

USER MANUAL
821NG
TECHNICAL SHEET

D TECHNICAL SHEET



USER MANUAL

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D.1 CRANE'S TECHNICAL DATA

Versions			2S	3S	4S	5S
Max. net lifting moment		$t\ m$ kNm	18.9 186	18.6 182	18.0 177	17.6 173
Max. dynamic moment		$daNm$ kNm	24800 248			
Capacity at min. hydraulic outreach	hook [S2]	kg	4405	4320	4100	3940
Max rated capacity	grab [S1]	kg	4405	4320	4100	3940
	min. outreach	m	4.30	4.30	4.39	4.47
Capacity at max. hydraulic outreach	hook [S2]	kg	2280	1700	1280	980
	grab [S1]	kg	2280	1700	1280	980
	max.outreach	m	8.10	10.13	12.25	14.46
Capacity of 1st man. extension	capacity	kg	N/A	1280	980	770
	max.outreach	m	N/A	12.25	14.46	16.59
Max. load height above the base for the last extension	hydraulic	m	10.6	12.6	14.7	16.9
	manual	m	N/A	19.0	21.1	21.1
Weight of crane without stabilizers		kg	2040	2190	2335	2450
Weight of stabilizers	ST-M	kg	265			
	EX-H	kg	370			
	SE-H	kg	500			
Weight of 1st man. extension		kg	N/A	86	65	57
Max. working pressure		bar	315			
Max. oil flow rate		l/min	45			
		l/min	70			
Max. power needed		kW	30.7			
		kW	47.8			
Oil tank capacity		l	130			
Slewing angle		$^{\circ}$	415			
Gross slewing torque		$daNm$ kNm	2600 26.0			
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	10880			
	EX	daN	9540			
	SE	daN	6965			
Max. stabilizer pressure on the ground with stabilizers fully extended	ST	MPa	2.86			
	EX	MPa	2.51			
	SE	MPa	1.83			
Lifting conversion factor, k	kgm/bar		75.22			
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%		-	-	-	75°-85%

N/A: configuration not available

(*): configuration requiring pull derating: available only for CE/TOP cranes (PCS)

Pull%: pull derating percentage



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	2305	2455	2600	2715
EX-H	2410	2560	2705	2820
SE-H	2540	2690	2835	2950

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

Additional weight for TI2 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

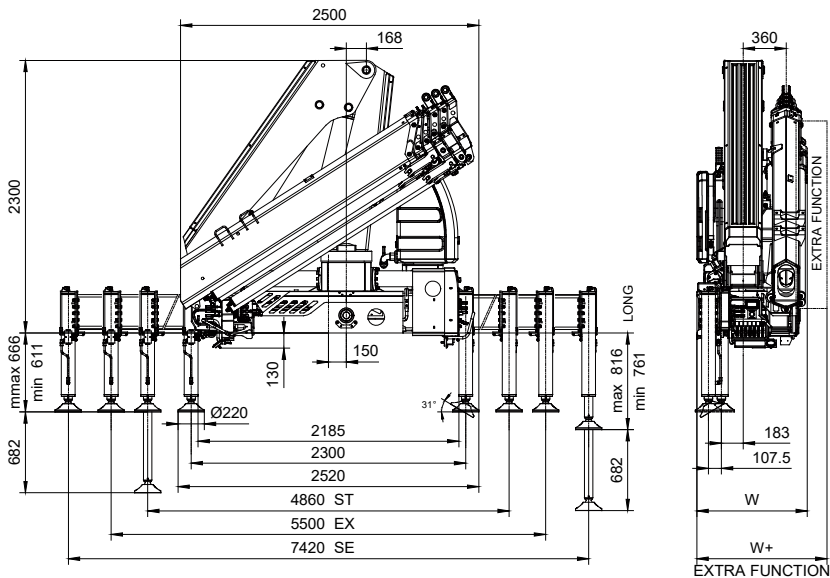
Additional weight of 1st extra function activated with hose reel: 20 kg

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

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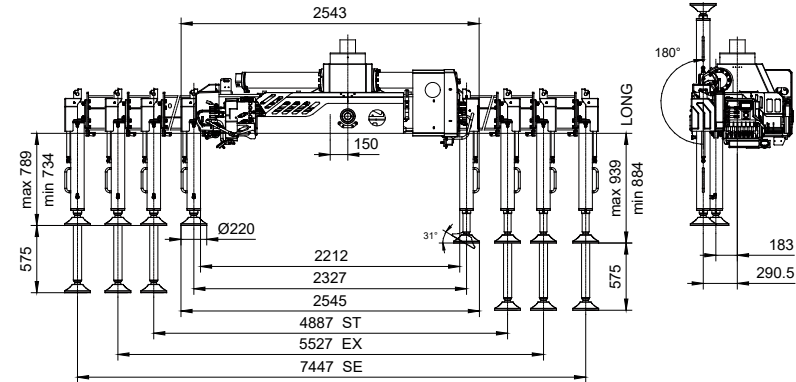
D.4 OVERALL DIMENSIONS

FIXED STABILIZERS LEGS



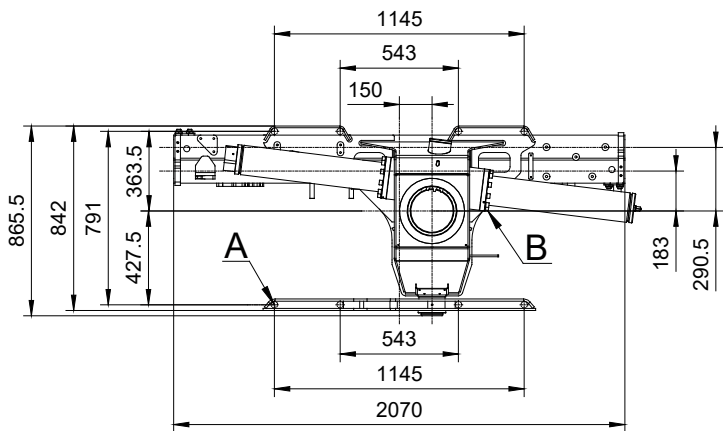
	2S	3S	4S	5S
W (mm)	930	930	930	930
W+ (mm)	Slides	1050	1050	1050
	Hose reel	N/A	N/A	1120

TURNING STABILIZERS LEGS



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D.5 BASE DIMENSIONS AND MOUNTING BOLTS

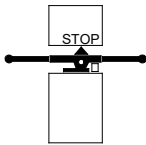
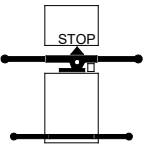
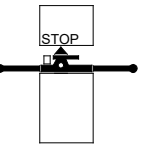
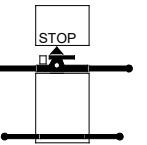
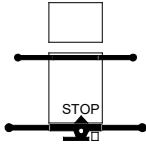
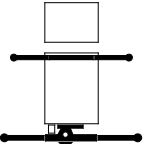
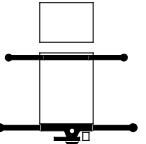
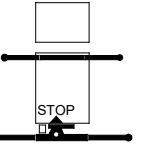
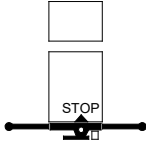
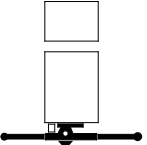
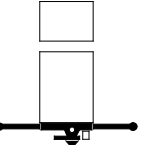
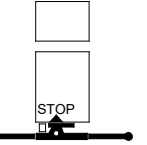
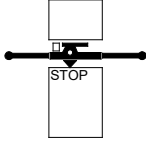
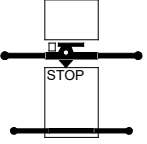
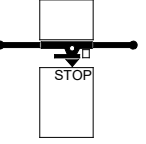
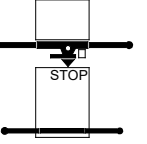


Ref.	Description	Q.ty	Material Grade	Size (Q.ty)	Tightening torque
A	Kit with 8 crane mounting bolts	8	42CrMo4+QT EN 10083-3	M24x2 L=1100 (4) L=1015 (4)	400 Nm
	Kit with 4 crane mounting bolts	4	42CrMo4+QT EN 10083-3	M30x2 L=1000 (2) L=1100 (2)	700 Nm
B	Fixing bolts for each slewing cylinder	10	8.8	M14x2 L=75	80 Nm

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D.6 INSTALLATION TYPE NUMBER

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

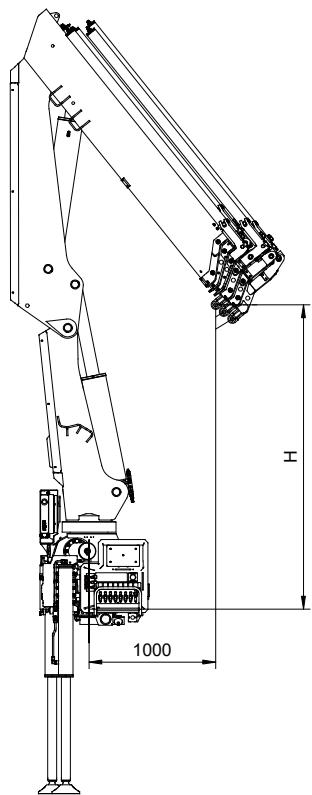
OPPOSITE DEAD POINT		STANDARD DEAD POINT	
1 	2 	3 	4 
5 	6 	7 	8 
9 	10 	11 	12 
13 	14 	15 	16 

Legend:

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

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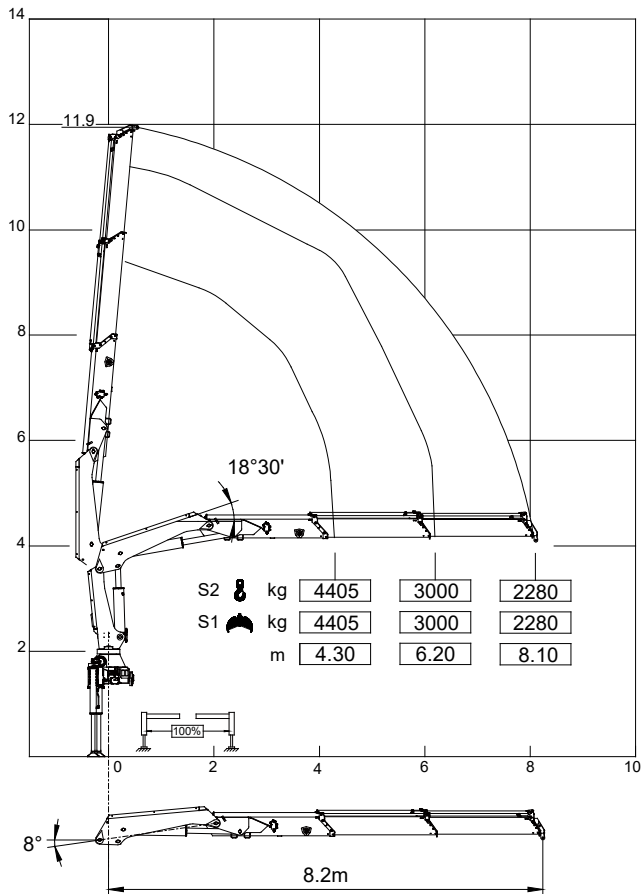
D.7 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
2S	2400
3S	2400
4S	2305
5S	2210

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D.8 LOAD CHARTS FOR USE WITH HOOK/TOOL
821NG 2S



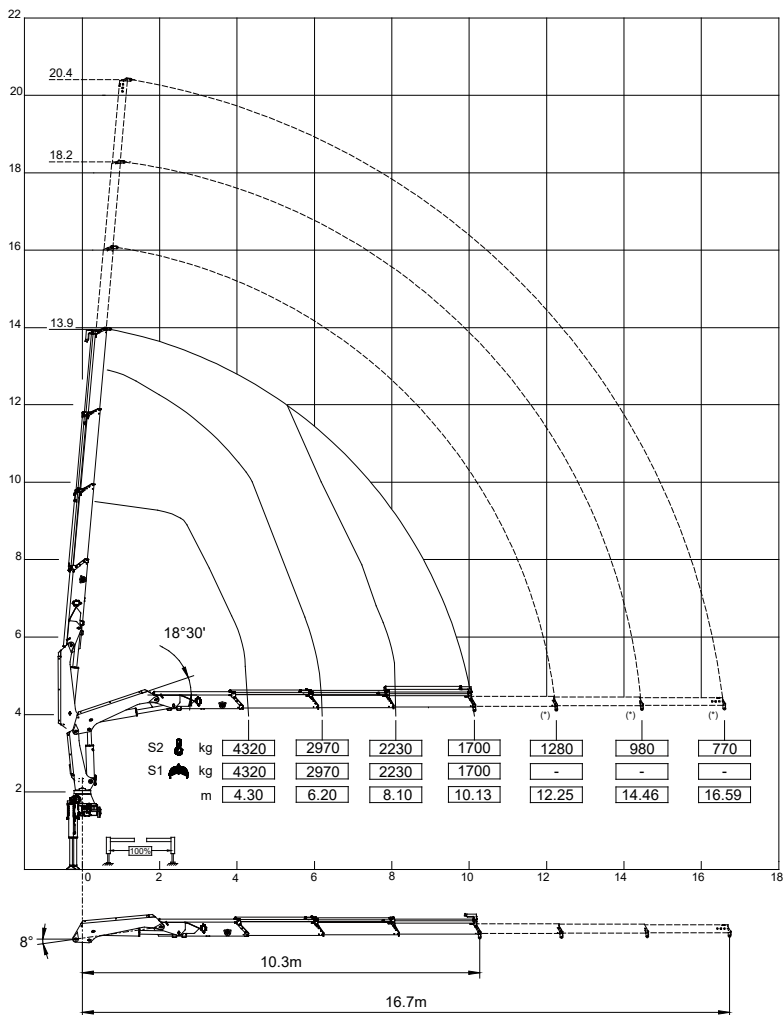
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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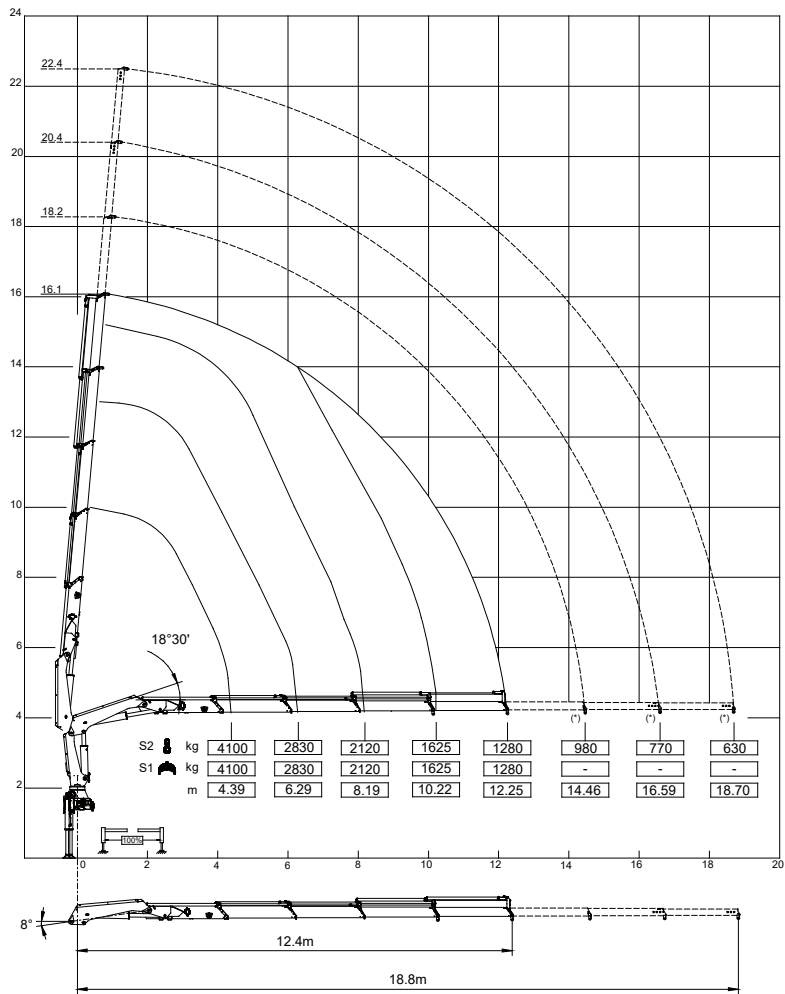
LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL 821NG 3S



(*) 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 **LOAD CHARTS FOR USE WITH HOOK/TOOL**
821NG 4S



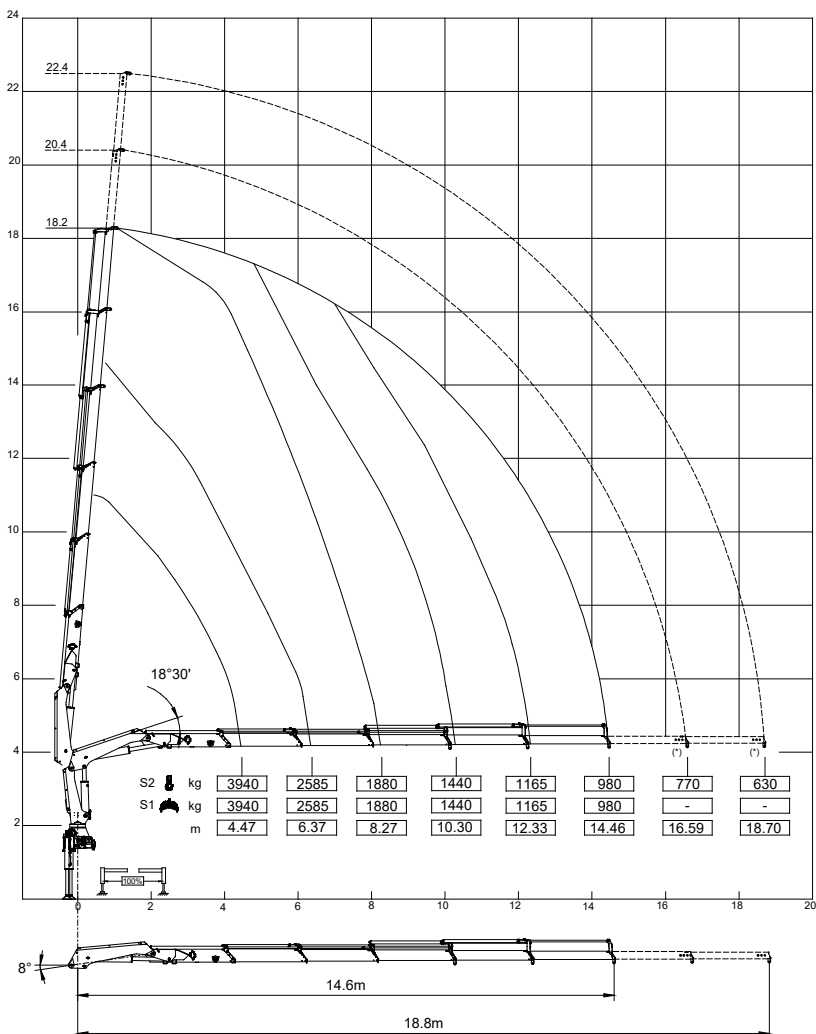
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
 If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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



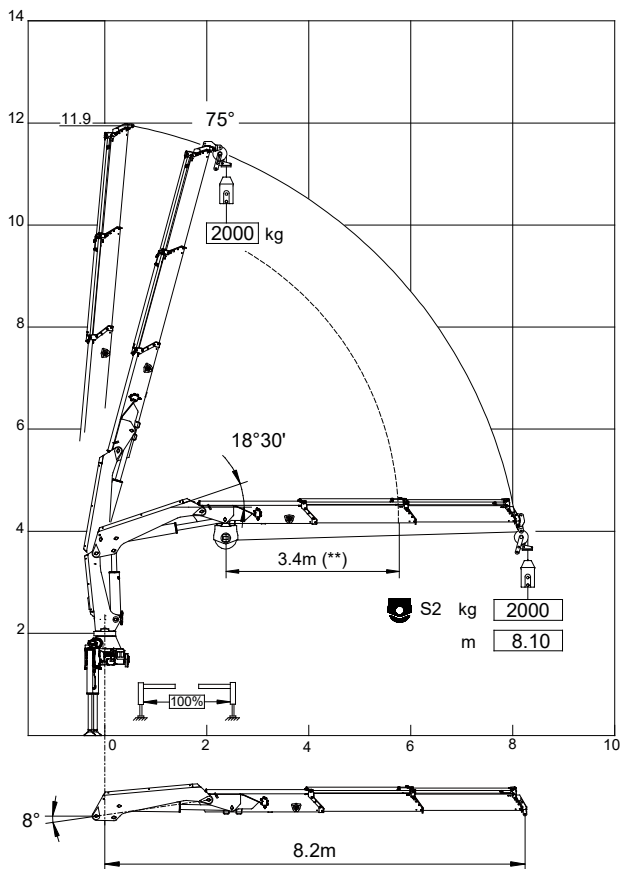
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D.9 LOAD CHARTS FOR T12 WINCH IN SINGLE LINE

821NG 2S + T12 SINGLE LINE



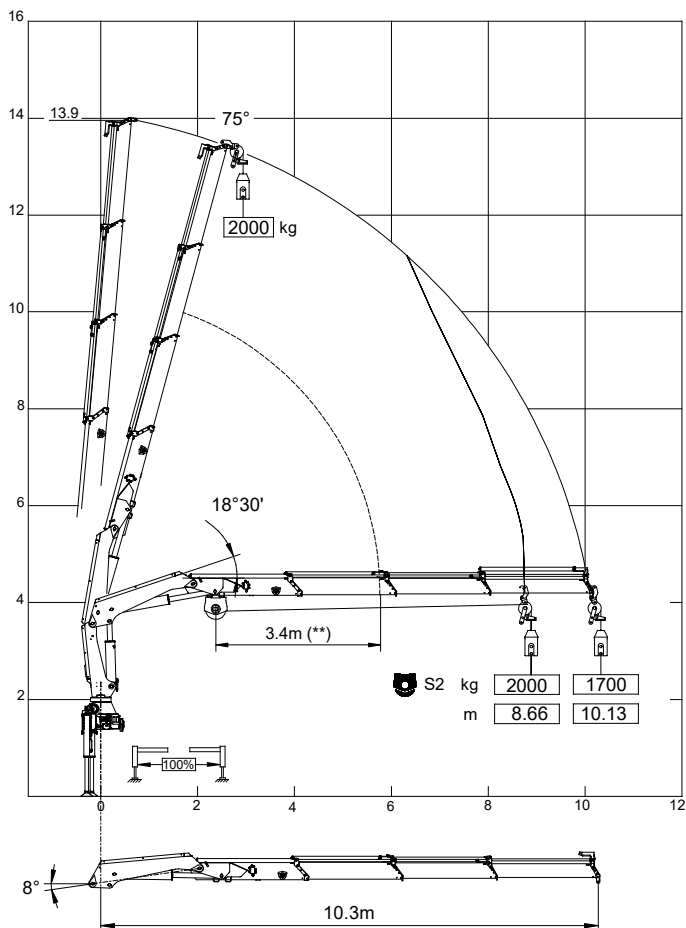
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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



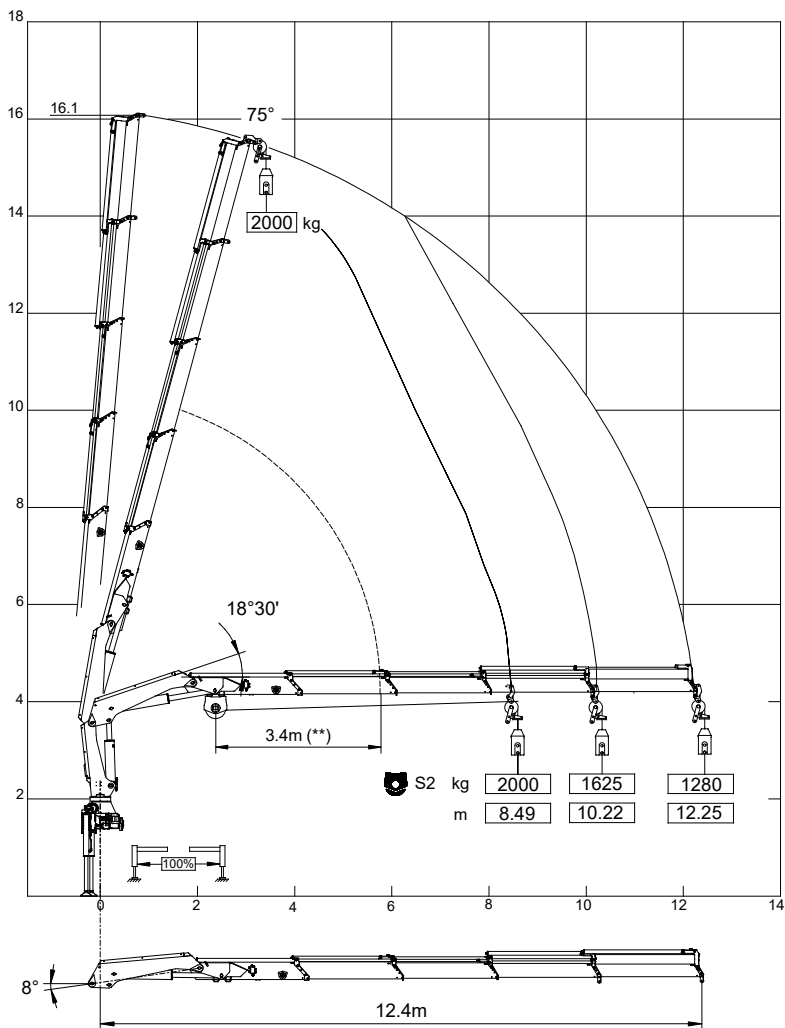
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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



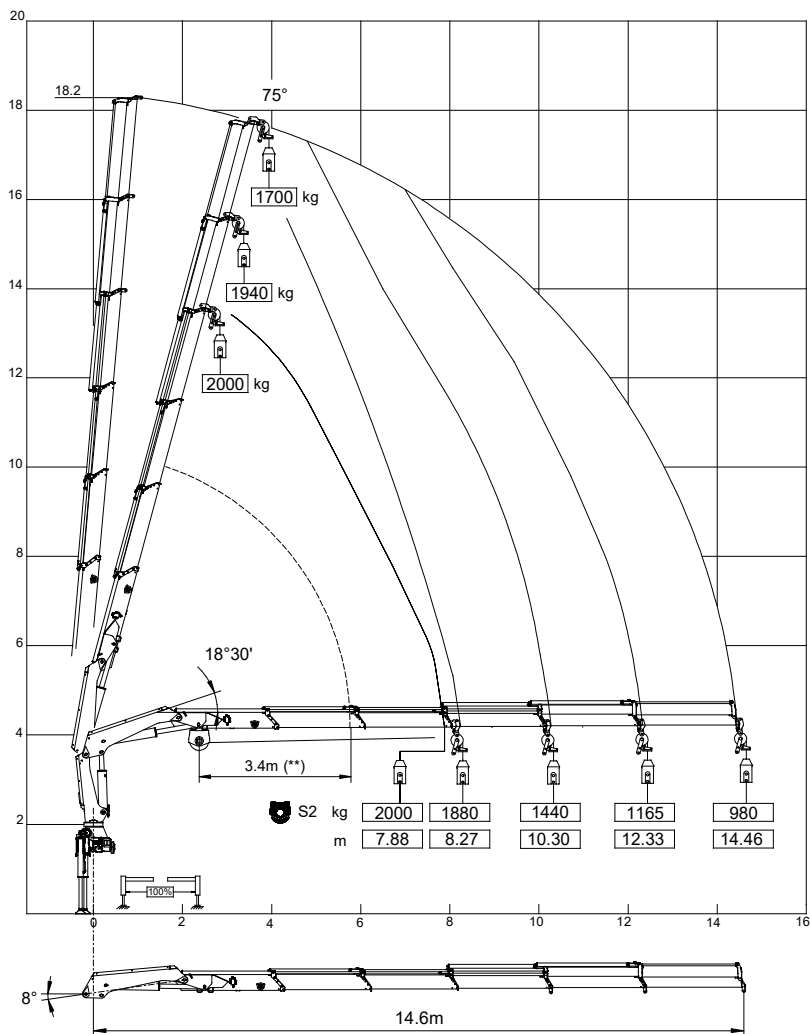
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

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



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

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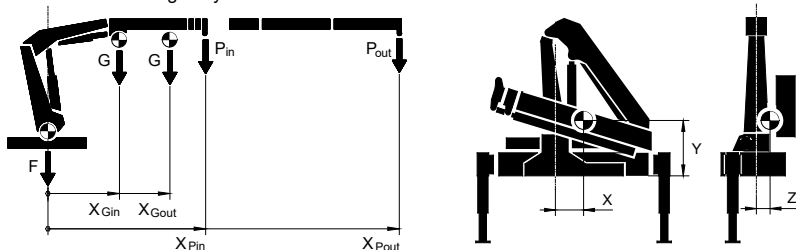
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D.10 CENTERS OF GRAVITY AND TEST LOADS

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

821NG	F kg	G Kg	X_G in / out m	P in / out kg	X_P in / out m	TL kg	X	Y	Z
2S	ST-M : 1345 EX-H : 1450 SE-H : 1580	960	2.07 2.96	4405 2280	4.30 8.10	2850	204	692	20
3S		1110	2.22 3.76	4320 1700	4.30 10.13	2125	199	711	42
4S		1255	2.34 4.59	4100 1280	4.39 12.25	1630	189	729	62
5S		1370	2.43 5.30	3940 980	4.47 14.46	1276	180	742	74

The data are relating to crane configuration with horizontal booms.

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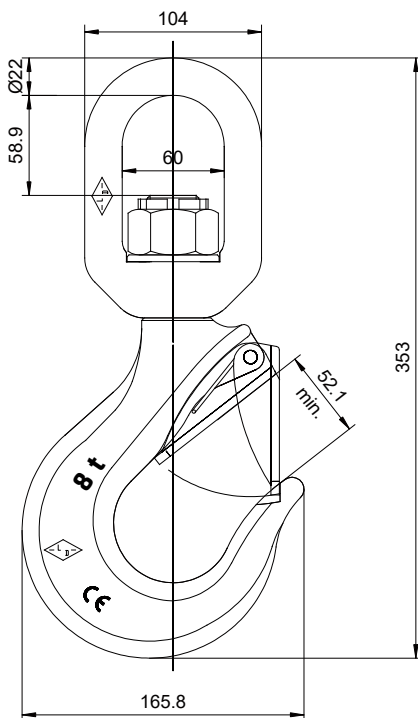
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D.11 HOOK DATA

HOOK MOUNTED ON STANDARD BOOM
VERSIONS: 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

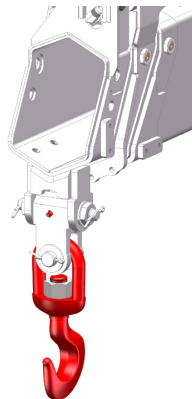
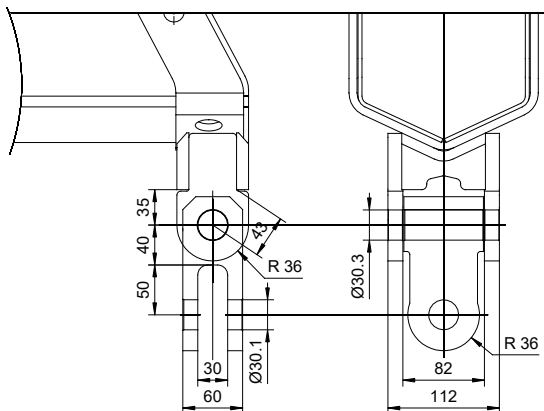
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D.12 LOAD ATTACHMENT

ATTACHMENT FOR HOOK AND LIFTING TOOL



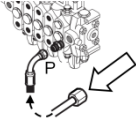
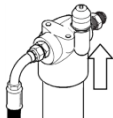
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D.13 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

821NG	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	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	19	28
2.boom cylinder	26	17
boom extension 1S (SGS active)	N/A	N/A
boom extension 2S (SGS active)	N/A	N/A
boom extension 3S (SGS active)	N/A	N/A
boom extension 4S (SGS active)	N/A	N/A
boom extension 5S (SGS active)	32	34

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	Time interval min.	Max. load descent mm
2S	10	405
3S	10	507
4S	10	245
5S	10	289

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CAPACITY OF HYDRAULIC SYSTEM

821NG	Cylinders extended ℓ	Cylinders retracted ℓ
1S	65	44
2S	73	47
3S	80	52
4S	88	57
5S	96	62

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.14 OIL COOLER



TECHNICAL SPECIFICATIONS

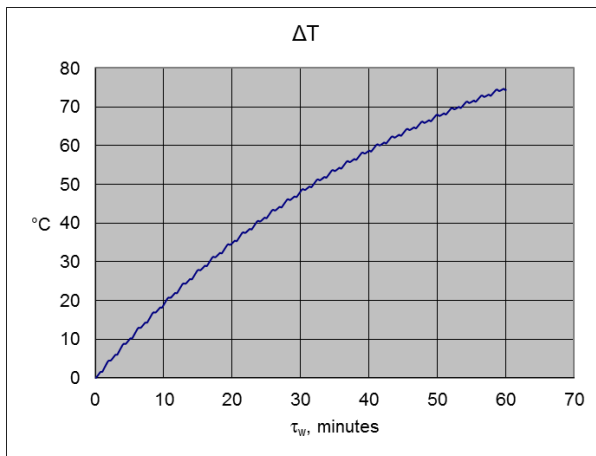
Heat transfer coefficient: 235 W/K (oil flow rate of 40 l/min)

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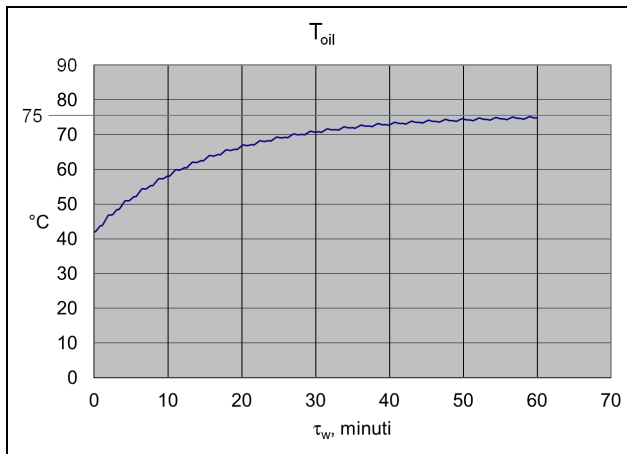
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However, when a crane equipped with oil cooler carries out a sequence of standard work cycles, the oil temperature exceeds 75 °C after the following working times:

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.



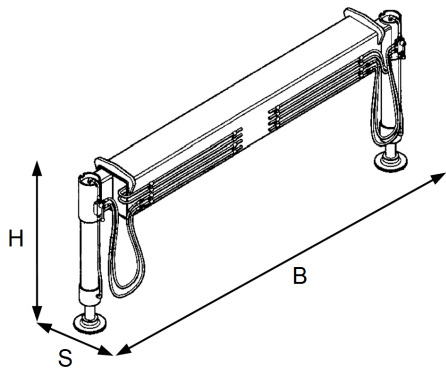
Notes:

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.15 ADDITIONAL STABILIZERS



Additional stabilizers must be chosen so that:

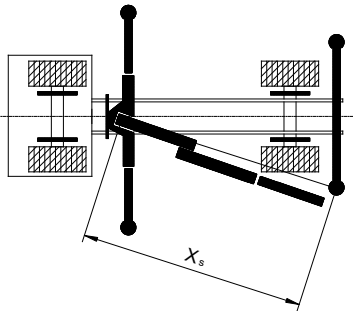
- the installation is stable (see Installer Manual)
- the max. force acting on the additional stabilizers, F_s , is lower than the max. load allowed by the stabilizers itself, R_{max} .

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

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.



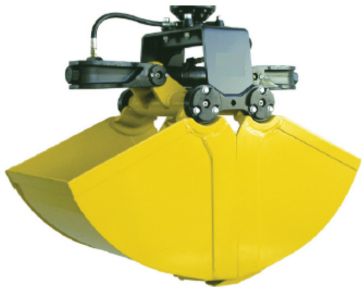
- In addition, CE additional stabilizer must be equipped with safety devices integrated with the crane's stability control system. Therefore we recommend to install the following models designed by the crane's manufacturer.

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.16 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	2280	H605-650	410	650	975	1870	61%	100%
3S	1700	H605-650	410	650	975	1290	81%	100%
4S	1280	H605-550	375	550	825	905	94%	100%
5S	980	H604-350	240	350	525	740	78%	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 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	2280	H653-4 large	435	500	750	1845	52%	100%
3S	1700	H653-4 large	435	500	750	1265	70%	100%
4S	1280	H653-4 large	395	350	525	885	72%	100%
5S	980	H653-4 small	250	240	360	730	62%	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	2280	H634-0,25	170	4000	2110	100%	53%
3S	1700	H634-0,25	170	4000	1530	100%	38%
4S	1280	H634-0,25	170	4000	1110	100%	28%
5S	980	H634-0,25	170	4000	810	100%	20%

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

USER MANUAL

821NG

TECHNICAL SHEET

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	2280	H332-1330	265	1600	2015	82%	100%
3S	1700	H332-1330	265	1600	1435	100%	90%
4S	1280	H332-1330	265	1600	1015	100%	63%
5S	980	H332-850	245	2200	735	100%	33%

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

TECHNICAL SHEET

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	2280	H415 2000-500	155	2000	2125	95%	100%
3S	1700	H415 1500-500	135	1500	1565	96%	100%
4S	1280	H415 1500-500	135	1500	1145	100%	76%
5S	980	H415 1500-500	135	1500	845	100%	56%

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