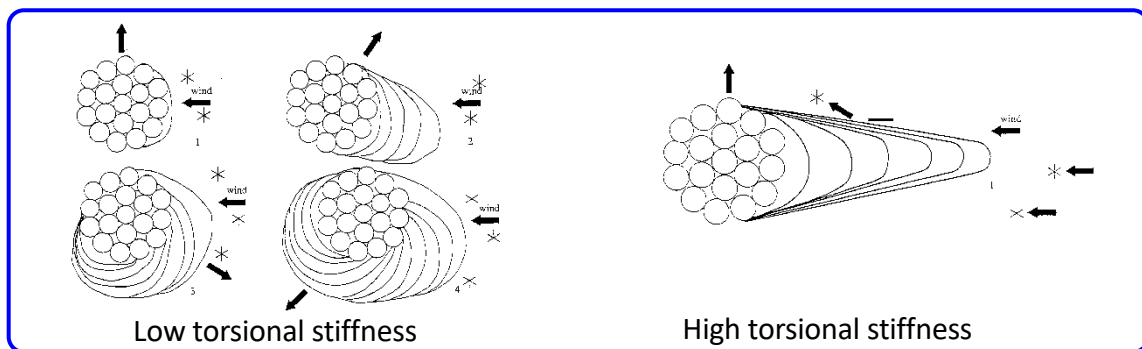
## Counterweight for preventing snow accretion from developing

Counterweight (Fig.4) is a product installed onto overhead lines at intervals of about 100 meters to prevent snow accretion from developing. Wet snow tends to develop heavily by twisting the wire. In contrast to this mechanism, installing counterweights onto conductors can strengthen the torsional stiffness of the wire and reduce the snow accumulation (Fig.5).

Counterweights for various wire sizes are available as well as SR rings. Table 3 shows some typical sizes from our lineup. Other sizes without our current lineup will be ready to offer as well, on demand.



**Fig. 4 Counterweight**



**Fig.5 Wet snow accretion on a stranded wire <sup>1)</sup>**

**Table 3 Counterweight Dimensions**

CAT. No.	Counterpart Conductor			Standard Dimensions						Nominal Weight (kg)
	Nominal Area (mm <sup>2</sup> )	Stranded Wires (No./mm)	Strand o.d. (mm)	A (mm)	B (mm)	L (mm)	Preformed Armor Rod			
							d (mm)	E (mm)	No./Set	
NBC28-810AC	810	45/4.8 7/3.2	38.4	80	150	430	9.3	700	14	18.0
NBC24-610AC	610	54/3.8 7/3.8	34.2	80	140	420	9.3	700	13	14.0
NBC28-410AC	410	26/4.5 7/3.5	28.5	80	150	430	7.8	500	13	16.5
NBC24-330AC	330	26/4.0 7/3.1	25.3	80	140	420	7.8	500	12	13.0
NBC20-240AC	240	30/3.2 7/3.2	22.4	72	130	420	6.7	500	12	11.0
NBC16-160AC	160	30/2.6 7/2.6	18.2	72	110	390	5.4	500	12	10.0

1) Y. Sakamoto "Snow accretion on overhead wires" (Philosophical Transactions of the Royal Society A, G. Poots, Ed., Vol. 358, 2000, pages 2941-2970)

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