

USER MANUAL
909NG C
TECHNICAL SHEET

D TECHNICAL SHEET



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D.1 CRANE'S TECHNICAL DATA

Versions		2S	3S
Max. net lifting moment		<i>t m</i>	8.3
		<i>kNm</i>	81.3
Max. dynamic moment		<i>daNm</i>	11180
		<i>kNm</i>	111
Capacity at min. hydraulic outreach	hook [S2]	<i>kg</i>	2390
	grab [S1]	<i>kg</i>	2390
	Max rated capacity		
	min.outreach	<i>m</i>	3.47
Capacity at max. hydraulic outreach	hook [S2]	<i>kg</i>	1210
	grab [S1]	<i>kg</i>	1210
	max.outreach	<i>m</i>	6.72
Capacity of 1st man. extension	capacity	<i>kg</i>	N/A
	max.outreach	<i>m</i>	N/A
Max. load height above the base for the last extension	hydraulic	<i>m</i>	8.9
	manual	<i>m</i>	N/A
Weight of crane without stabilizers		<i>kg</i>	1170
Weight of stabilizers	ST-M	<i>kg</i>	110
	EX-M	<i>kg</i>	160
	EX-H	<i>kg</i>	190
	SE-H	<i>kg</i>	210
Weight of 1st man. extension		<i>kg</i>	N/A
Max. working pressure		<i>bar</i>	320
Max. oil flow rate		<i>l/min</i>	20
		<i>l/min</i>	40
Max. power needed		<i>kW</i>	13.9
		<i>kW</i>	27.7
Oil tank capacity		<i>l</i>	75
Slewing angle		<i>°</i>	425°
Gross slewing torque		<i>daNm</i>	1060
		<i>kNm</i>	10.6
Max. base inclination		<i>°</i>	4°
		<i>°</i>	3°
Max. stabilizer force on the ground with stabilizers fully extended	ST	<i>daN</i>	7530
	EX	<i>daN</i>	5010
	SE	<i>daN</i>	4120
Max. stabilizer pressure on the ground with stabilizers fully extended	ST	<i>MPa</i>	3.74
	EX	<i>MPa</i>	2.49
	SE	<i>MPa</i>	2.05
Lifting conversion factor, k		<i>kgm/bar</i>	28.91
Distribution factor of dyn. moment on base, β		-	0.70
Position of standard dead point (see D.5)			

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D.2 TOTAL WEIGHTS

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

<i>kg</i>	Crane version	
Type of stabilizers	2S	3S
ST-M	1280	1370
EX-M	1330	1420
EX-H	1360	1450
SE-H	1380	1470

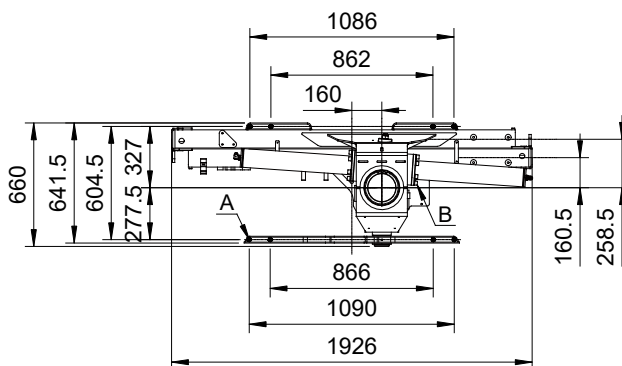
Additional weight of 1st extra function activated with slides: 8 kg pro hydraulic extension
Additional weight of 2nd extra function activated with slides: 2 kg pro hydraulic extension
Additional weight of 1st extra function activated with hose reel: 20 kg
Additional weight of 2nd extra function activated with hose reel: 10 kg
The weights may vary by $\pm 3\%$

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D.4 BASE DIMENSIONS AND MOUNTING BOLTS

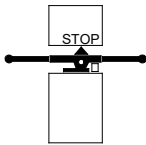
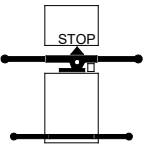
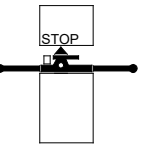
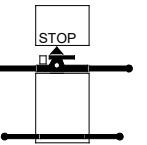
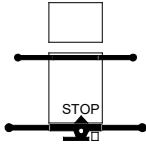
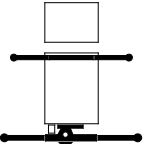
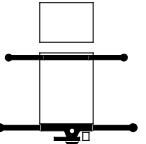
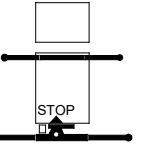
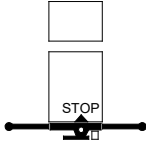
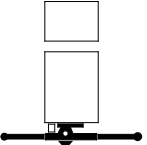
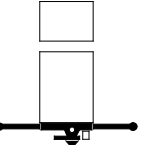
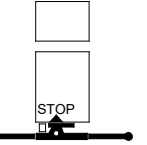
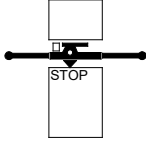
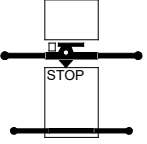
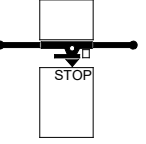
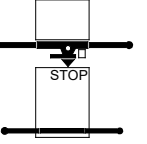


Ref.	Description	Q.ty	Material Grade	Size	Tightening torque
A	Kit with 8 crane mounting bolts	8	42CrMo4+QT EN 10083-3	M20x1.5 L=900	250 Nm
	Kit with 4 crane mounting bolts	4	39NiCrMo3+QT EN 10083-3	M24X2 L=520	400 Nm
B	Fixing bolts for each slewing cylinder	6	8.8	M14x2 L=65	80 Nm

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D.5 INSTALLATION TYPE NUMBER

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

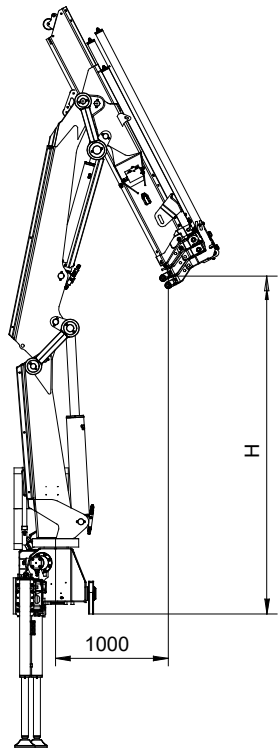
OPPOSITE DEAD POINT		STANDARD DEAD POINT	
1 	2 	3 	4 
5 	6 	7 	8 
9 	10 	11 	12 
13 	14 	15 	16 

Legend:

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

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D.6 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
2S	2290
3S	2210

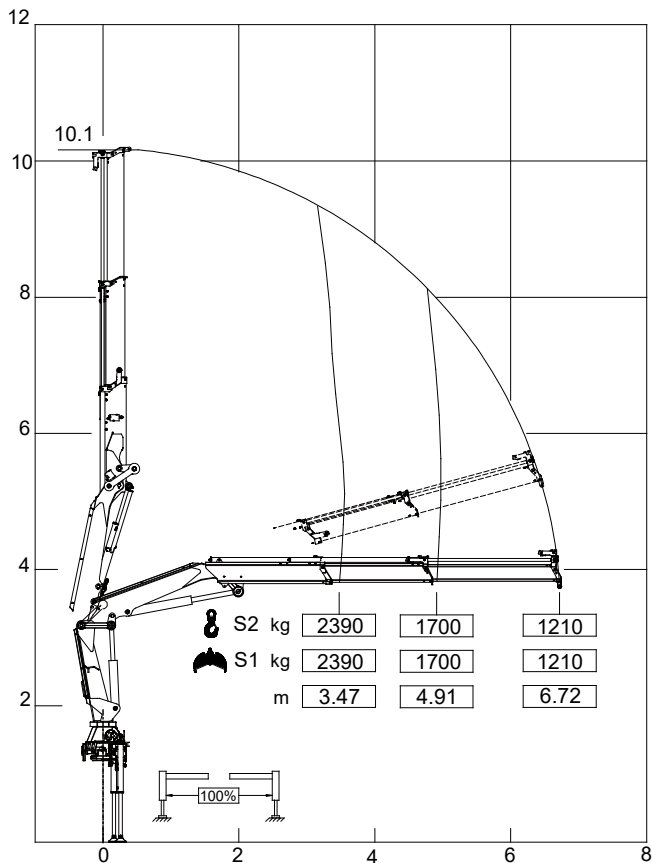
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D.7 LOAD CHARTS FOR USE WITH HOOK/TOOL

909NG C 2S



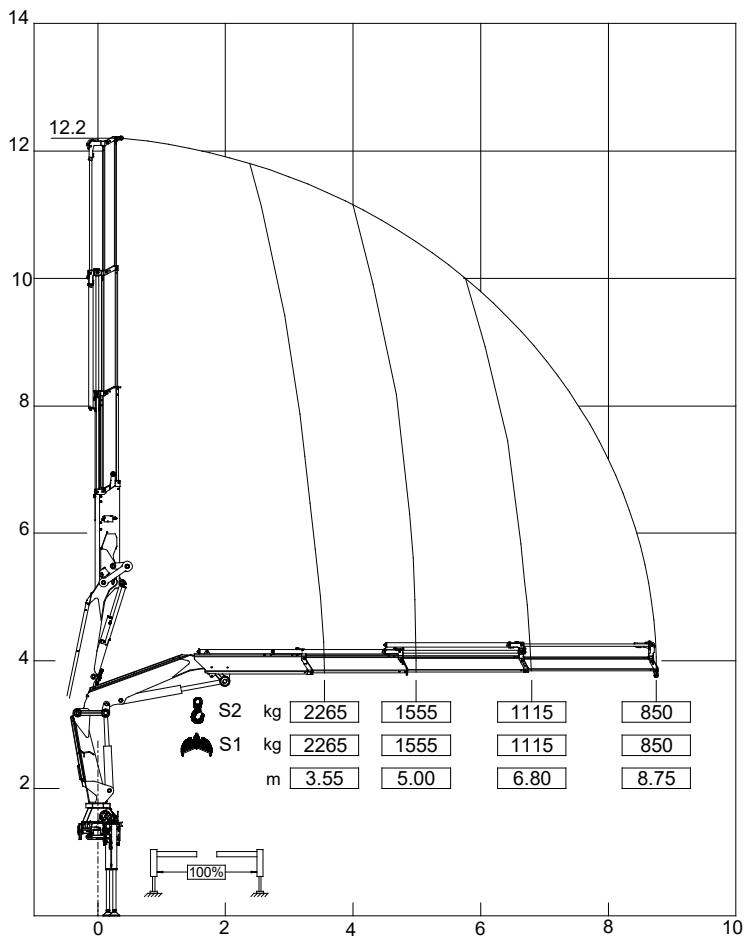
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

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LOAD CHART FOR USE WITH HOOK/TOOL 909NG C 3S



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

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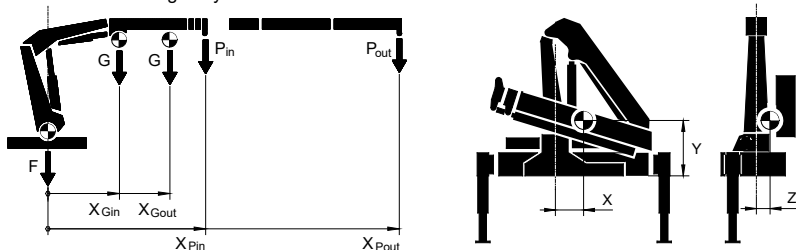
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D.8 CENTERS OF GRAVITY AND TEST LOADS

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

909NG C	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 : 795	485	2.21	2390	3.47	1513	196	663	20
	EX-M : 845		2.96	1210	6.72				
3S	EX-H : 875	575	2.34	2265	3.55	1068	184	688	37
	SE-H : 895		3.67	850	8.75				

The data are relating to crane configuration with horizontal booms.

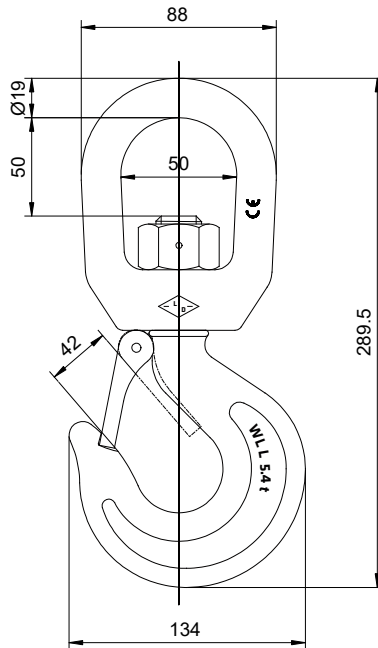
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D.9 HOOK DATA

HOOK MOUNTED ON STANDARD BOOM

VERSIONS: 2S, 3S

DIMENSIONS



TECHNICAL PROPERTIES

Working load limit (WLL) : 5400 kg

Material: alloy steel

Weight: 3.2 kg

Swivel hook

Reference standard: DIN 15401

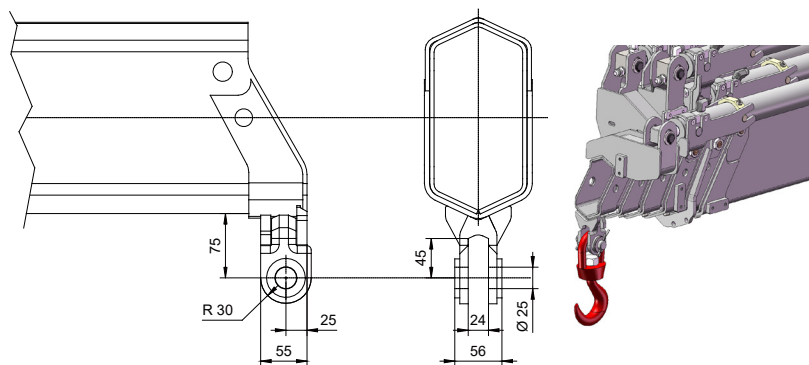
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D.10 LOAD ATTACHMENT

ATTACHMENT FOR HOOK



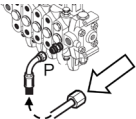
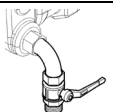
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D.11 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

909NG C	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 FOR HYDRAULIC CYLINDERS

909NG C	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	N/A	N/A
2.boom cylinder	N/A	N/A
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

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.

909NG C	Time interval min.	Max. load descent mm
2S	10	336
3S	10	438

CAPACITY OF HYDRAULIC SYSTEM

909NG C	Cylinders extended t	Cylinders retracted t
2S	32	22
3S	37	26

Capacities do not include the oil tank.

ADDITIONAL CAPACITY FOR HYDRAULICALLY OPERATED STABILIZER EXTENSIONS

EX-H	+3.5	+2.0
SE-H	+4.5	+3.0

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D.12 OIL COOLER



TECHNICAL SPECIFICATIONS

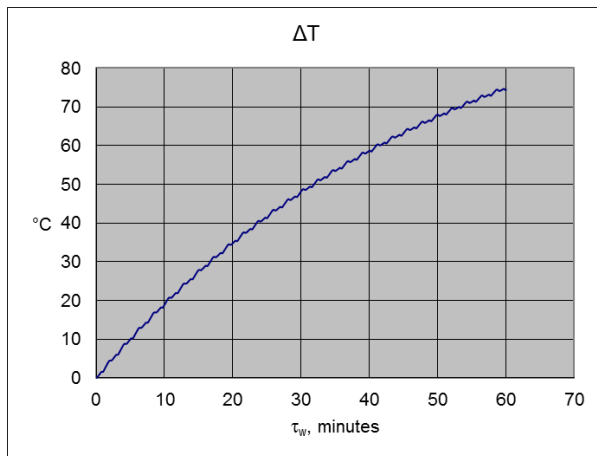
Heat transfer coefficient: 235 W/K (oil flow rate of 40 l/min)

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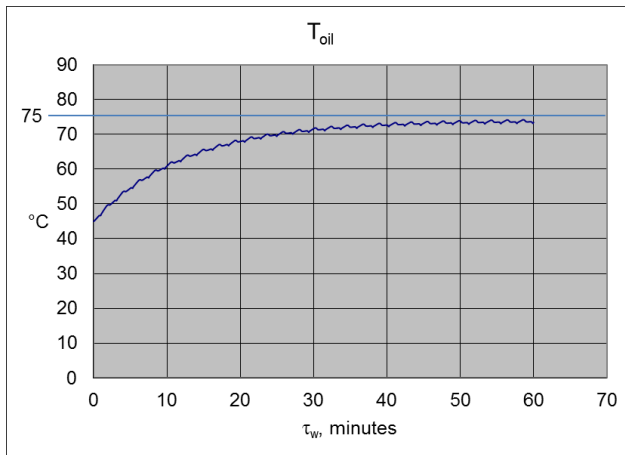
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However, when a crane equipped with oil cooler carries out a sequence of standard work cycles, the oil temperature exceeds 75 °C after the following working times:

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)

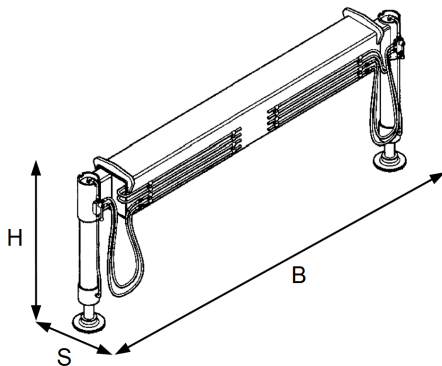
The calculation of the oil temperature is purely indicative and depending on several variables (e.g. working cycle, wind, humidity, weather, etc.)

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D.13 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:

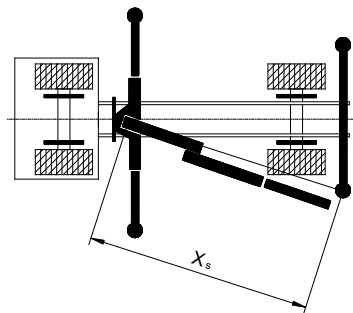
M_{dyn} : max. dynamic moment of the crane

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 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.

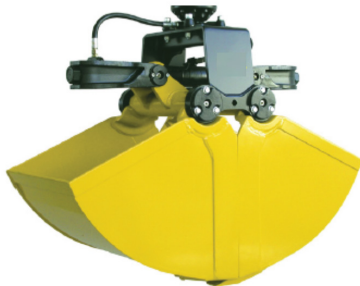
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D.14 RECOMMENDED ADDITIONAL LIFTING TOOLS

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	1210	H605-450	340	450	675	870	84%	100%
3S	850	H605-250	285	250	375	565	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	1210	H653-4 large	435	500	750	775	98%	100%
3S	850	H653-4 small	275	120	180	575	54%	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	1210	H634-0,25	170	4000	1040	100%	26%
3S	850	H634-0,25	170	4000	680	100%	17%

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⁾
2S	1210	H332-850	245	2200	965	100%	44%
3S	850	H332-850	245	2200	605	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

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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⁾
2S	1210	H415 2000-500	155	2000	1055	100%	53%
3S	850	H415 2000-500	155	2000	695	100%	35%

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