29A - MAST COMPOSITION

1. CRANE TOWERS

1. 1. FREE STANDING CRANES

❑ The mast compositions on pages 29A-0520-.. are given for free standing heights IN SERVICE and OUT OF SERVICE and for the static and rail-mounted versions indicated in the data sheet .

The assembling order is that given in paragraph (29A-0520 -...) for reasons of strength. These documents deal with the optimum composition of the crane tower which is not allowed to be lower. But it is possible to fit stronger sections (*).

(*) Strong sections: Example: 1 section with upright made up of boxed L120x15 is stronger (strength) than a section with upright made up of boxed L120x12.

❑ It is possible to replace 1 tower section of 10 m length by 2 mast sections of 5 m length or 3 mast sections of 3,33 m length.

1. 2. VERY HIGH CRANES

Beyond the free standing height of rail-mounted or static crane, the crane must be connected either to the ground by anchorage by guy ropes or to the building by rigid anchorages.

For each utilization of anchorages on cranes with chassis, please consult us.

i The very high cranes are subjected to a downgrading of the load. (**)

(**) COMPULSORILY consult us.

1. 2. 1. With rigid anchorages to the building

❑ The heights indicated in the tables of pages 29A-0530-... are the H.S.C.(Hook height) and the anchorage heights on fixing angles taken with respect to the joint face of the fixing angles.

i The anchorage heights and the distances between the frames are minimum values which must be strictly observed. Each value lower than the indicated one results in a smaller number of sections above the anchorage (therefore a downgrading of the hook height). Please consult us.

The mast composition is given for the optimum utilization of the frame.

❑ The determination and the execution of the beams connecting the anchorage frame to the building are on the user's responsibility. They must be able to take up the loads and reactions given in the tables on pages 29A-0530-...

1. 2. 2. With anchorage by guy ropes (**)

(**) COMPULSORILY consult us.

1. 3. UNUSUAL CASES

1. 3. 1. With climbing inside the building

❑ The mast compositions and the loads applied on the frames are given in the chapter 29A specific to this operation.

1. 3. 2. REDUCING THE FREE STANDING HEIGHT DUE TO THE TELESCOPIC CAGE.

If, for reasons of later increase in height, the telescopic cage is to be left at the top of the masts, it is absolutely necessary to reduce the free standing height ”IN SERVICE” and ”OUT OF SERVICE” by removing X mast sections (**).

(**) COMPULSORILY consult us.

2. A SET OF RECOMMENDED MAST SECTIONS

2. 1. SECTIONS OF 10,5 M LENGTH

- ❑ SR24BS Cross section 1,20 x 1,20 m – length 10,5 m – Monoblock tower section – witht lugs – allows starting telescoping with mast sections of 3 m length.– lowerfish joint D50 – upper fish joint D40.
- ❑ S26BS Cross section 1,20 x 1,20 m – length 10,5 m – Monoblock tower section – witht lugs – allows starting telescoping with mast sections of 3 m length.– lowerfish joint D50 – upper fish joint D50.
- ❑ SR28ER Cross section 1,20 x 1,20 m – length 10,5 m – Monoblock tower section – without lugs – allows starting telescoping with mast sections of 3 m length.– lowerfish joint D65 – upper fish joint D50.

2. 2. SECTIONS OF 3 M LENGTH

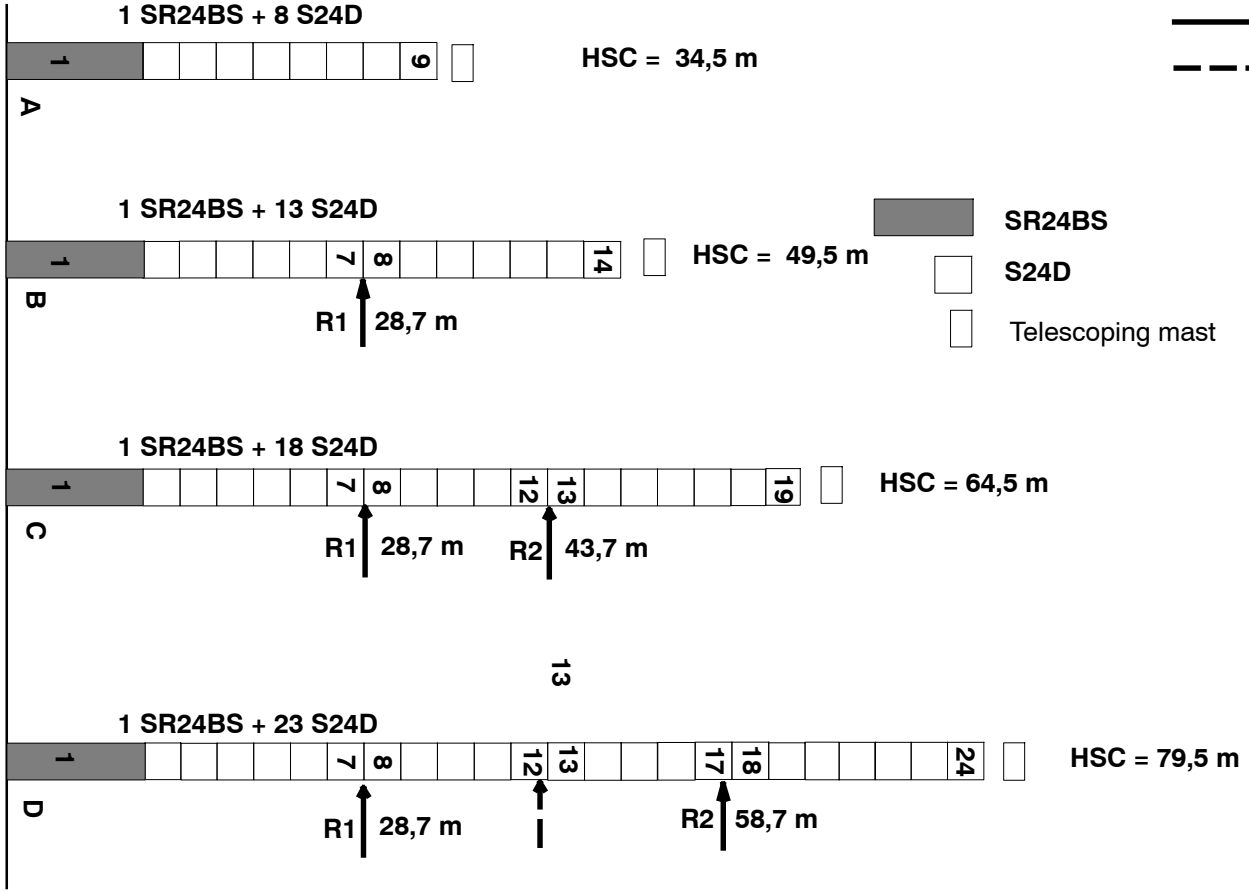
- ❑ S24D1 Cross section 1,20 x 1,20 m – length 3 m – Monoblock mast section – with lugs – can be telescoped
- ❑ S24D2 Cross section 1,20 x 1,20 m – length 3 m – Monoblock mast section – with lugs – with resting platform – can be telescoped
- ❑ SR24D1 Cross section 1,20 x 1,20 m – length 3 m – Monoblock mast section – with lugs – can be telescoped

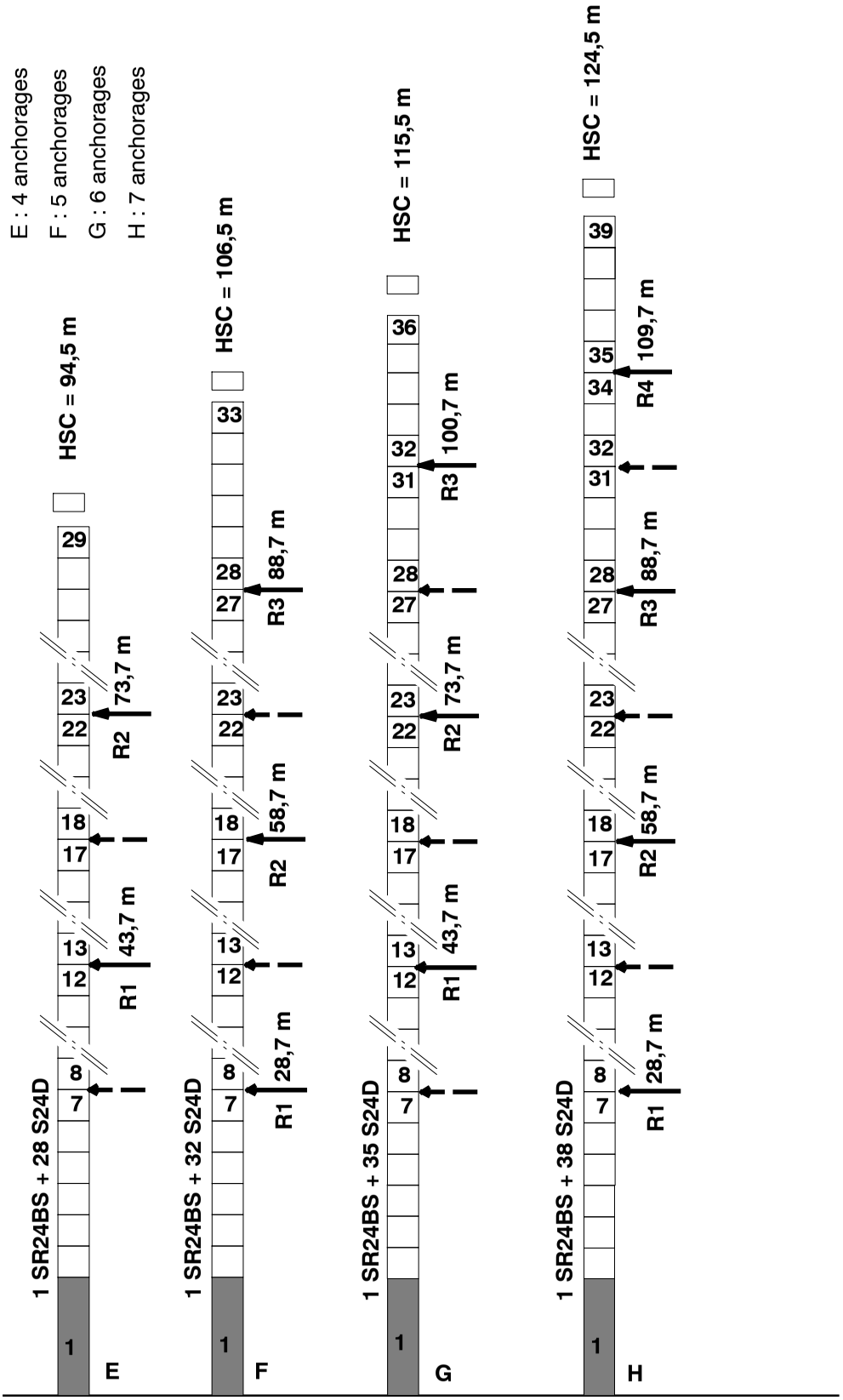
2. 3. TELESCOPING MAST

- ❑ Cross section 1,20 x 1,20 m – length 1,50 m – Monoblock mast section – with fixing gussets for the telescopic cage. Always placed under the fixed towerhead, it ensures the connection with the other crane tower sections.

3. MAST COMPOSITION (VERY HIGH CRANE) AND REACTIONS ON THE ANCHORAGES

3. 1. MCi85A - P12C - FEM 1.001



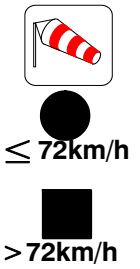


3. 2. REACTIONS ON THE ANCHORAGES

≤ 72km/h

> 72km/h

H.S.C (m)	H1 (m)	H2 (m)	H3 (m)	H4 (m)	H5 (m)	H6 (m)	RS (daN)	R1 (daN)	R2 (daN)	R3 (daN)	R4 (daN)	R5 (daN)	R6 (daN)
				Cmax : **109 kN.m**			RS	R1	R2	R3	R4	R5	R6
124.5	28.7	58.7	88.7	109.7			6. 21.	11. 48.	18. 61.	-35. 35.	58. 100.		
121.5	28.7	58.7	88.7	109.7			6. 20.	11. 49.	17. 59.	-33. 45.	53. 85.		
118.5	28.7	58.7	88.7	109.7			6. 20.	10. 49.	20. 57.	-27. 54.	49. 70.		
115.5	43.7	73.7	100.7				9. 37.	21. 67.	-28. 40.	53. 102.			
112.5	43.7	73.7	100.7				9. 37.	20. 65.	-28. 48.	48. 88.			
109.5	43.7	73.7	100.7				9. 37.	19. 63.	27. 56.	45. 75.			
106.5	28.7	58.7	88.7				5. 19.	20. 54.	-27. 41.	55. 109.			
103.5	28.7	58.7	88.7				5. 20.	19. 51.	-26. 50.	51. 95.			
100.5	28.7	58.7	88.7				5. 20.	18. 49.	-26. 58.	47. 82.			
97.5	28.7	58.7	88.7				6. 21.	17. 47.	26. 67.	43. 66.			



Cmax : **109 kN.m**

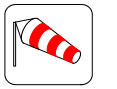
H.S.C (m)	H1 (m)	H2 (m)	H3 (m)	H4 (m)	H5 (m)	H6 (m)	RS (daN) RS	R1 (daN) R1	R2 (daN) R2	R3 (daN) R3	R4 (daN) R4	R5 (daN) R5	R6 (daN) R6
94.5	43.7	73.7					14.	-25.	58.				
							40.	45.	110.				
91.5	43.7	73.7					14.	-24.	54.				
							39.	53.	97.				
88.5	43.7	73.7					13.	-24.	50.				
							38.	61.	86.				
85.5	43.7	73.7					12.	24.	46.				
							37.	67.	75.				
82.5	43.7	73.7					12.	25.	42.				
							36.	73.	64.				
79.5	28.7	58.7					15.	-32.	60.				
							26.	28.	113.				
76.5	28.7	58.7					14.	-30.	55.				
							23.	38.	100.				
73.5	28.7	58.7					13.	-29.	51.				
							21.	47.	88.				
70.5	28.7	58.7					12.	-28.	47.				
							19.	54.	77.				

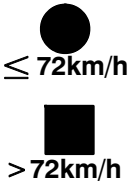
Cmax : **109 kN.m**

≤ 72km/h

> 72km/h

H.S.C (m)	H1 (m)	H2 (m)	H3 (m)	H4 (m)	H5 (m)	H6 (m)	RS (daN) RS	R1 (daN) R1	R2 (daN) R2	R3 (daN) R3	R4 (daN) R4	R5 (daN) R5	R6 (daN) R6
67.5	28.7	58.7					11.	28.	44.				
							17.	61.	67.				
64.5	28.7	43.7					13.	-57.	81.				
							28.	-6.	118.				
61.5	28.7	43.7					12.	-52.	75.				
							26.	9.	99.				
58.5	28.7	43.7					11.	-49.	69.				
							24.	22.	82.				
55.5	28.7	43.7					13.	-44.	64.				
							23.	34.	66.				
52.5	28.7	43.7					12.	-42.	60.				
							22.	44.	51.				
49.5	28.7						-32.	65.					
							0.	111.					
46.5	28.7						-29.	60.					
							9.	97.					
43.5	28.7						-27.	56.					
							17.	84.					
40.5	28.7						-26.	51.					
							23.	71.					





H.S.C (m)	H1 (m)	H2 (m)	H3 (m)	H4 (m)	H5 (m)	H6 (m)	RS (daN) RS	R1 (daN) R1	R2 (daN) R2	R3 (daN) R3	R4 (daN) R4	R5 (daN) R5	R6 (daN) R6
			Cmax : **109 kN.m**										
37.5	28.7						-25. 29.	47. 60.					
40.5	25.7						-3136. 1195.	5839. 8281.					
37.5	25.7						-2977. 1961.	5375. 6958.					
34.5	25.7						-2648. 2629.	4976. 5733.					

R ● 81 kN

R ■ 118 kN

H1 - H2 - H3 - H4 : Height of tightened anchorages

RS : Reactions on the ground

R ● : Maximum reaction “In Service”

R1 - R2 - R3 - R4 : Reactions on anchorages tightened

Cmax = Max. torsional moment on the masts

R ■ : Maximum reaction “Out of Service”