

USER MANUAL
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TECHNICAL SHEET

D TECHNICAL SHEET



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D.1 CRANE'S TECHNICAL DATA

Versions			1S	2S	3S	4S	5S
Max. net lifting moment		 t m kNm	12.4 122	11.8 116	11.4 112	11.1 109	10.7 105
Max. dynamic moment		 $daNm$ kNm	15570 156				
Capacity at min. hydraulic outreach	hook [S2]	 kg	2740	2610	2475	2355	2245
	grab [S1]	 kg	2740	2610	2475	2355	2245
Max rated capacity		min. outreach  m	4.54	4.54	4.62	4.71	4.78
Capacity at max. hydraulic outreach	hook [S2]	 kg	1940	1395	1015	755	560
	grab [S1]	 kg	1940	1395	1015	755	560
	max.outreach	 m	6.34	8.14	10.20	12.27	14.39
Capacity of 1st man. extension	capacity	 kg	N/A	1010	755	560	410
	max.outreach	 m	N/A	10.36	12.34	14.39	16.49
Max. load height above the base for the last extension	hydraulic	 m	8.6	10.3	12.3	14.3	16.4
	manual	 m	N/A	16.4	18.4	18.4	18.4
Weight of crane without stabilizers		 kg	1335	1455	1570	1660	1745
Weight of stabilizers	ST-M	kg	210				
	EX-M	kg	270				
	EX-H	kg	305				
	SE-H	kg	360				
Weight of 1st man ext.		 kg	N/A	65	46	40	32
Max. working pressure		 bar	285				
Max. oil flow rate		 l/min	30				
		 l/min	60				
Max. power needed		 kW	18.5				
		 kW	37.1				
Oil tank capacity		 l	130				
Slewing angle		 $^{\circ}$	425				
Gross slewing torque		 $daNm$ kNm	1420 14.2				
Max. base inclination		 $^{\circ}$	4 $^{\circ}$				
		 $^{\circ}$	3 $^{\circ}$				
Max boom inclination for use with CE winch		$^{\circ}$	75 $^{\circ}$				
Max. stabilizer force on the ground with stabilizers fully extended	ST	daN	8025				
	EX	daN	6130				
	SE	daN	4960				
Max. stabilizer pressure on the ground with stabilizers fully extended	ST	MPa	3.15				
	EX	MPa	2.41				
	SE	MPa	1.95				
Lifting coversion factor, k		kgm/bar	52.53				
Distribution factor of dyn. moment on base, β		-	0.70				
Position of standard dead point (see D.6)							

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D.2 WINCH SETTINGS

T11 - SINGLE LINE PULL

Versions		1S	2S	3S	4S	5S
 Max line pull	kg	1000	1000	1000	1000	1000

T11 - DOUBLE LINE PULL

Versions		1S	2S	3S	4S	5S
 Max line pull	kg	1000	1000	1000	1000	1000

T12 - SINGLE LINE PULL

Versions		1S	2S	3S	4S	5S
 Max line pull	kg	2000	2000	2000	2000	2000

N/A: configuration not available



When the crane is equipped with winch, the max. working pressure and the limiter setting pressure are increased by 10 bar with respect to the standard ones.

D.3 TOTAL WEIGHTS

The table shows the total weights including oil inside the cylinders (fully retracted) and considering oil tank empty.

kg	Crane version				
Type of stabilizers	1S	2S	3S	4S	5S
ST-M	1545	1665	1780	1870	1955
EX-M	1605	1725	1840	1930	2015
EX-H	1640	1760	1875	1965	2050
SE-H	1695	1815	1930	2020	2105

Additional weight for T11 winch: 95 kg

Additional weight for T12 winch: 150 kg

Additional weight of 1st extra function activated with slides: 8 kg pro hydraulic extension

Additional weight of 2nd extra function activated with slides: 2 kg pro hydraulic extension

Additional weight of 1st extra function activated with hose reel: 20 kg

Additional weight of 2nd extra function activated with hose reel: 10 kg

The weights may vary by $\pm 3\%$

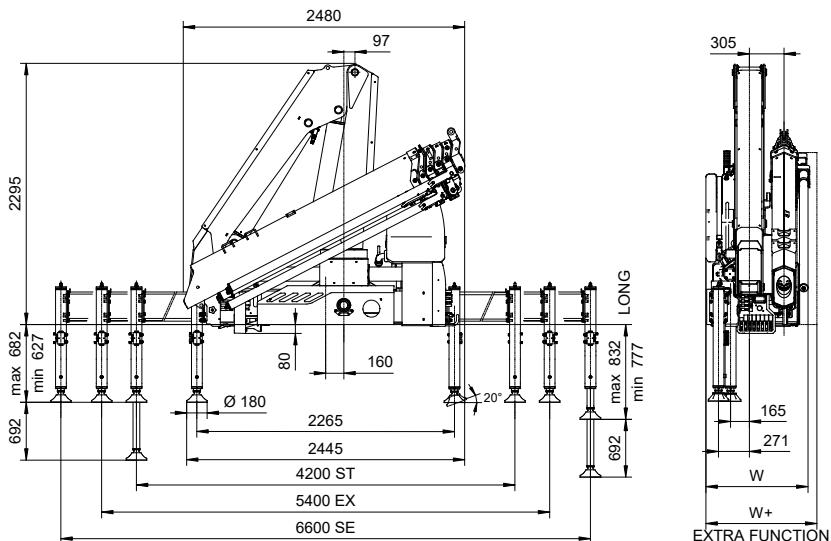
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D.4 OVERALL DIMENSIONS

FIXED STABILIZERS LEGS

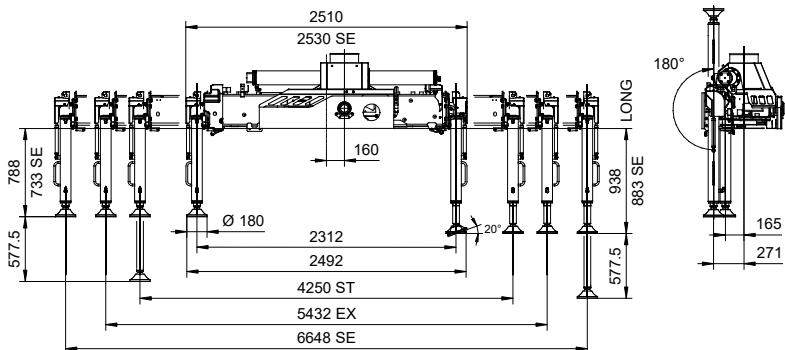


	1S	2S	3S	4S	5S
W (mm)	825	825	825	825	895
W+ (mm)	930 (*)	930 (*)	930 (*)	930 (*)	975 (**)

(*) activations with slides

(**) activations with hose reel

TURNING STABILIZERS LEGS

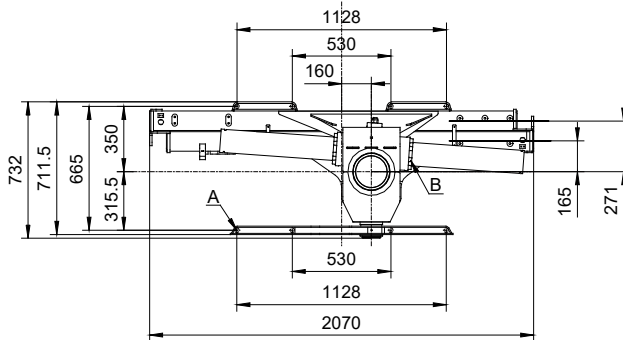


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D.5 BASE DIMENSIONS AND MOUNTING BOLTS



Ref.	Description	Q.ty	Material Grade	Size	Tightening torque
A	Kit with 8 crane mounting bolts	8	42CrMo4+QT EN 10083-3	M24x2 L=1100	400 Nm
	Kit with 4 crane mounting bolts	4	42CrMo4+QT EN 10083-3	M30x2 L=600	700 Nm
B	Fixing bolts for each slewing cylinder	8	8.8	M14x2 L=40	80 Nm

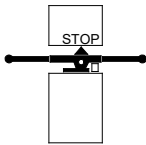
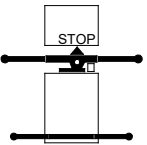
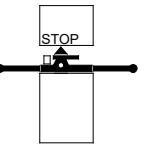
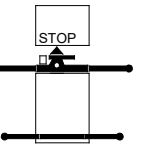
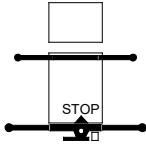
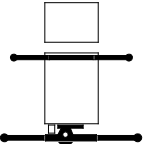
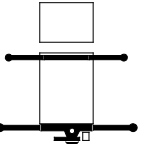
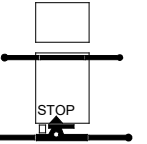
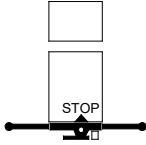
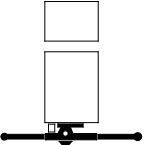
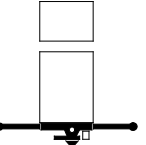
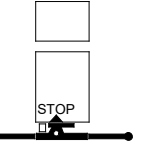
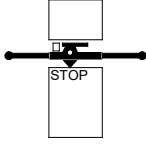
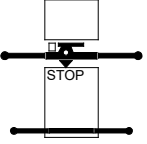
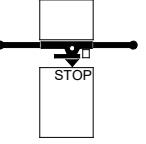
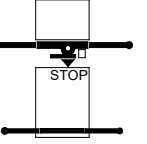
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D.6INSTALLATION TYPE NUMBER

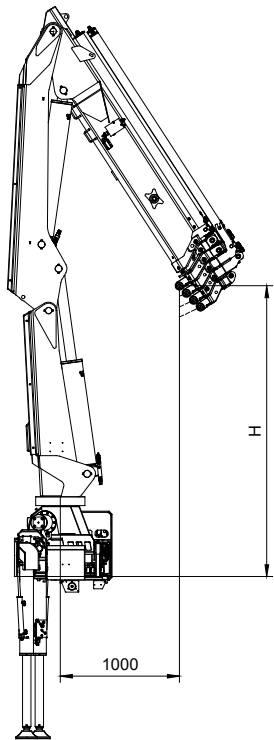
Installation types numbers (ITN) for cranes with standard dead point (STOP) toward swing bridge.

OPPOSITE DEAD POINT		STANDARD DEAD POINT	
1 	2 	3 	4 
5 	6 	7 	8 
9 	10 	11 	12 
13 	14 	15 	16 

Legend:
▲ : position of dead point (STOP)
□ : position of main manual controls (on column side)

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D.7 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
1S	1627
2S	1536
3S	1458
4S	1375
5S	1293

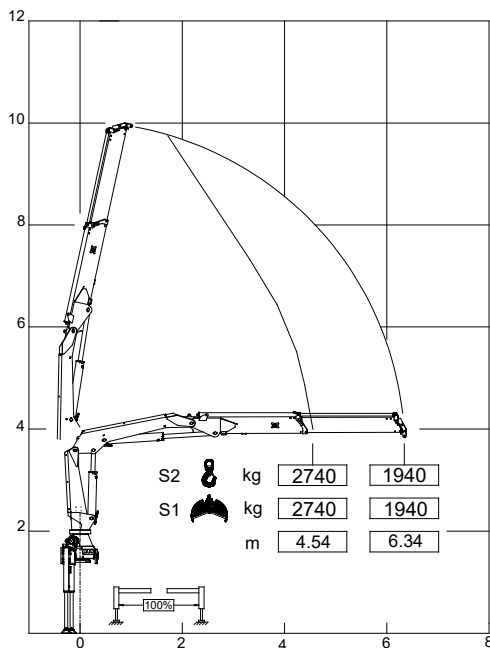
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D.8 LOAD CHARTS FOR USE WITH HOOK/TOOL

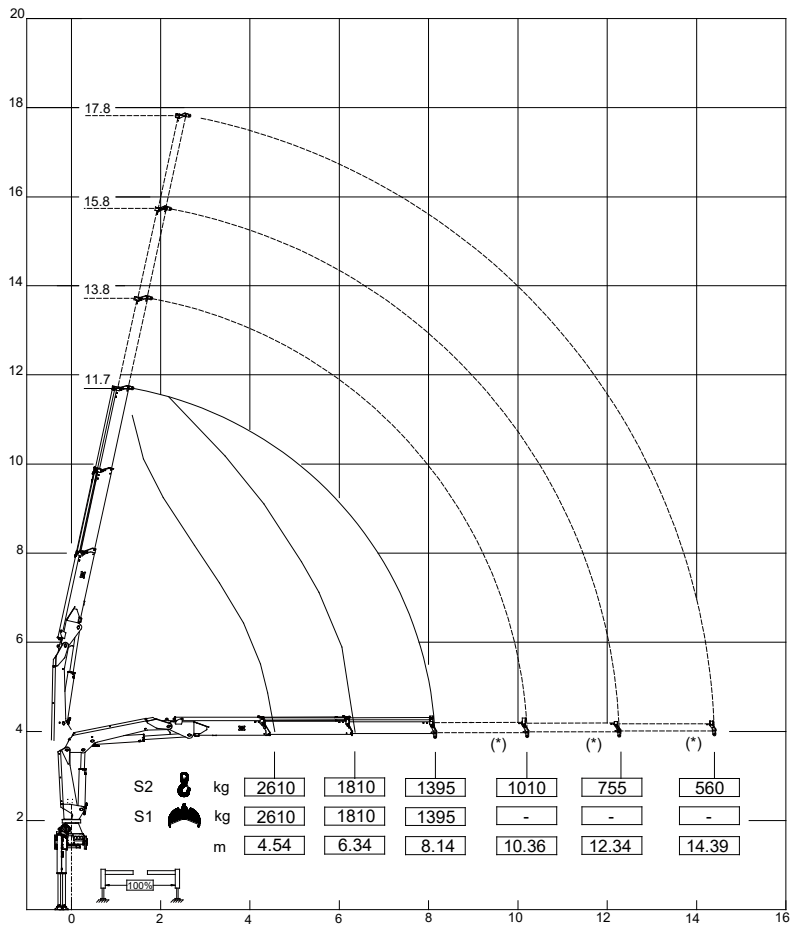
813NG 1S



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
 If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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LOAD CHARTS FOR USE WITH HOOK/TOOL
813NG 2S



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

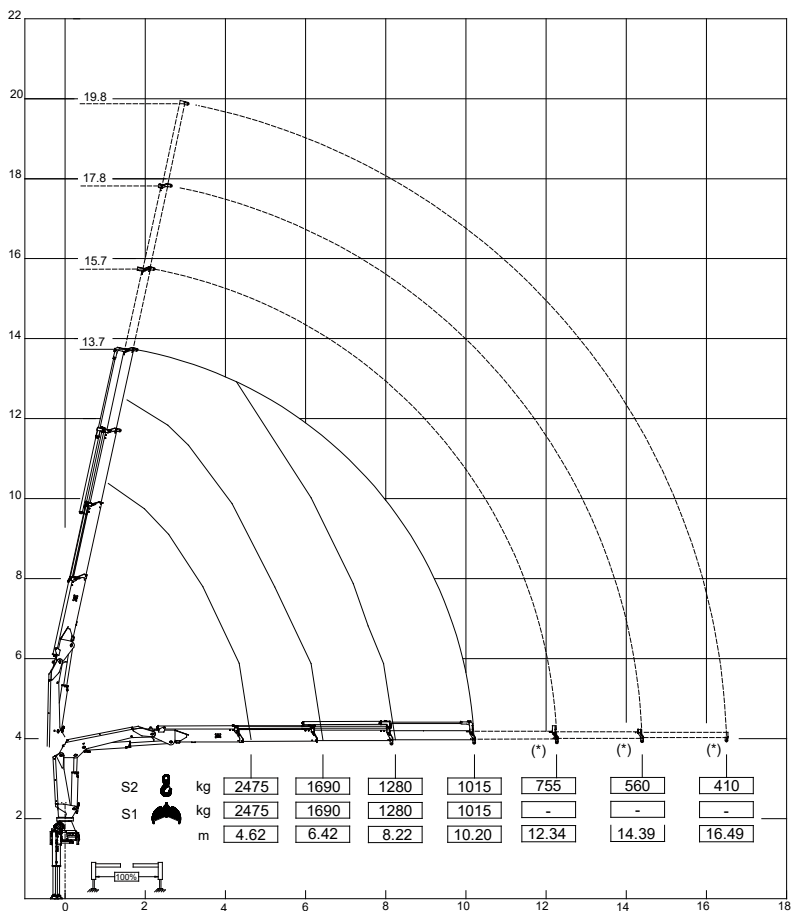
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LOAD CHARTS FOR USE WITH HOOK/TOOL

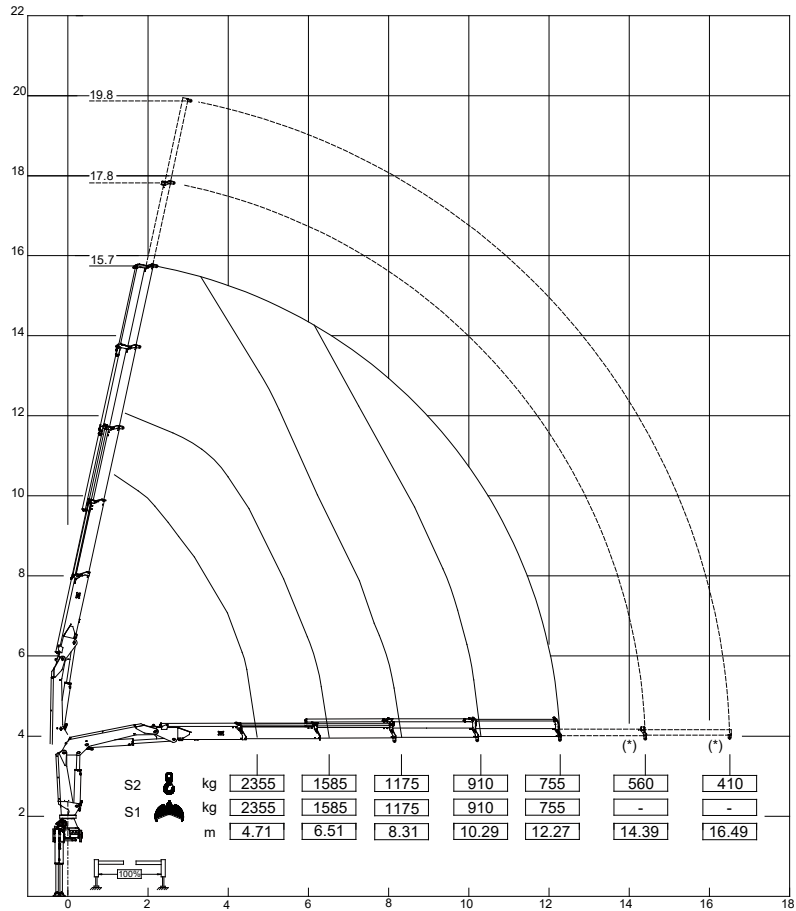
813NG 3S



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
 If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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LOAD CHARTS FOR USE WITH HOOK/TOOL
813NG 4S



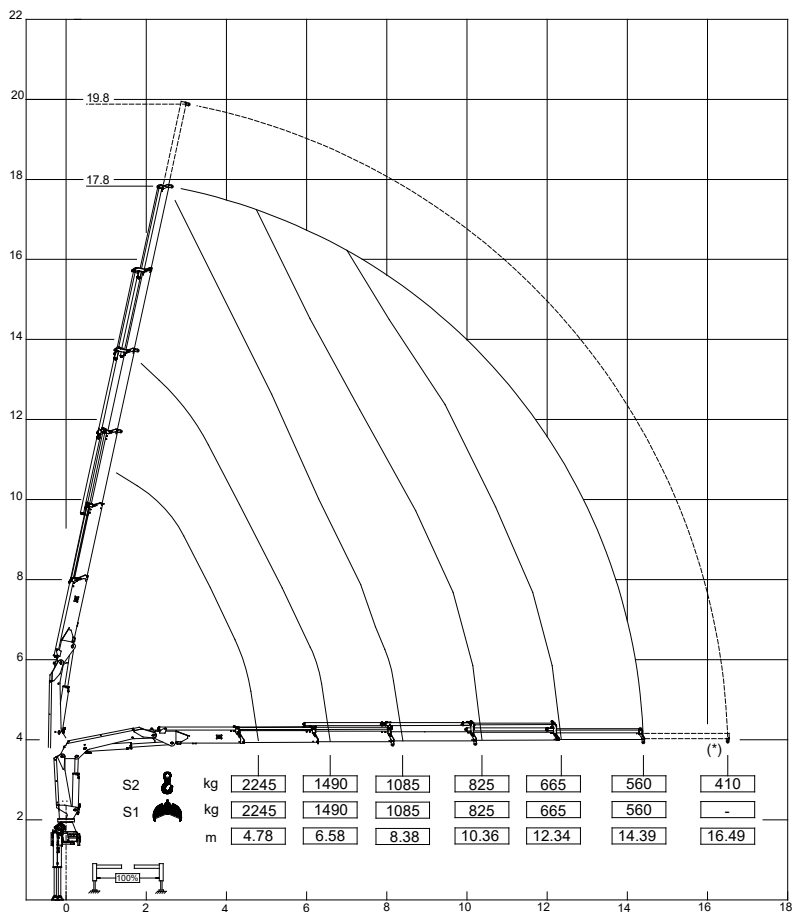
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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LOAD CHARTS FOR USE WITH HOOK/TOOL 813NG 5S



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

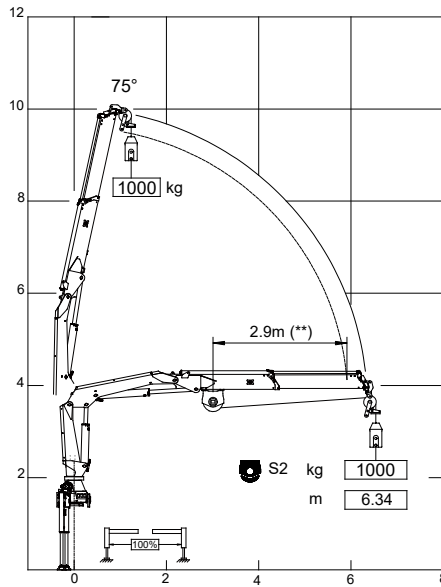
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D.9 LOAD CHARTS FOR T11 WINCH IN SINGLE LINE

813NG 1S + T11 SINGLE LINE



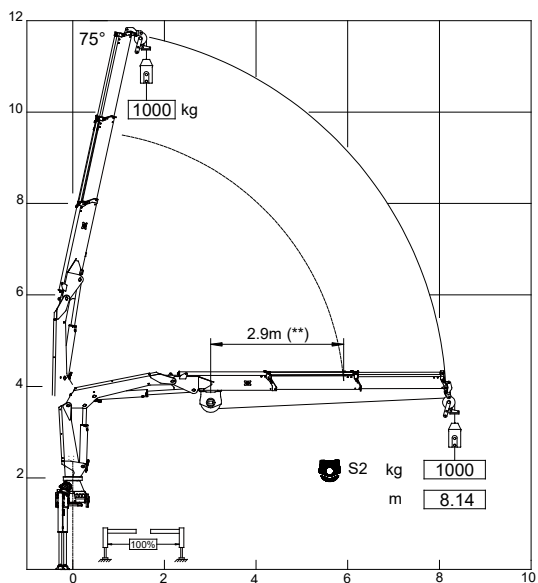
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN SINGLE LINE 813NG 2S + T11 SINGLE LINE



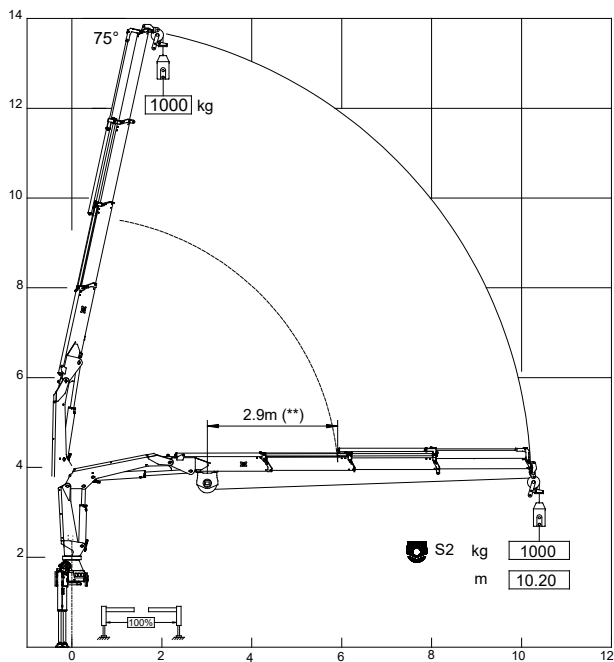
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN SINGLE LINE 813NG 3S + T11 SINGLE LINE



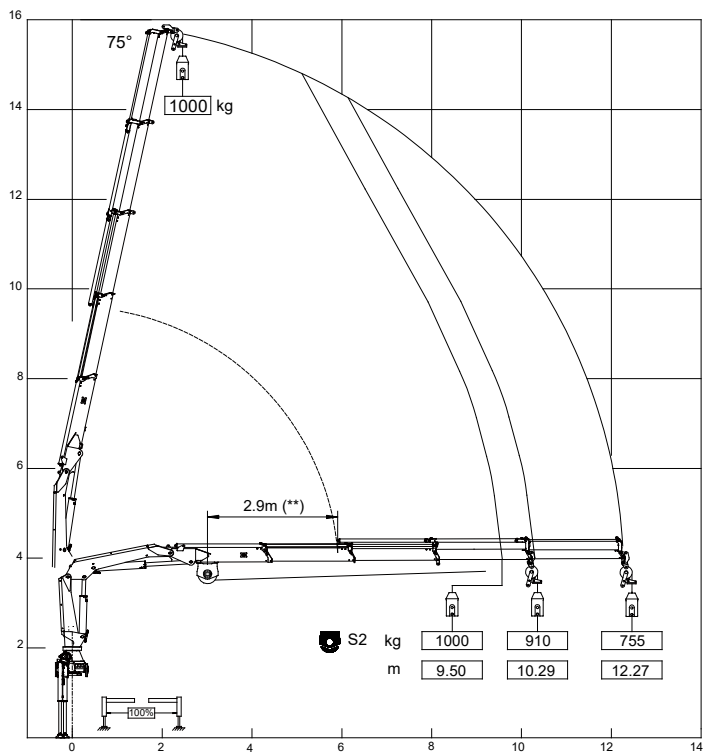
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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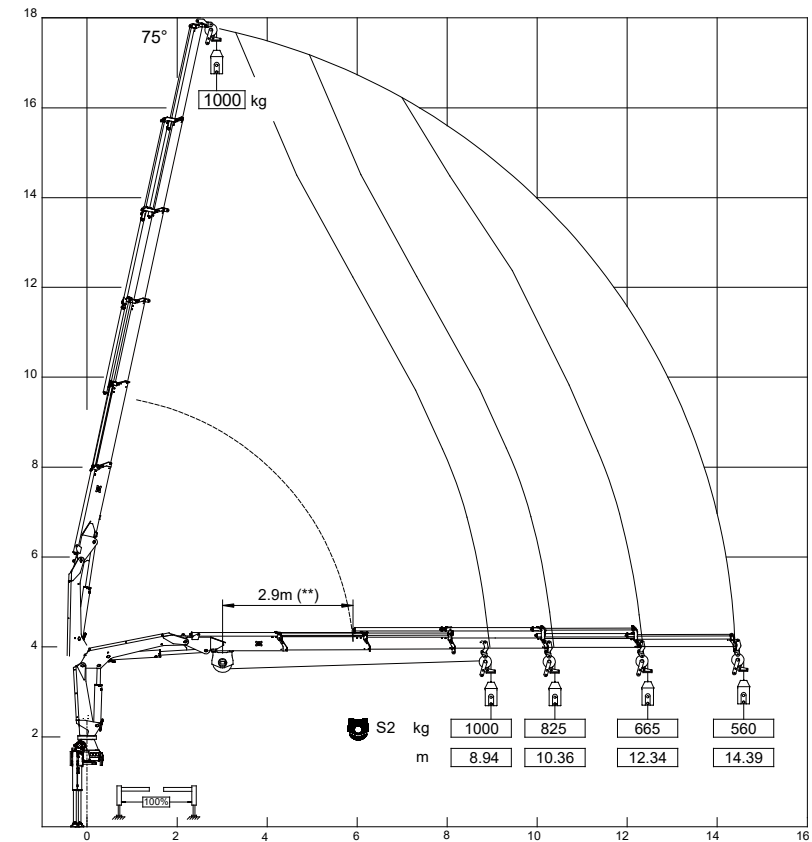
LOAD CHART FOR WINCH T11 IN SINGLE LINE 813NG 4S + T11 SINGLE LINE



(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN SINGLE LINE
813NG 5S + T11 SINGLE LINE



(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

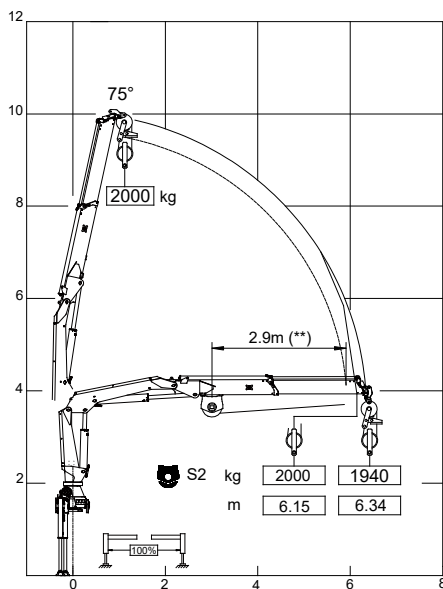
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D.10 LOAD CHARTS FOR T11 WINCH IN DOUBLE LINE

813NG 1S + T11 DOUBLE LINE



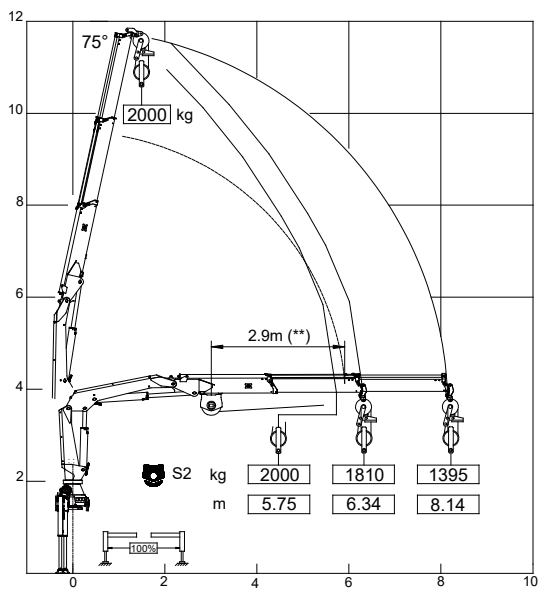
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN DOUBLE LINE 813NG 2S + T11 DOUBLE LINE



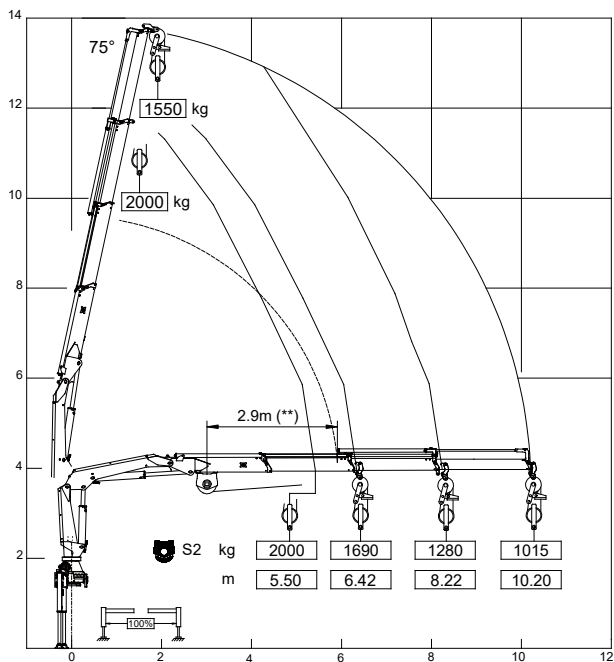
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN DOUBLE LINE 813NG 3S + T11 DOUBLE LINE



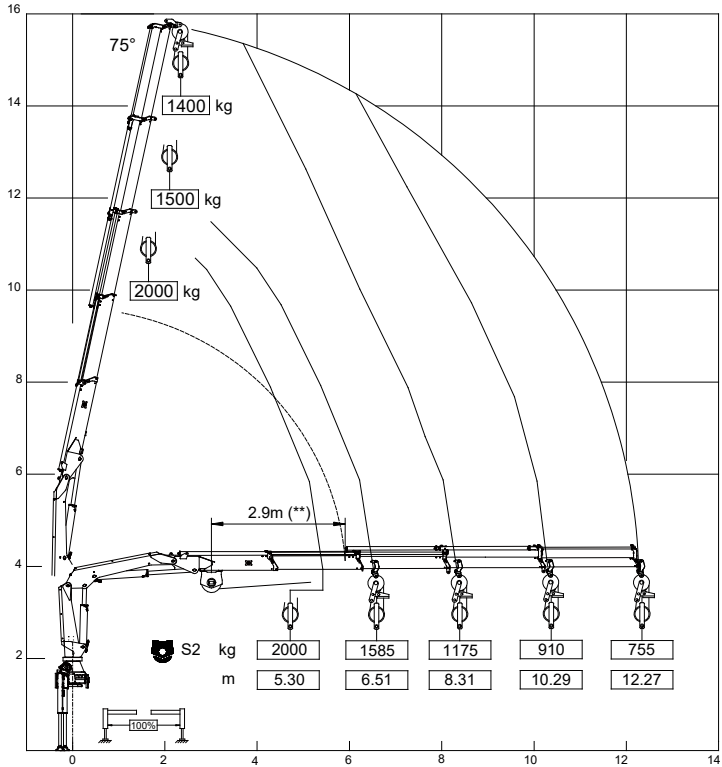
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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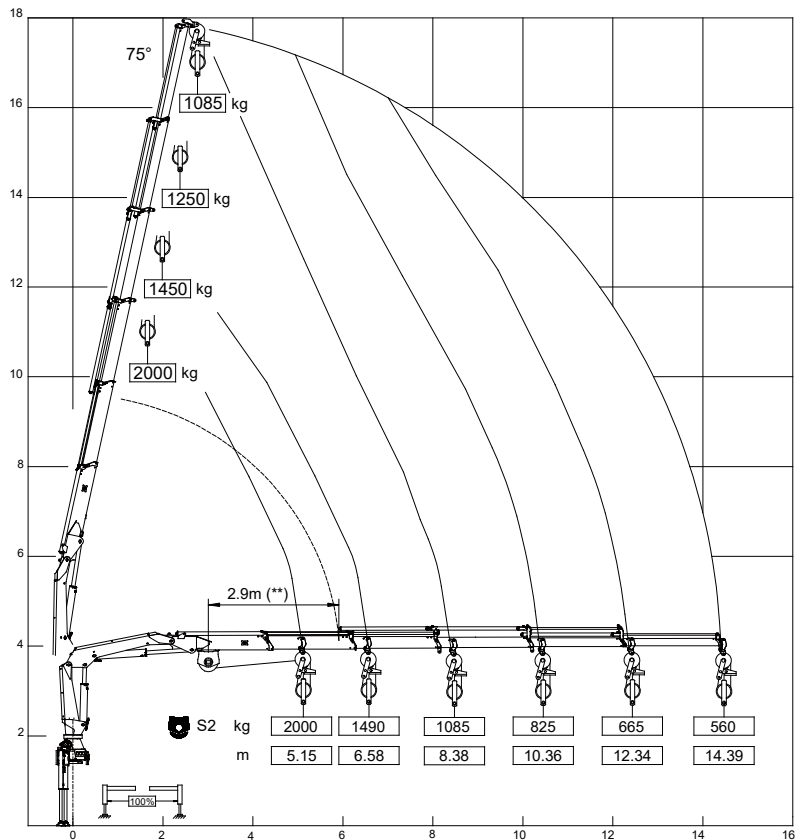
LOAD CHART FOR WINCH T1 IN DOUBLE LINE 813NG 4S + T1 DOUBLE LINE



(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN DOUBLE LINE
813NG 5S + T11 DOUBLE LINE



(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

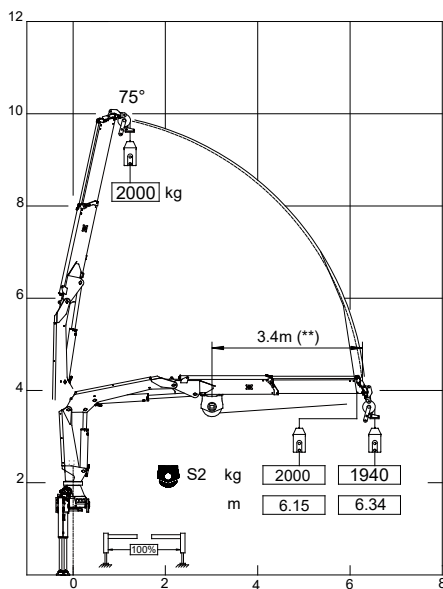
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D.11 LOAD CHARTS FOR T12 WINCH IN SINGLE LINE

813NG 1S + T12 SINGLE LINE



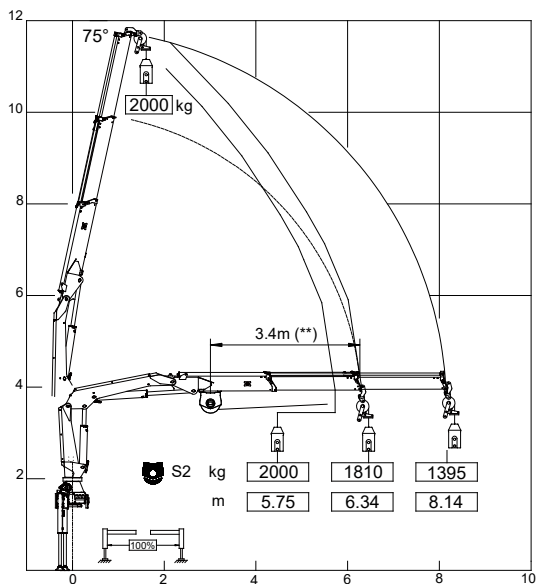
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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LOAD CHART FOR WINCH T12 IN SINGLE LINE 813NG 2S + T12 SINGLE LINE



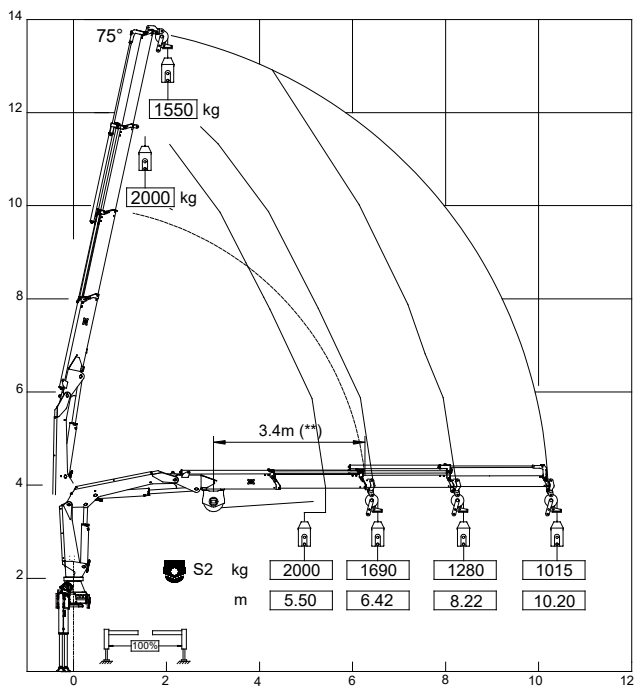
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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LOAD CHART FOR WINCH T12 IN SINGLE LINE 813NG 3S + T12 SINGLE LINE



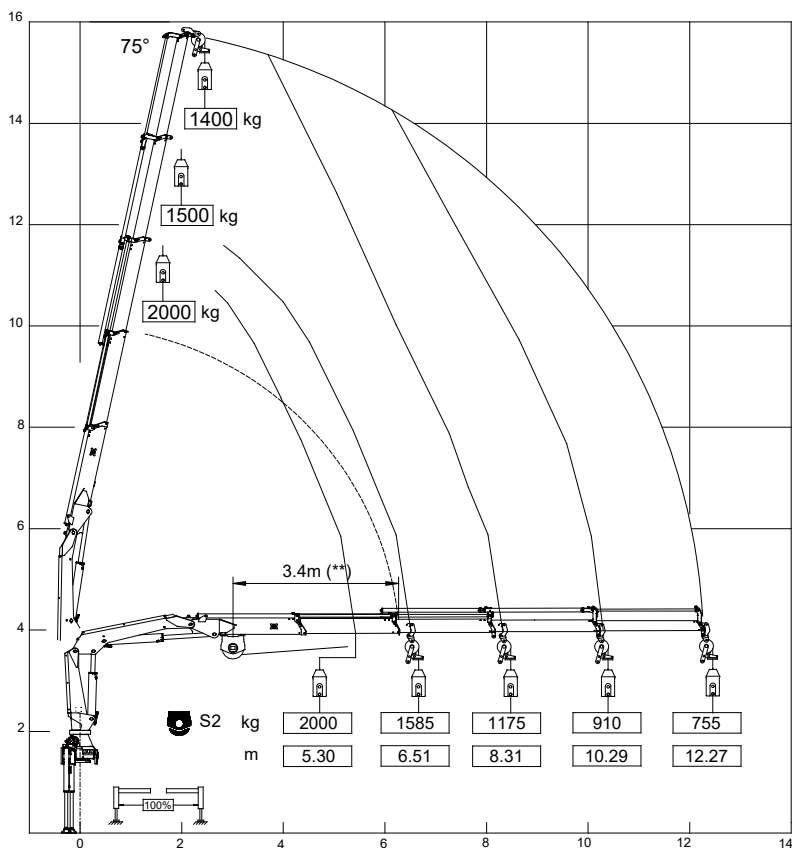
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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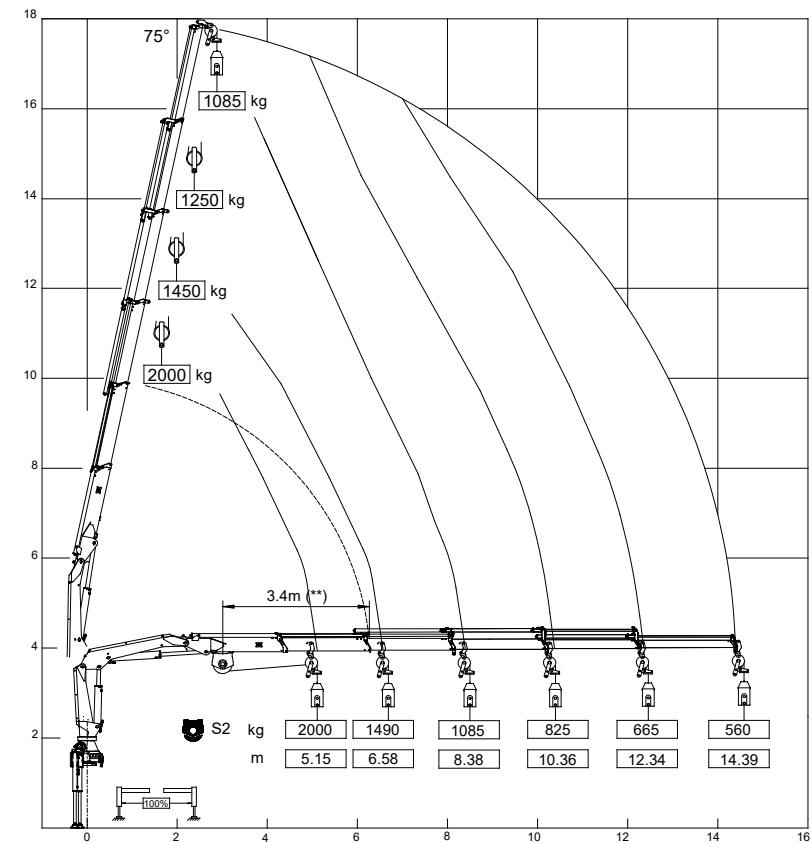
LOAD CHART FOR WINCH T12 IN SINGLE LINE 813NG 4S + T12 SINGLE LINE



(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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LOAD CHART FOR WINCH T12 IN SINGLE LINE
813NG 5S + T12 SINGLE LINE



(**) Minimum distance winch - pulley
Winch max. pull with PCS: 2000 kg

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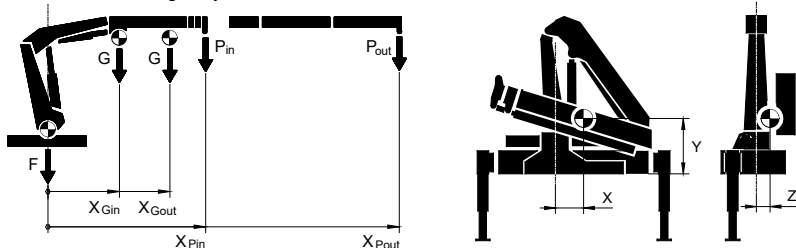
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D.12 CENTERS OF GRAVITY AND TEST LOADS

This annex contains the data needed for the stability test in accordance with EN 12999.

Loads and centers of gravity



Hooking point for the test load



Key:

F = weight of fixed parts (stabilizers, base, column, 1st boom cylinder)

G = weight of booms

X_G = distance between G and column axis

P = rated capacity

X_P = distance between P and column axis

TL = test load, to be hooked to the last hydraulic extension

X, Y, Z = coordinates of center of gravity for whole crane folded in transport position (EX-H version)

in = configuration with all hydraulic extensions fully retracted

out = configuration with all hydraulic extensions fully extracted

WEIGHTS AND CENTERS OF GRAVITY

813NG	F kg	G kg	X_G in / out m	P in / out kg	X_P in / out m	TL kg	X	Y	Z
1S	ST-M : 1050 EX-M : 1110 EX-H : 1145 SE-H : 1200	495	2.26 2.62	2740 1940	4.54 6.34	2425	206	700	-3
2S		615	2.47 3.39	2610 1395	4.54 8.14	1744	200	714	22
3S		730	2.62 4.19	2475 1015	4.62 10.20	1278	188	726	41
4S		820	2.72 4.92	2355 755	4.71 12.27	972	175	735	54
5S		905	2.80 5.65	2245 560	4.78 14.39	743	165	745	69

The data are relating to crane configuration with horizontal booms.

For the jib version, the "in" data are relating to standard crane's extensions always fully extracted.

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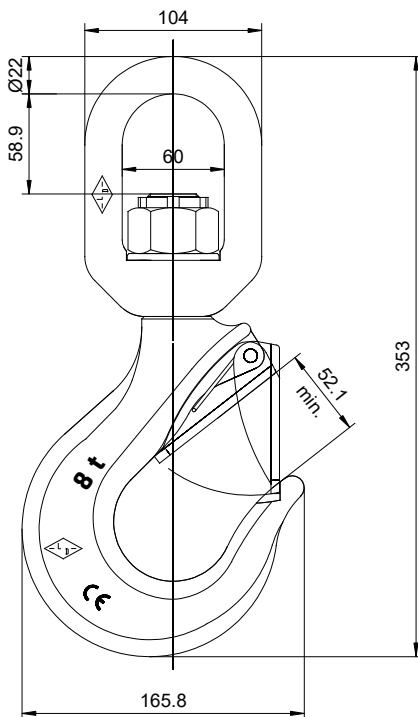
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D.13 HOOK DATA

HOOK MOUNTED ON STANDARD BOOM
VERSIONS: 1S, 2S, 3S, 4S, 5S

DIMENSIONS



TECHNICAL PROPERTIES

Working load limit (WLL) : 8000 kg

Material: alloy steel

Weight: 6.2 kg

Swivel hook

Reference standard: DIN 15401

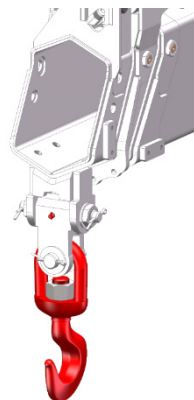
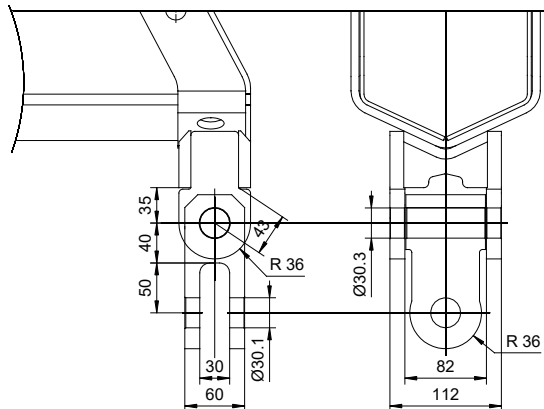
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D.14 LOAD ATTACHMENT

ATTACHMENT FOR HOOK AND LIFTING TOOL



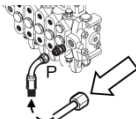
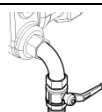
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D.15 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

813NG	NO RDC	RDC
Control valve pressure line	 M 7/8"-14 JIC	 M 3/4"-16 GAS
Tank suction line	 M 1" 1/2 BSP	 M 1" 1/2 BSP

EXTENSION TIMES OF HYDRAULIC CYLINDERS

813NG	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	18	30
2.boom cylinder	23	15
boom extension 1S (SGS active)	6	9
boom extension 2S (SGS active)	12	16
boom extension 3S (SGS active)	19	24
boom extension 4S (SGS active)	26	26
boom extension 5S (SGS active)	32	32

Times are indicative and referring to the following operating conditions:

- unloaded crane operated with a single control lever
- oil flow rate recommended for NO RDC crane
- ISO VG 46 oil at a temperature of 50°C

MAX. ALLOWABLE SINK RATE FOR THE LOAD

The sink rate is the uncontrolled descent of the load in a given time interval due to internal leakage of hydraulic components. The table below shows the maximum permitted descent of the rated load, at the max. hydraulic outreach and in the given time interval.

813NG	Time interval min.	Max. load descent mm
1S	10	317
2S	10	407
3S	10	510
4S	10	245
5S	10	288

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CAPACITY OF HYDRAULIC SYSTEM

813NG	Cylinders extended ℓ	Cylinders retracted ℓ
1S	50	34
2S	59	39
3S	66	45
4S	74	50
5S	80	54

Capacities do not include the oil tank.

ADDITIONAL CAPACITY FOR HYDRAULICALLY OPERATED STABILIZER EXTENSIONS

EX-H	+4.0	+2.5
SE-H	+5.5	+3.5

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D.16 OIL COOLER



TECHNICAL SPECIFICATIONS

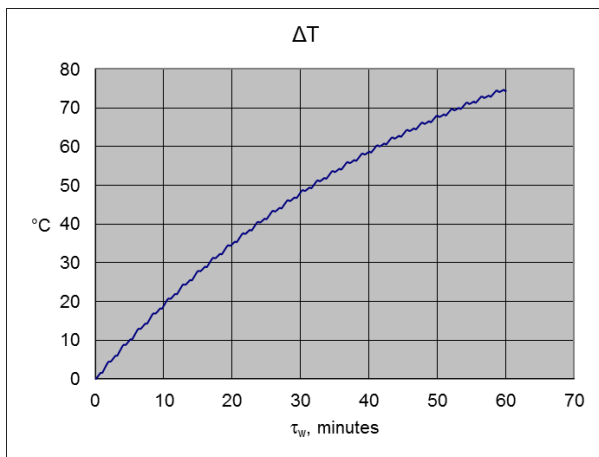
Heat transfer coefficient: 235 W/K (oil flow rate of 40 l/min)

Activation temperature: 48 °C

Weight: 13.5 kg

Capacity: 4 l

For a crane without oil cooler performing a sequence of standard work cycles, the difference in temperature between the oil and the environment is shown in the graph below.



The oil cooler is recommended when

$$T_{env} + \tau_w > 57$$

where:

T_{env} : temperature of the environment (°C)

ΔT : difference in temperature between the oil and the environment (°C)

τ_w : working time (minutes)

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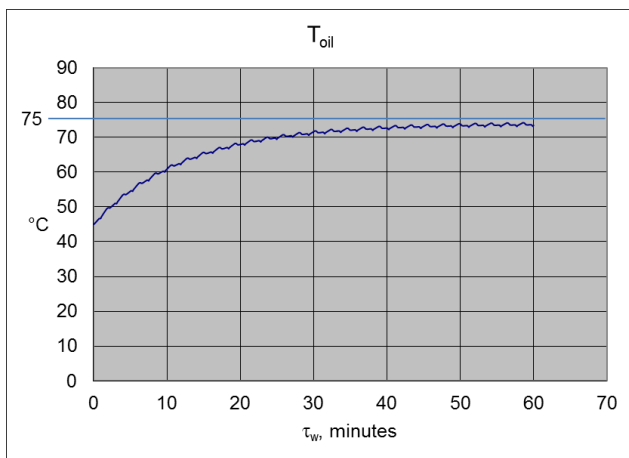
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However, when a crane equipped with oil cooler carries out a sequence of standard work cycles, the oil temperature exceeds 75 °C after the following working times:

T_{env} (°C)	τ_w to exceed 75 °C (minutes)
45	no limit
48	35
50	25
52	20
54	15

The graph below shows the temperature trend (T_{oil}) with oil cooler when $T_{env} = 45$ °C.



Notes:

The max recommended oil temperature is 75°C (at 80°C you must stop working)

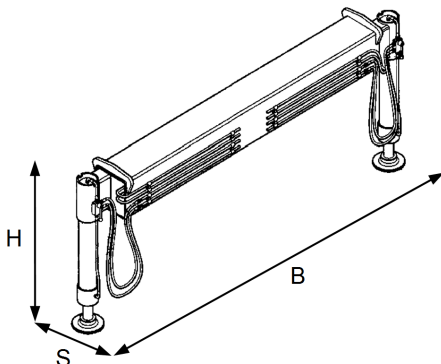
The calculation of the oil temperature is purely indicative and depending on several variables (e.g. working cycle, wind, humidity, weather, etc.)

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D.17 ADDITIONAL STABILIZERS



Additional stabilizers must be chosen so that:

- the installation is stable (see Installer Manual)
- the max. force acting on the additional stabilizers, F_s , is lower than the max. load allowed by the stabilizers itself, R_{max} .

$$F_s = M_{dyn} / X_s \quad F_s \geq 0.6 F_{sg}$$

where:

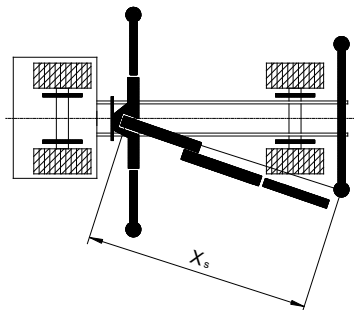
M_{dyn} : max. dynamic moment of the crane

X_s : distance between column axis - stab. cylinder

F_{sg} : max force on stabilizer leg

Check that: $F_s \leq R_{max}$

R_{max} is given in the technical specifications of the additional stabilizers.



- In addition, CE additional stabilizer must be equipped with safety devices integrated with the crane's stability control system. Therefore we recommend to install the following models designed by the crane's manufacturer.

Code	Spread (m)	Weight (kg)	R_{max} (kg)	Overall dimensions BxHxS (mm)
7850088	2.00	155	6250	2160x770x190
7850086	3.32	220	6250	2285x780x240
7850087	3.32	235	6250	2285x780x240

For further information see the User Manual for outriggers.

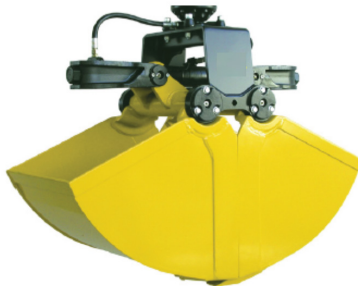
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D.18 RECOMMENDED ADDITIONAL LIFTING TOOLS

CLAMSHELL BUCKET



Crane version	Gross load kg ⁽¹⁾	Data of recommended tool				Payload kg ⁽³⁾	Load ratio	
		HYVA model	weight kg	volume dm ³	capacity kg ⁽²⁾		crane ⁽⁴⁾	tool ⁽⁵⁾
1S	1940	H605-650	410	650	975	1530	71%	100%
2S	1395	H605-650	410	650	975	985	99%	100%
3S	1015	H605-650	410	650	975	605	100%	62%
		H605-550	375	550	825	640	100%	78%
4S	755	H605-450	340	450	675	415	100%	61%
		H604-350	240	350	525	515	100%	98%
5S	560	H604-325	235	325	487,5	325	100%	67%
		H604-250	220	250	375	340	100%	91%

Notes

⁽¹⁾ The gross load is the load capacity of crane at maximum hydraulic outreach

⁽²⁾ The tool's load capacity is calculated multiplying the volume by a density of 1.5 kg/dm³

⁽³⁾ The payload is the gross load of crane minus the tool's weight

⁽⁴⁾ The crane's load ratio is the percentage value of the liftable load with respect to the gross load

⁽⁵⁾ The tool's load ratio is the percentage value of the liftable load with respect to tool's capacity

Stress history class: S1

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RECOMMENDED ADDITIONAL LIFTING TOOLS ORANGE PEEL GRAPPLE



Crane version	Gross load kg ⁽¹⁾	Data of recommended tool				Payload kg ⁽³⁾	Load ratio	
		HYVA model	weight kg	volume dm ³	capacity kg ⁽²⁾		crane ⁽⁴⁾	tool ⁽⁵⁾
1S	1940	H651-5 large	435	500	750	1505	61%	100%
2S	1395	H653-4 large	435	500	750	960	85%	100%
3S	1015	H653-4 large	435	500	750	580	100%	77%
4S	755	H653-4 large	395	350	525	360	100%	69%
5S	560	H653-4 small	250	240	360	310	100%	86%

Notes

- ⁽¹⁾ The gross load is the load capacity of crane at maximum hydraulic outreach
- ⁽²⁾ The tool's load capacity is calculated multiplying the volume by a density of 1.5 kg/dm³
- ⁽³⁾ The payload is the crane's gross load minus the tool's weight
- ⁽⁴⁾ The crane's load ratio is the percentage value of the liftable load with respect to the gross load
- ⁽⁵⁾ The tool's load ratio is the percentage value of the liftable load with respect to tool's capacity

Stress history class: S1

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RECOMMENDED ADDITIONAL LIFTING TOOLS
LOGGING GRAPPLE



Crane version	Gross load kg ⁽¹⁾	Data of recommended tool			Payload kg ⁽²⁾	Load ratio	
		HYVA model	weight kg	capacity kg		crane ⁽³⁾	tool ⁽⁴⁾
1S	1940	H634-0,25	170	4000	1770	100%	44%
2S	1395	H634-0,25	170	4000	1225	100%	31%
3S	1015	H634-0,25	170	4000	845	100%	21%
4S	755	H634-0,25	170	4000	585	100%	15%
5S	560	H634-0,25	170	4000	390	100%	10%

Notes

- ⁽¹⁾ The gross load is the load capacity of crane at maximum hydraulic outreach
- ⁽²⁾ The payload is the gross load of crane minus the tool's weight
- ⁽³⁾ The crane's load ratio is the percentage value of the liftable load with respect to the gross load
- ⁽⁴⁾ The tool's load ratio is the percentage value of the liftable load with respect to tool's capacity

Stress history class: S1

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RECOMMENDED ADDITIONAL LIFTING TOOLS BRICK STACK GRAPPLE



Crane version	Gross load kg ⁽¹⁾	Data of recommended tool			Payload kg ⁽²⁾	Load ratio	
		HYVA model	weight kg	capacity kg		crane ⁽³⁾	tool ⁽⁴⁾
1S	1940	H332-850	245	2200	1695	100%	77%
2S	1395	H332-850	245	2200	1150	100%	52%
3S	1015	H332-1300	265	1600	750	100%	47%
4S	755	H332-1300	265	1600	490	100%	31%
5S	560	H332-1300	265	1600	295	100%	18%

Notes

⁽¹⁾ The gross load is the load capacity of crane at maximum hydraulic outreach

⁽²⁾ The payload is the gross load of crane minus the tool's weight

⁽³⁾ The crane's load ratio is the percentage value of the liftable load with respect to the gross load

⁽⁴⁾ The tool's load ratio is the percentage value of the liftable load with respect to tool's capacity

Stress history class: S2

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RECOMMENDED ADDITIONAL LIFTING TOOLS PALLET FORK



Crane version	Gross load kg ⁽¹⁾	Data of recommended tool			Payload kg ⁽²⁾	Load ratio	
		HYVA model	weight kg	capacity kg		crane ⁽³⁾	tool ⁽⁴⁾
1S	1940	H415 2000-500	155	2000	1785	100%	89%
2S	1395	H415 2000-500	155	2000	1240	100%	62%
3S	1015	H415 1500-500	135	1500	880	100%	59%
4S	755	H415 1500-500	135	1500	620	100%	41%
5S	560	H415 1500-500	135	1500	425	100%	28%

Notes

⁽¹⁾ The gross load is the load capacity of crane at maximum hydraulic outreach

⁽²⁾ The payload is the gross load of crane minus the tool's weight

⁽³⁾ The crane's load ratio is the percentage value of the liftable load with respect to the gross load

⁽⁴⁾ The tool's load ratio is the percentage value of the liftable load with respect to tool's capacity

Stress history class: S2