

USER MANUAL
821NG T
TECHNICAL DATA

D TECHNICAL DATA



USER MANUAL

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TECHNICAL DATA

D.1 CRANE'S TECHNICAL DATA

Versions			2S	3S	4S	5S
Max. net lifting moment		 $t \cdot m$ kNm	20.2 198	20.7 203	20.5 201	19.0 186
Max. dynamic moment		 $daNm$ kNm	24950 249.5			
Capacity at min. hydraulic outreach	hook [S2]	 kg	8335	8250	7930	7115
	grab [S1]	 kg	8335	8250	7930	7115
Max rated capacity		 m	2.42	2.51	2.59	2.67
Capacity at max. hydraulic outreach	hook [S2]	 kg	3360	2495	1895	1375
	grab [S1]	 kg	3360	2495	1895	1375
	max. outreach	 m	6.02	8.04	10.07	12.08
Capacity of 1st man. extension	capacity	 kg	N/A	N/A	N/A	N/A
	max. outreach	 m	N/A	N/A	N/A	N/A
Max. load height above the base for the last extension	hydraulic	 m	8.4	10.4	12.4	14.4
	manual	 m	N/A	N/A	N/A	N/A
Weight of crane without stabilizers		 kg	1680	1825	1945	2040
Weight of stabilizers		ST-M kg	265			
		EX-H kg	370			
		SE-H kg	500			
Max. working pressure		 bar	315			300
Max. oil flow rate		 l/min	45			
		 l/min	70			
Power needed		 kW	30.7			29.3
		 kW	47.8			45.5
Oil tank capacity		 l	130			
Gross slewing torque		 $daNm$ kNm	2600 26.0			
Slewing angle		 $^{\circ}$	415			
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	10945			
	EX	daN	9600			
	SE	daN	7010			
Max. stabilizer pressure on the ground with stabilizers fully extended	ST	MPa	2.9			
	EX	MPa	2.5			
	SE	MPa	1.8			
Lifting conversion factor, k		kgm/bar	75.74			
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

TI2 - SINGLE LINE PULL

Versions		2S	3S	4S	5S
 Max line pull	kg	2000	2000	2000	2000
Start angle - pull% Final angle - pull%	 %	-	-	-	-

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	2S	3S	4S	5S
ST-M	1945	2090	2210	2305
EX-H	2050	2195	2315	2410
SE-H	2180	2325	2445	2540

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

Additional weight for TI2 winch: 150 kg

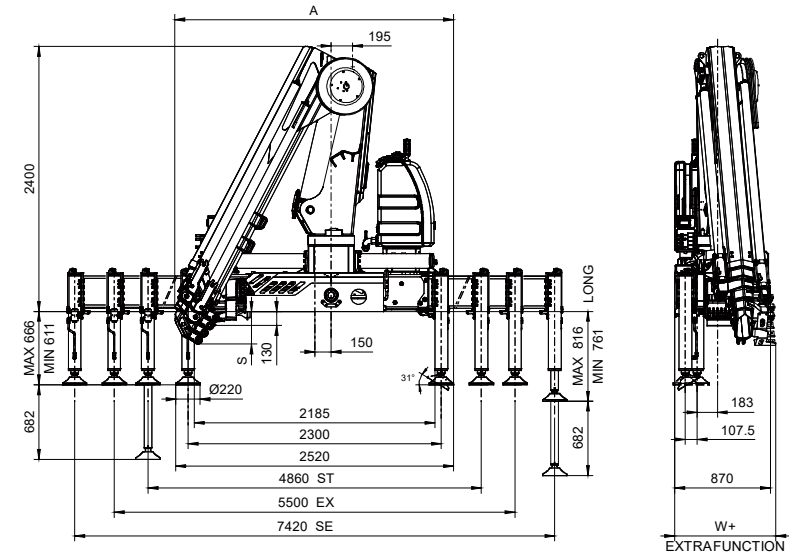
Additional weight of 1st extra function activated with hose reel: 20 kg

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

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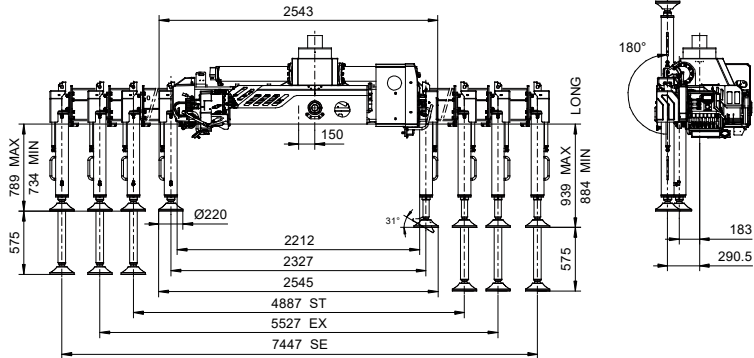
D.4 OVERALL DIMENSIONS

FIXED STABILIZERS LEGS



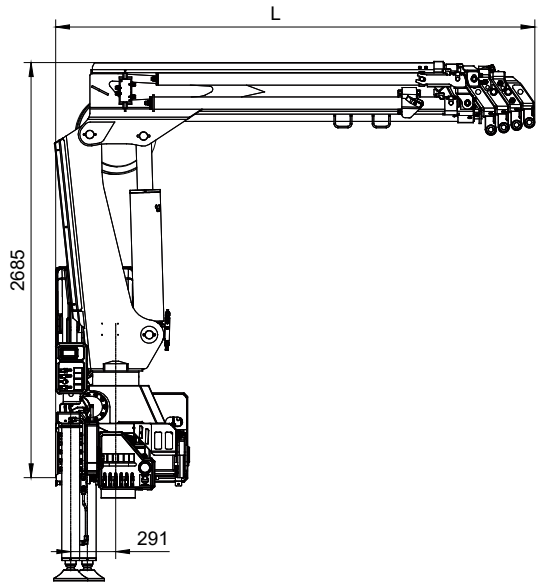
	2S	3S	4S	5S
A (mm)	2510	2510	2540	2540
S (mm)	100	165	230	295
W+ (mm)	910	910	910	920

TURNING STABILIZERS LEGS



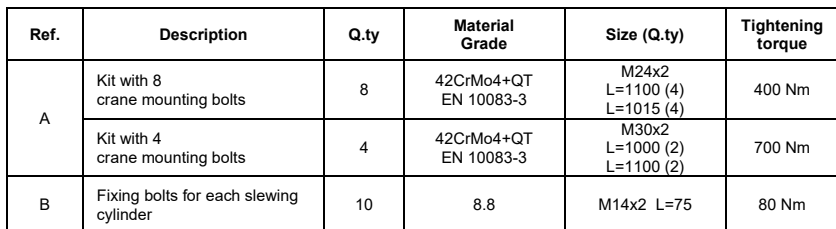
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OVERALL DIMENSIONS



Version	L mm
2S	2850
3S	2935
4S	3020
5S	3100

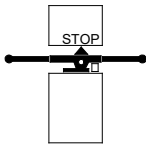
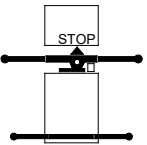
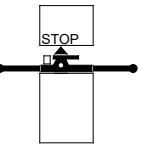
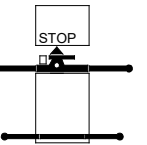
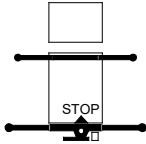
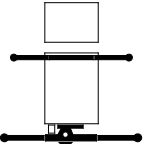
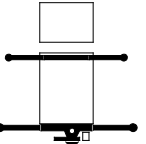
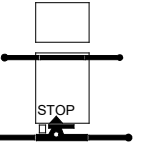
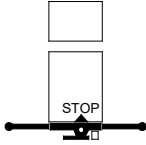
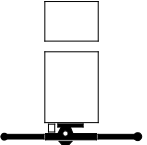
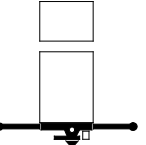
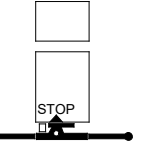
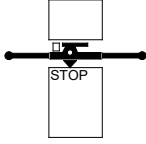
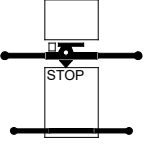
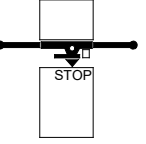
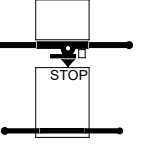
D.5 BASE DIMENSIONS AND MOUNTING BOLTS



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D.6 INSTALLATION TYPE NUMBER

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

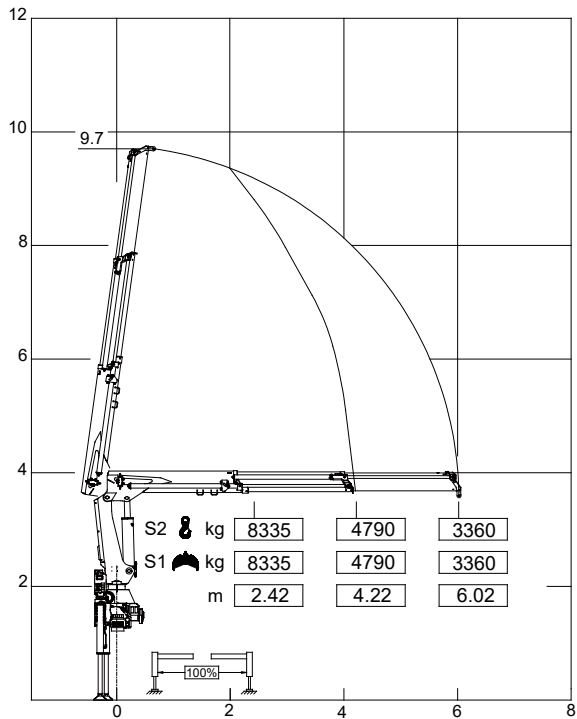
OPPOSITE DEAD POINT		STANDARD DEAD POINT	
1	2	3	4
			
5	6	7	8
			
9	10	11	12
			
13	14	15	16
			

Legend:

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

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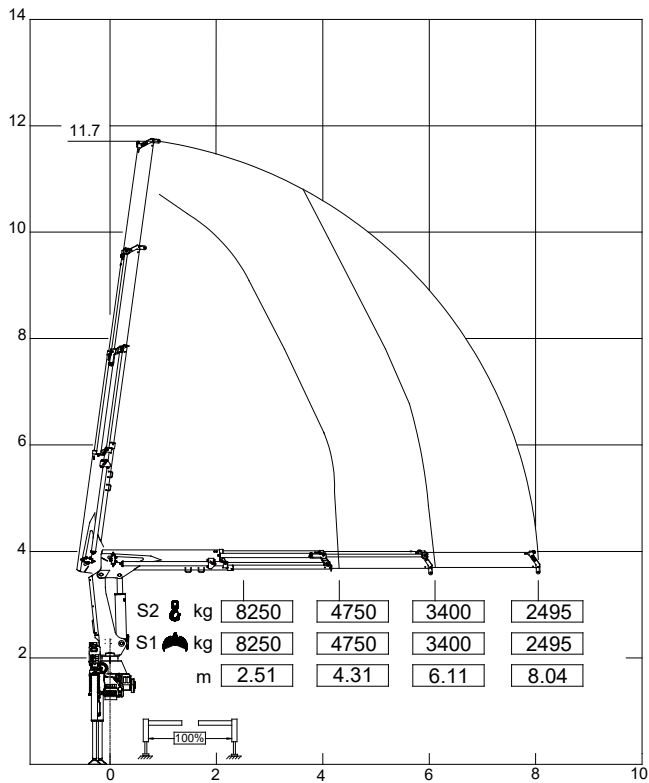
D.7 LOAD CHARTS FOR USE WITH HOOK/TOOL
821NG T 2S



If an additional lifting tool is mounted, the rated capacities are reduced by the tool's weight.

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LOAD CHARTS FOR USE WITH HOOK/TOOL
821NG T 3S



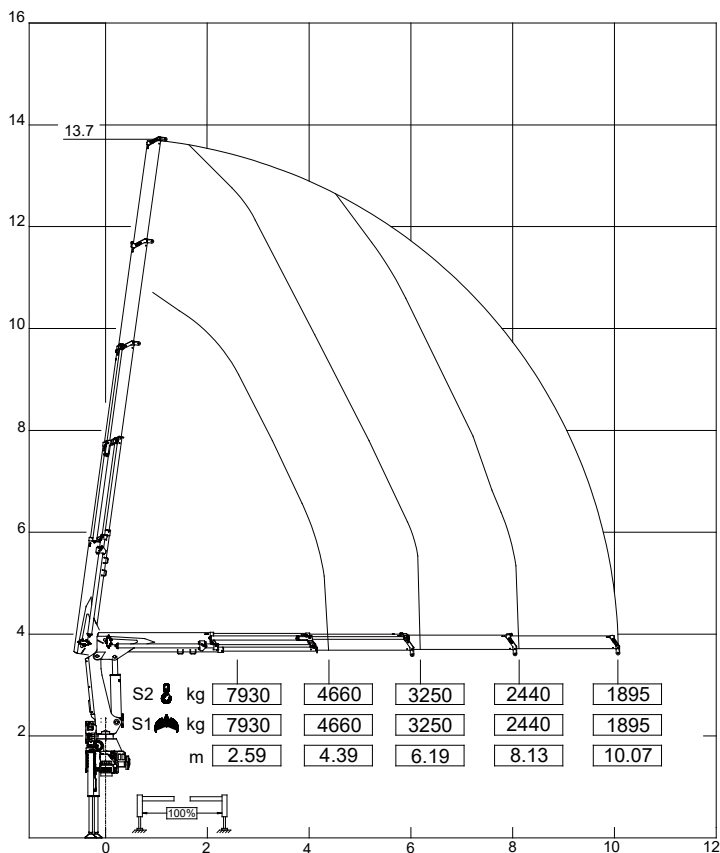
If an additional lifting tool is mounted, the rated capacities are reduced by the tool's weight.

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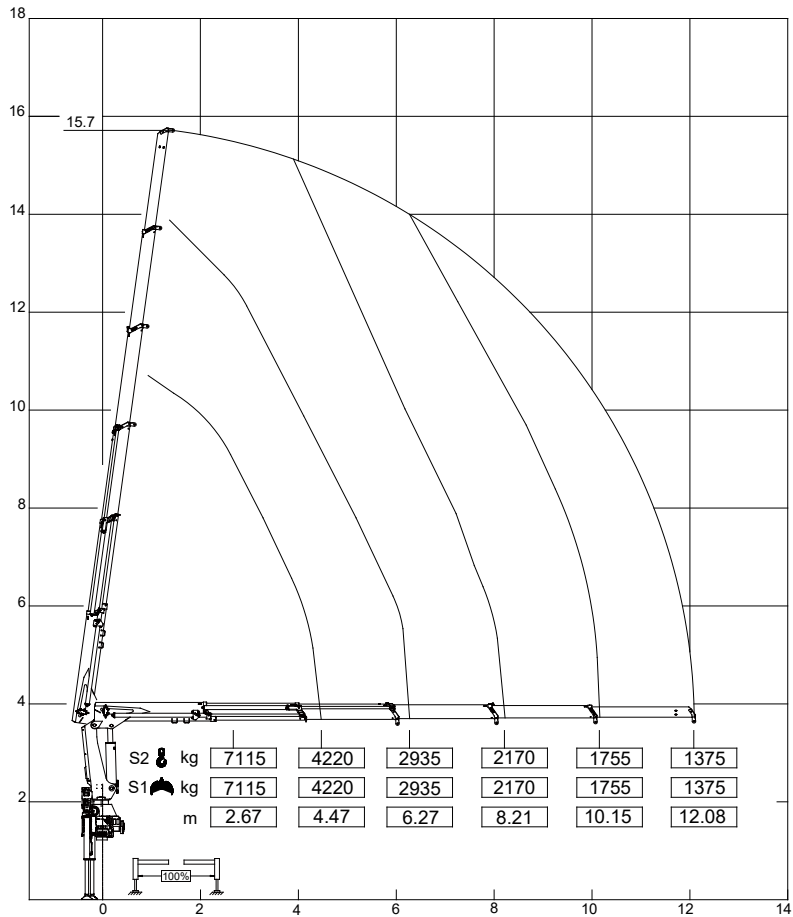
LOAD CHARTS FOR USE WITH HOOK/TOOL 821NG T 4S



If an additional lifting tool is mounted, the rated capacities are reduced by the tool's weight.

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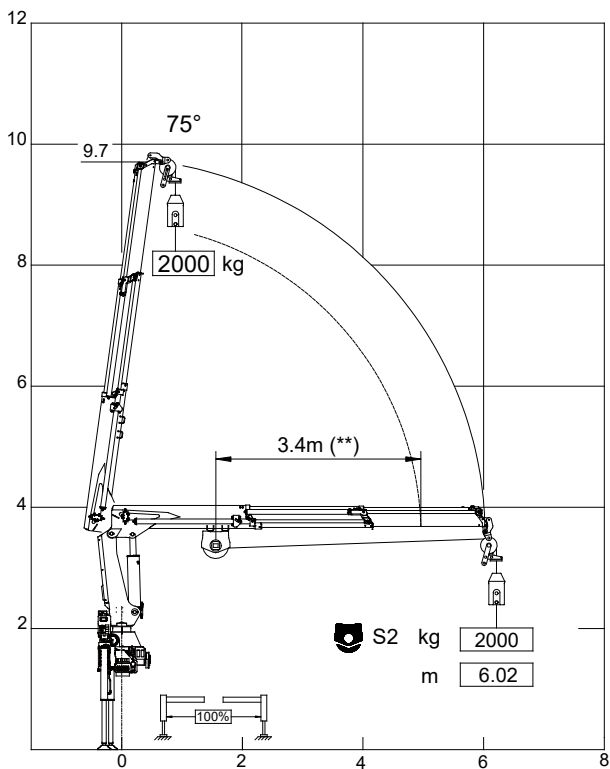
LOAD CHARTS FOR USE WITH HOOK/TOOL **821NG T 5S**



If an additional lifting tool is mounted, the rated capacities are reduced by the tool's weight.

D.8 LOAD CHARTS FOR T12 WINCH IN SINGLE LINE

821NG T 2S + T12 SINGLE LINE



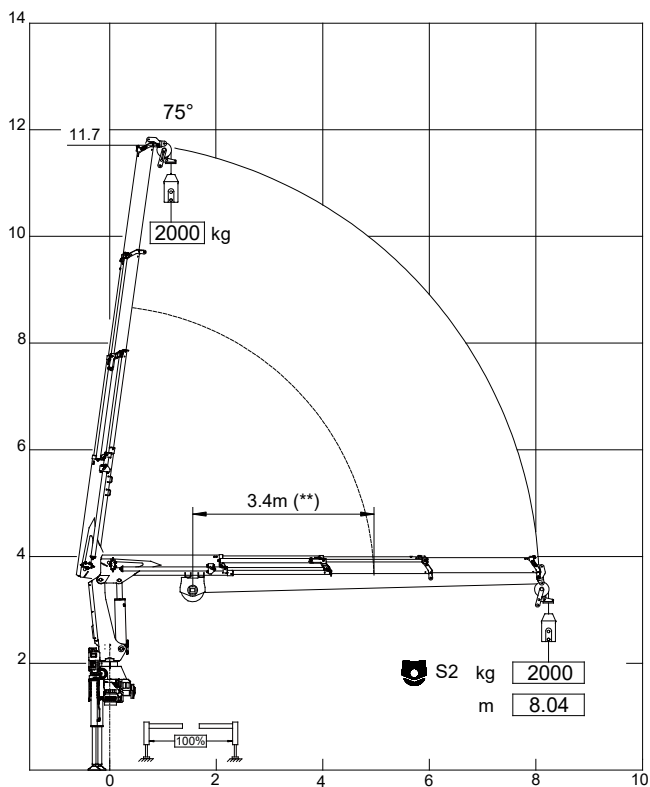
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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LOAD CHART FOR WINCH T12 IN SINGLE LINE 821NG T 3S + T12 SINGLE LINE



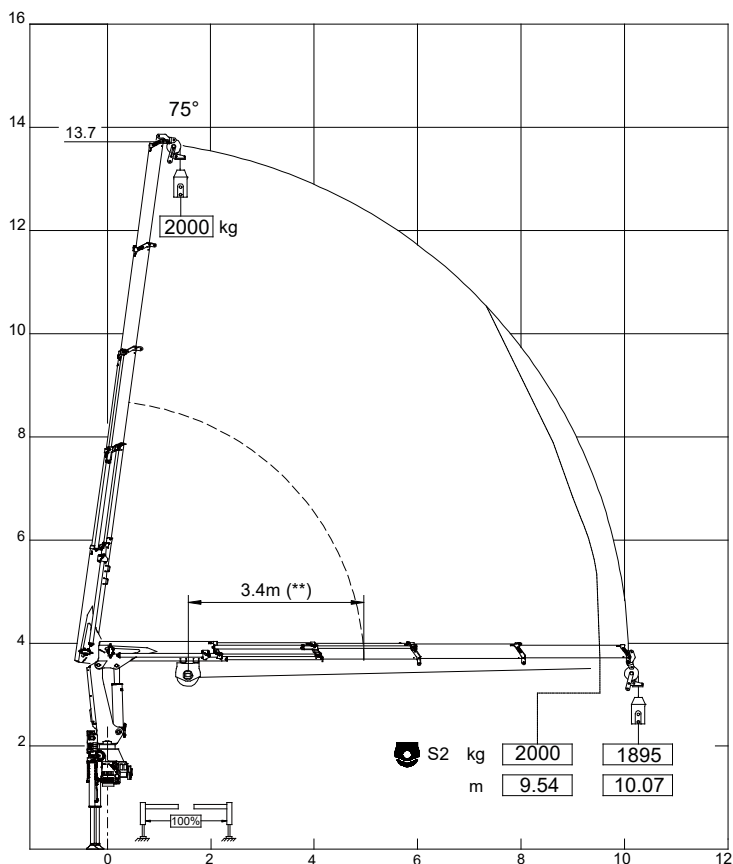
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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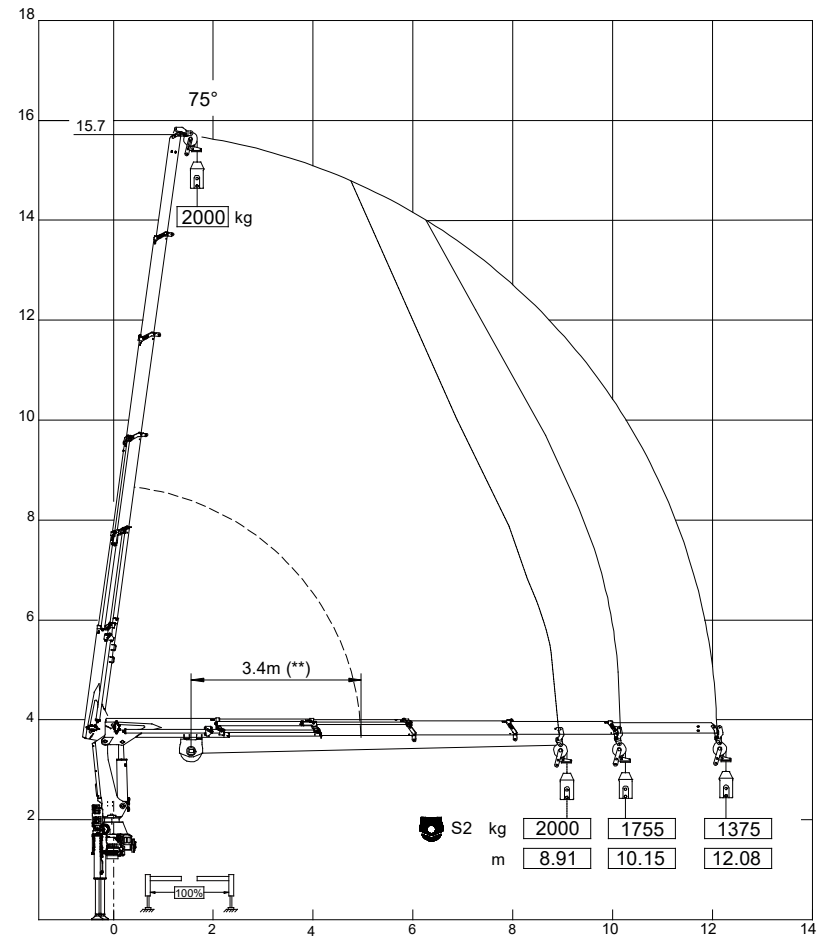
LOAD CHART FOR WINCH T12 IN SINGLE LINE 821NG T 4S + T12 SINGLE LINE



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

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LOAD CHART FOR WINCH T12 IN SINGLE LINE
821NG T 5S + T12 SINGLE LINE

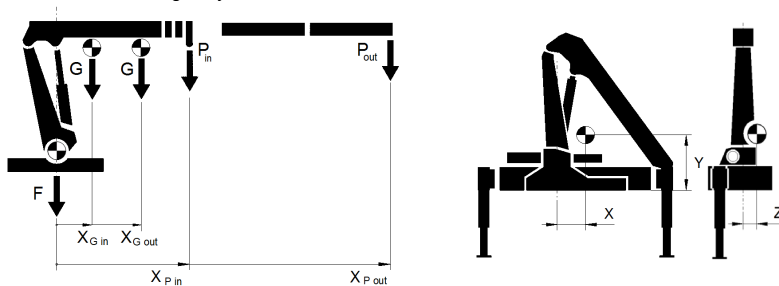


(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

D.9 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: STANDARD CRANE

821NG T	F Kg	G Kg	X_G in / out m	P in / out kg	X_P in / out m	TL (TL2) kg	X	Y	Z
2S	ST-M : 1345 EX-H : 1450 SE-H : 1580	600	1.06 2.48	8335 3360	2.42 6.02	4200	196	662	-35
3S		745	1.12 3.33	8250 2495	2.51 8.04	3119	238	682	-16
4S		865	1.16 4.09	7930 1895	2.59 10.07	2369	267	692	-4
5S		960	1.19 4.78	7115 1375	2.67 12.08	1726	288	702	2

The data are relating to crane configuration with horizontal booms.

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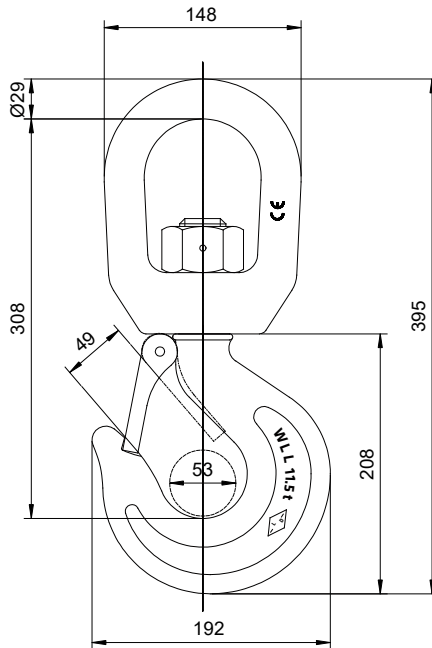
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D.10 HOOK DATA

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

DIMENSIONS



TECHNICAL PROPERTIES

Working load limit (WLL) : 11500 kg

Material: alloy steel

Weight: 10.5 kg

Swivel hook

Reference standard: DIN 15401

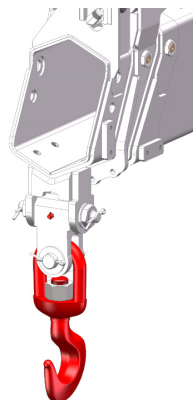
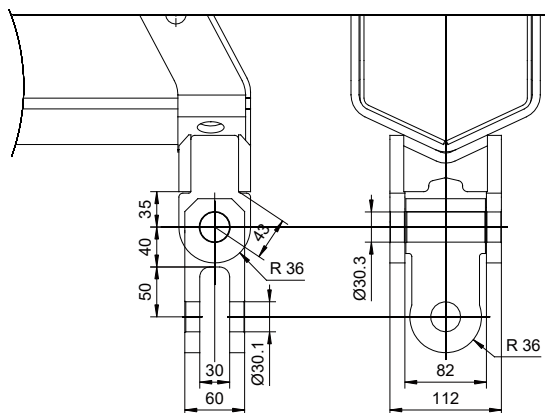
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D.11 LOAD ATTACHMENT

ATTACHMENT FOR HOOK AND LIFTING TOOL



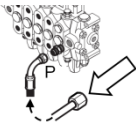
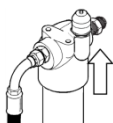
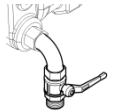
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D.12 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

821NG T	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

821NG T	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	20	30
boom extension 1S	N/A	N/A
boom extension 2S	N/A	N/A
boom extension 3S	N/A	N/A
boom extension 4S	N/A	N/A
boom extension 5S	66	30

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.

821NG T	Time interval min.	Max. load descent mm
2S	10	301
3S	10	402
4S	10	504
5S	10	242

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CAPACITY OF HYDRAULIC SYSTEM

821NG T	Cylinders extended ℓ	Cylinders retracted ℓ
2S	52	34
3S	59	39
4S	67	43
5S	74	48

Capacities do not include the oil tank.

ADDITIONAL CAPACITY FOR HYDRAULICALLY OPERATED STABILIZER EXTENSIONS

EX-H	+4.0	+2.5
SE-H	+6.5	+3.5

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D.13 OIL COOLER



TECHNICAL SPECIFICATIONS

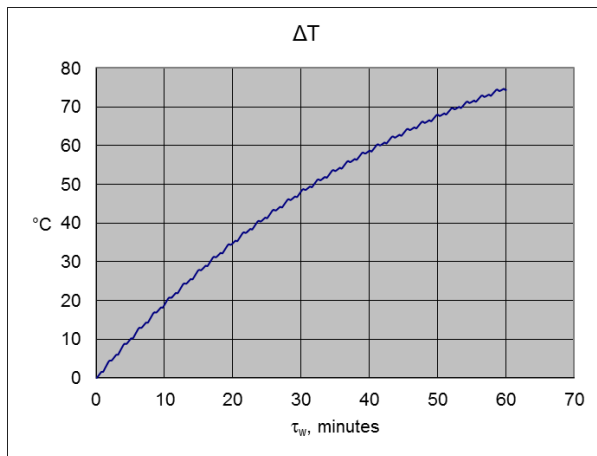
Heat transfer coefficient: 235 W/K (oil flow rate of 40 l/min)

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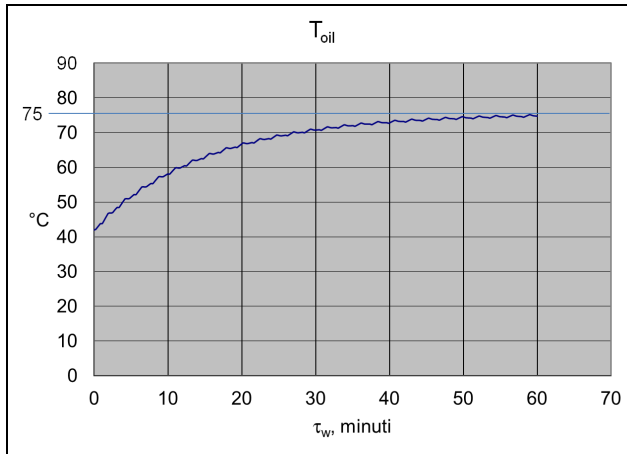
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However, when a crane equipped with oil cooler carries out a sequence of standard work cycles, the oil temperature exceeds 75 °C after the following working times:

T_{env} (°C)	τ_w to exceed 75 °C (minutes)
42	no limit
45	35
48	25
50	21
52	18
54	15

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



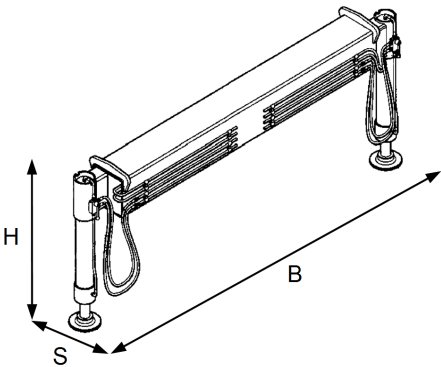
Notes:

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.14 ADDITIONAL STABILIZERS



Additional stabilizers must be chosen so that:

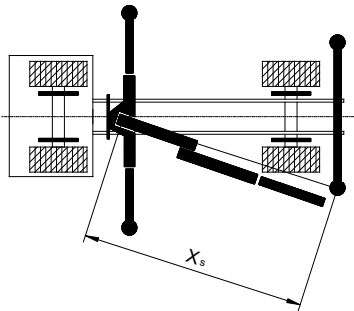
- the installation is stable (see Installer Manual)
- the max. force acting on the additional stabilizers, F_s , is lower than the max. load allowed by the stabilizers itself, R_{max} .

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

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.



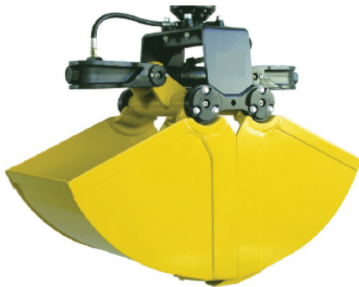
- In addition, CE additional stabilizer must be equipped with safety devices integrated with the crane's stability control system. Therefore we recommend to install the following models designed by the crane's manufacturer.

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.15 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⁾
2S	3360	H605-650	410	650	975	2950	41%	100%
3S	2495	H605-650	410	650	975	2085	56%	100%
4S	1895	H605-650	410	650	975	1485	73%	100%
5S	1375	H605-650	410	650	975	965	100%	99%

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⁾
2S	3360	H653-4 large	435	500	750	2925	35%	100%
3S	2495	H653-4 large	435	500	750	2060	47%	100%
4S	1895	H653-4 large	435	500	750	1460	63%	100%
5S	1375	H653-4 large	435	500	750	940	86%	100%

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⁾
2S	3360	H634-0,25	170	4000	3210	100%	80%
3S	2495	H634-0,25	170	4000	2325	100%	58%
4S	1895	H634-0,25	170	4000	1725	100%	43%
5S	1375	H634-0,25	170	4000	1205	100%	30%

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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TECHNICAL DATA

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⁾
2S	3360	H332-850	245	2200	3115	73%	100%
3S	2495	H332-850	245	2200	2250	74%	100%
4S	1895	H332-850	245	2200	1650	97%	100%
5S	1375	H332-850	245	2200	1130	100%	51%

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

USER MANUAL

821NG T

TECHNICAL DATA

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⁾
2S	3360	H415 1500-500	135	1500	3225	64%	100%
3S	2495	H415 1500-500	135	1500	2360	66%	100%
4S	1895	H415 1500-500	135	1500	1760	86%	100%
5S	1375	H415 1500-500	135	1500	1240	100%	83%

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