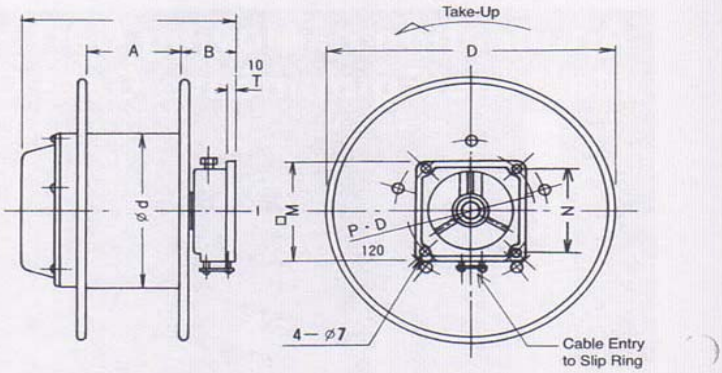
Part1 Spring Cable Reel

Definition of Our Type

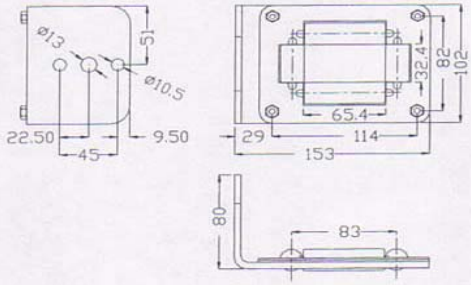
KCRS3W-4P

- 4P — Quantity of Poles
- W — Quantity of Springs
  - None:1
  - W:2
  - T:3
  - F:4
- 3 — Cabel Reel Spring
- KCRS — KYEC®

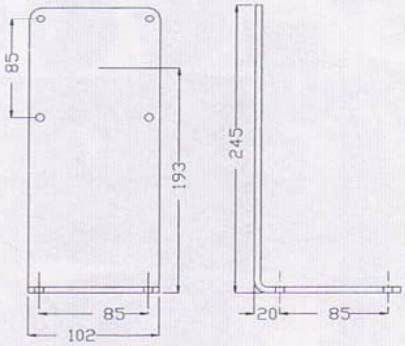
●KCRS1 、KCRS11



●Sheave Guide Chart



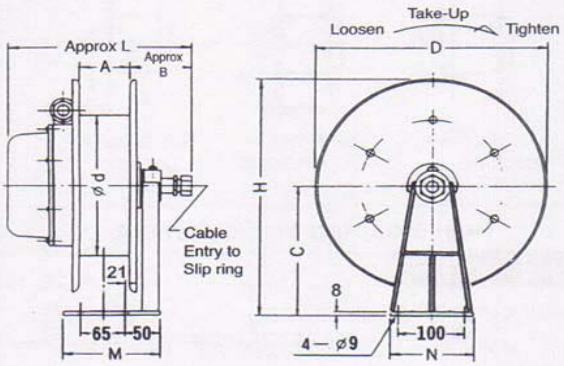
●Bracket Chart



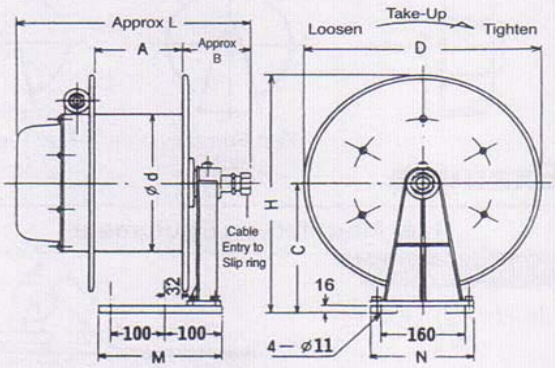
Specification and Dimension

Type	Max Length (horizontally furl)	Maximum		Reel Dimension									Weight (kg)
		Amps	Poles	A	B	C	D	d	H	L	M	N	
CRS 1	2X3 10M	15A	8P	93	55	195	290	160	340	195	105	85	8
CRS 11	2X3 13M	15A	8P	90	60	195	320	200	355	205	110	85	10
CRS 2W	3.5X3 18M	30A	12P	110	85	225	400	230	425	310	145	125	14
CRS 216W	5.5X3 16M	30A	12P	110	85	225	400	230	425	310	145	125	16
CRS 3W	3.5X3 25M	30A	12P	110	85	275	500	230	525	310	145	125	18
CRS 4W	5.5X3 18M	40A	16P	90	120	195	500	285	545	368	235	195	32
CRS 4T	5.5X3 27M	40A	16P	168	120	380	650	285	705	438	235	195	41
CRS 4F	5.5X3 38M	40A	16P	168	120	380	650	285	705	438	235	195	45
CRS 4F20	14X3 22M	40A	4P	168	120	380	650	285	705	438	235	195	46
CRS 5T	8X3 36M	40A	16P	160	130	380	650	353	705	450	235	245	68
CRS 5T20	14X3 26M	60A	4P	160	130	380	650	353	705	450	235	245	75
CRS 5F	8X3 48M	40A	16P	160	130	380	650	353	705	450	235	245	72
CRS 6F	14X3 56M	60A	4P	205	160	440	750	440	815	500	300	260	110

●KCRS2W、KCRS3W



●KCRS4F、KCRS4W、KCRS5F KCRS5T、KCRS6T



How to Choose Your Type

1. Cable's diameter should be under flange's .
2. Cable weight (per meter) × Length < Maximum Reel Torque
   Ex:3.5mm/4C as Cable Dim shows 0.41 kg/m, 10m×0.41 kg/m = 4.1kg < (7kg)

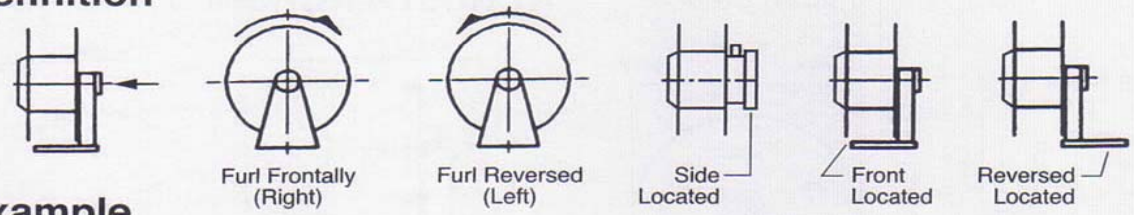
Cross-refer the Specification (P.5) find the Choice is CRS 216W.

Type	Cable Entry Flange Dim. mm	Annulus	Max Winding Force F (kgf)	Max Torque kgf*m
CRS 1	14	15	2	0.2
CRS 11	13	13	3	0.3
CRS 2W	13	22	3.5	0.4
CRS 216W	16	20	7	0.8
CRS 3W	13	35	3.5	0.4
CRS 4W	22	25	7.5	1.06
CRS 4T	22	37	7.5	1.06
CRS 4F	22	50	7.5	1.06
CRS 4F20	22	26	17	2.42
CRS 5T	26	37	10	1.76
CRS 5T20	26	30	17	3.0
CRS 5F	26	50	10	1.76
CRS 6F	33	60	24	5.28

Reel mounted on the moving equipment will be an effort-saving way.

Design(Cross-refer Questionnaire)

Definition

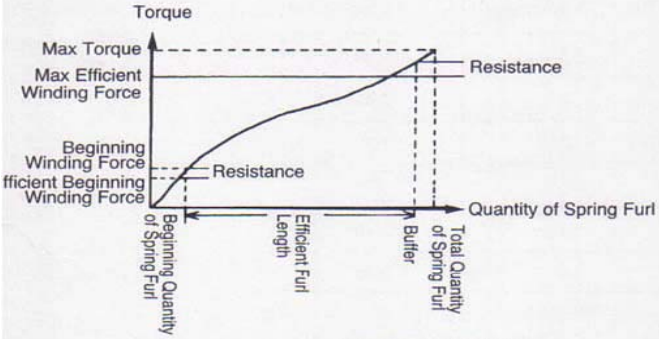


Example

Reel Mounted on Equipment	Reel Mounted on Equipment
1.Horizontally Furl $fe > (w \times \ell) \times 9.807$ $\ell \fallingdotseq 2h$	**6.Horizontally Furl** $Fe > W \times (\ell + L') \times \mu \times 9.807$ $\mu \fallingdotseq 0.7 \sim 0.6$
2.Horizontally Poised Furl $Fe > \frac{w \times L^2 \times 9.807}{8 \times S}$	**7.Horizontally Poised Furl** $Fe > \frac{w \times L^2 \times 9.807}{8 \times S}$
3.Upright Setting $fe > w \times 9.807$	**8.Upright Setting** $fe > w \times 9.807$
4.Downward Setting $Fe > (w \times L + \triangle) \times 9.807$ $\triangle$ = Weight of Load (kg)	**9.Downward Setting** $Fe > (w \times L + \triangle) \times 9.807$ $\triangle$ =
5.Horizontally/Middle Power In Fe calculated as Type 1	**10.Horizontally/Middle Power In** Fe calculated as Type 6

Fe=Max Efficient Winding Force(kgf) fe=Beginning Winding Force(kgf) L=Max Furl Length W=Cable Weight (kg/m) L'=Length on Ground
ℓ=Free Length (m) S= Poised Drop Allowable Length μ=Efficient Value

Efficient Winding Force(kgf)



Max Winding Force $F(kgf) = \frac{\text{Max Torque (kgf} \cdot \text{m)}}{\text{Reel Radius (m)}}$

Max Efficient Winding Force $Fe(kgf) = \mu \cdot F\ (kgf)$ $\mu = 0.7$

When quantity of poles is over 4 or speed is over 40 m/min or other resistant cause occur, by all means add the buffer (reduce the μEfficient Value).

Cable Dim

Conductor Cross Section Area mm² \ Type Poles	3 poles		4 poles	
	O.D mm	Weight kg/m	O.D mm	Weight kg/m
1.25	11.5	0.195	13.0	0.245
2.0	12.5	0.23	13.5	0.285
3.5	14.0	0.33	15.5	0.41
5.5	15.5	0.43	17.5	0.54
8.0	17.0	0.54	19.0	0.69
14.0	22.0	0.905	25.0	1.15
22.0	28.0	1.73	31.0	1.82
(30.0)	33.0	1.96	36.0	2.5
38.0	35.0	2.34	39.0	3.0
(50.0)	39.0	2.85	43.0	3.64
60.0	42.0	3.45	47.0	4.41
(80.0)	49.0	4.64	55.0	5.94
100.0	54.0	5.63	60.0	7.2

Spring cable reel installment

Step

1. Power-in terminal enter "D" slip ring unit through "G" hollow axis, connected with "E" slip ring. (chart 1)

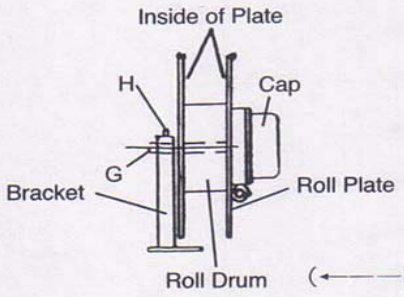
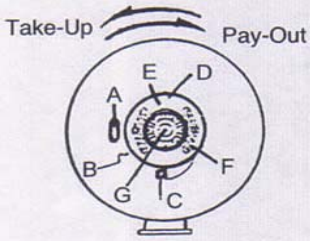


Chart 1



(←——Direction)

Chart 2

A : ⬭ Cable Hole
B : Cable Fixed Flake
C : Cable End
D : Slip Ring Unit
E : Slip Ring
F : Carbon Brush Base
G : Hollow Axis
H : Axis Located Screw

2. Cable pierces "A" hole ⬭ from the inside of roll plate and through "B" fixed point into "C" cable end. Connect the cable with carbon brush and arrange the cables. Lock the outside cap after connection.*Avoid cable hooking the screw parts, cables in the spring ring unit should be leaned aside as possible as you can. (chart 2)
3. Roll all cables clockwise in the roll plate (chart 3), or handle the cable and move roll plate anti-clockwise till all cables completed (chart 4)
4. Locate the cable reel.

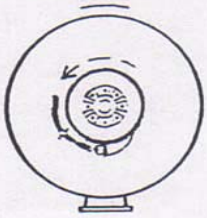


Chart 3

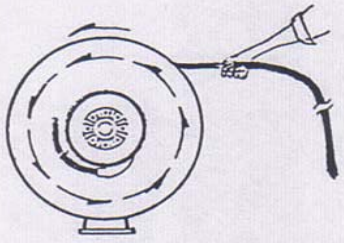
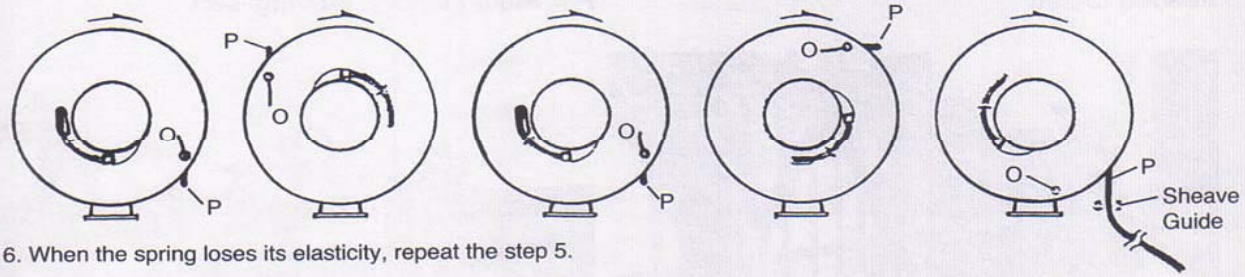


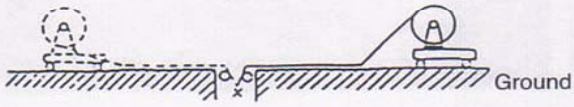
Chart 4

5. Move the plate 2?3 cycles (snail shape spring will save the kinetic energy). Pull cable out through the sheave guide; make a trial run after connect power.



6. When the spring loses its elasticity, repeat the step 5.
7.

Moving cart roll horizontally



with sheave guide.
(recommended standard way)

Moving cart on ground

(not recommended due to the additional kinetic friction).