

USER MANUAL
809NG
TECHNICAL SHEET

D TECHNICAL SHEET



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D.1 CRANE'S TECHNICAL DATA

Versions		1S	2S	3S	4S
Max. net lifting moment	 $t\ m$ kNm	8.7 85.3	8.2 80.8	8.0 78.5	7.8 76.9
Max. dynamic moment	 $daNm$ kNm	10730 107			
Capacity at min. hydraulic outreach	hook [S2]  kg	2130	2020	1920	1850
Max rated capacity	grab [S1]  kg	2130	2020	1920	1850
	min. outreach  m	4.08	4.08	4.17	4.24
Capacity at max. hydraulic outreach	hook [S2]  kg	1510	1095	790	600
	grab [S1]  kg	1510	1095	790	600
	max.outreach  m	5.76	7.45	9.34	11.21
Capacity of 1st man. extension	capacity  kg	N/A	710	600	475
	max.outreach  m	N/A	9.41	11.21	13.22
Max. load height above the base for the last extension	hydraulic  m	7.9	9.5	11.4	13.2
	manual  m	N/A	13.2	15.2	15.2
Weight of crane without stabilizers	 kg	1030	1110	1190	1260
Weight of stabilizers	ST-M  kg	110			
	EX-M  kg	160			
	EX-H  kg	190			
	SE-H  kg	210			
Weight of 1st man ext.	 kg	N/A	43.5	37.5	34
Max. working pressure	 bar	310			
Max. oil flow rate	 l/min	20			
	 l/min	40			
Max. power needed	 kW	13.4			
	 kW	26.9			
Oil tank capacity	 l	75			
Slewing angle	 $^{\circ}$	425			
Gross slewing torque	 $daNm$ kNm	1060 10.6			
Max. base inclination	 $^{\circ}$	4			
	 $^{\circ}$	3			
Max boom inclination for use with CE winch	 $^{\circ}$	75			
Max. stabilizer force on the ground	ST daN	7230			
with stabilizers fully extended	EX daN	4810			
	SE daN	3950			
Max. stabilizer pressure on the ground	ST MPa	3.56			
with stabilizers fully extended	EX MPa	2.39			
	SE MPa	1.96			
Lifting coversion factor, k	kgm/bar	33.78			
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

TI1 - SINGLE LINE PULL

Versions	1S	2S	3S	4S
 Max line pull <i>kg</i>	1000	1000	1000	1000
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.

<i>kg</i>	Crane version			
Type of stabilizers	1S	2S	3S	4S
ST-M	1140	1220	1300	1370
EX-M	1190	1270	1350	1420
EX-H	1220	1300	1380	1450
SE-H	1240	1320	1400	1470

Additional weight for TI1 winch: 95 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

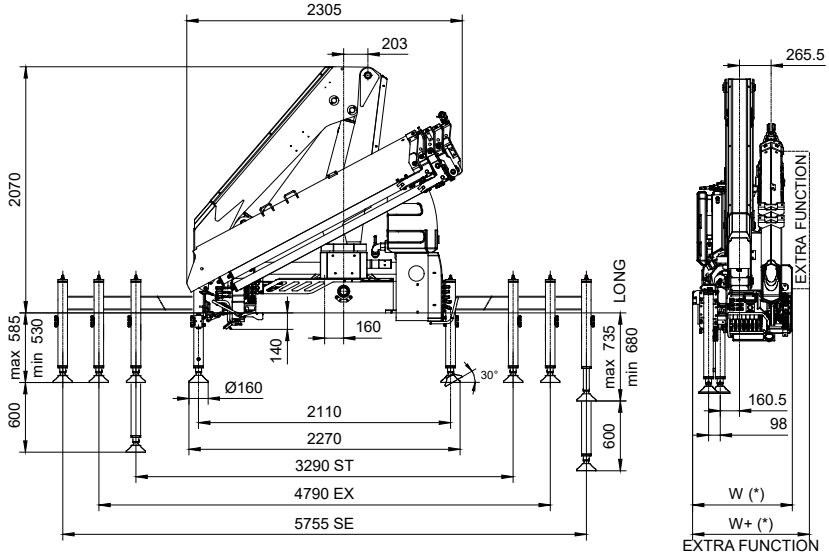
Additional weight of 2nd extra function activated with hose reel: 10 kg

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

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D.4 OVERALL DIMENSIONS

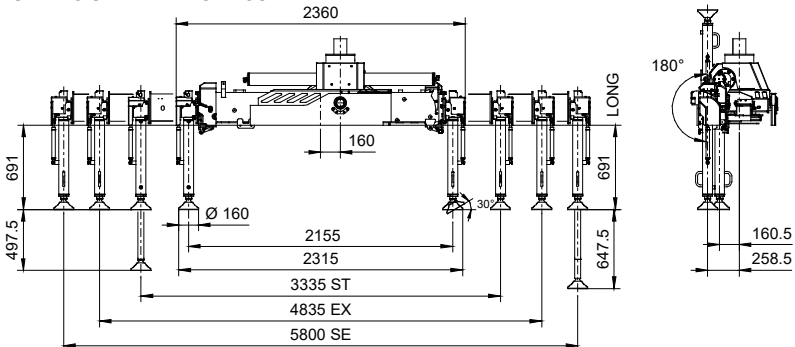
FIXED STABILIZERS LEGS



		1S	2S	3S	4S
W (*) (mm)		840	840	840	840
	Compact	840	840	N/A	N/A
W+ (*) (mm)	Slides	890	890	890	890
	Hose reel	N/A	N/A	N/A	945

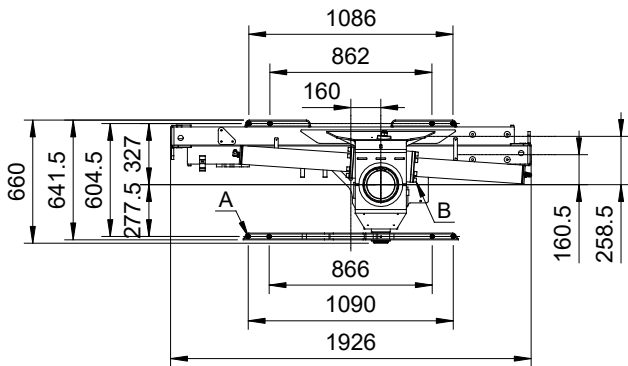
(*) The width has to be decreased by 40 mm in case of ST stabilisers.

TURNING STABILIZERS LEGS



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D.5 BASE DIMENSIONS AND MOUNTING BOLTS

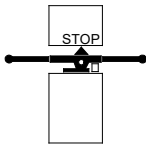
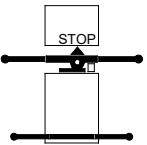
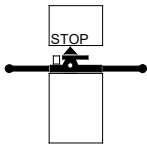
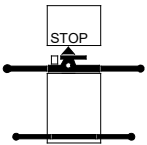
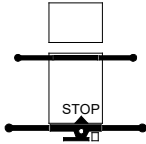
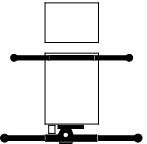
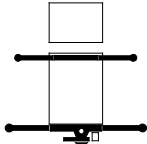
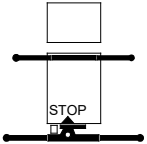
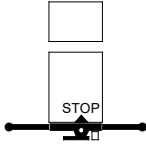
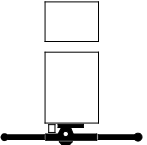
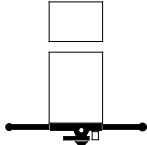
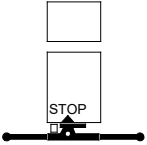
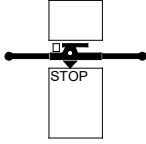
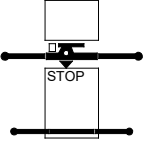
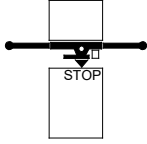
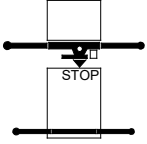


Ref.	Description	Q.ty	Material Grade	Size	Tightening torque
A	Kit with 8 crane mounting bolts	8	42CrMo4+QT EN 10083-3	M20x1.5 L=900	250 Nm
	Kit with 4 crane mounting bolts	4	39NiCrMo3+QT EN 10083-3	M24X2 L=520	400 Nm
B	Fixing bolts for each slewing cylinder	6	8.8	M14x2 L=65	80 Nm

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D.6 INSTALLATION TYPE NUMBER

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

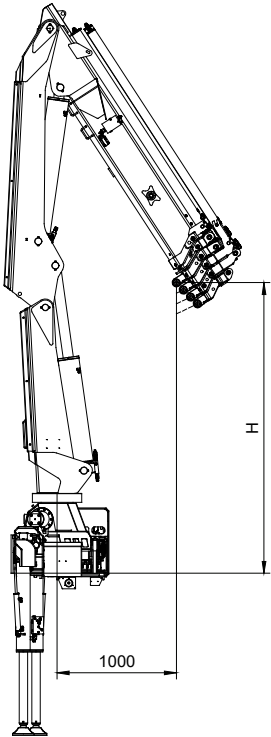
OPPOSITE DEAD POINT		STANDARD DEAD POINT	
1	2	3	4
			
5	6	7	8
			
9	10	11	12
			
13	14	15	16
			

Legend:

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

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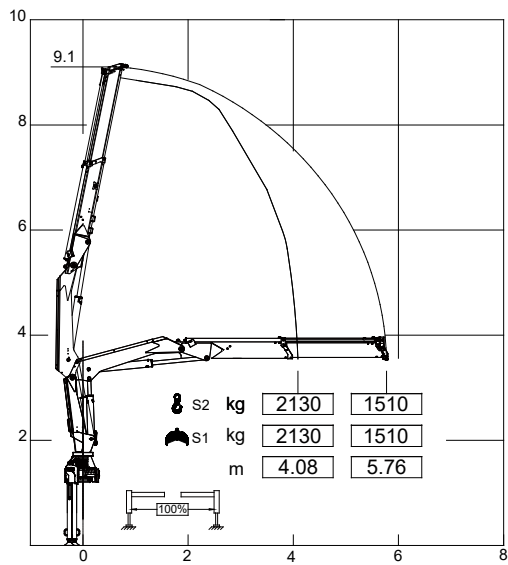
D.7 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
1S	1859
2S	1778
3S	1696
4S	1619

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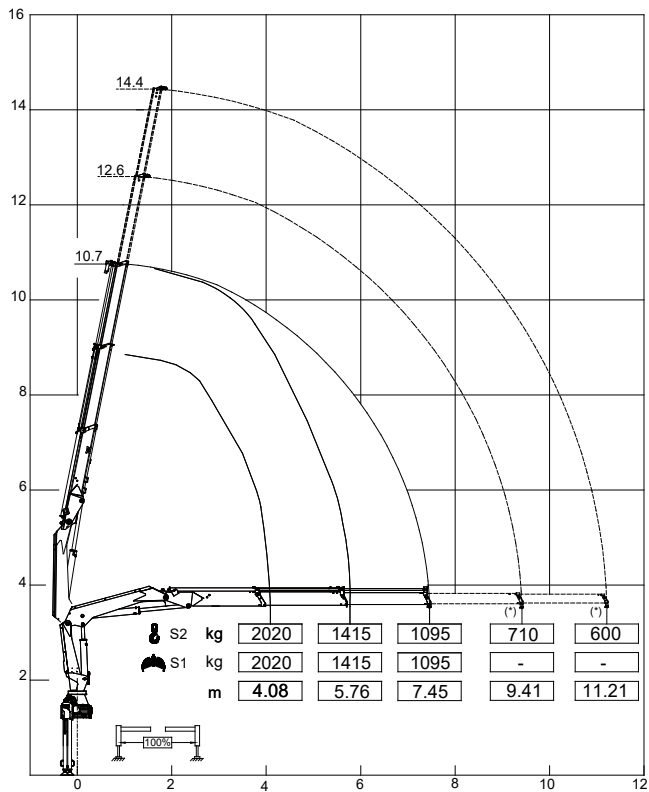
D.8 LOAD CHARTS FOR USE WITH HOOK/TOOL
809NG 1S



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

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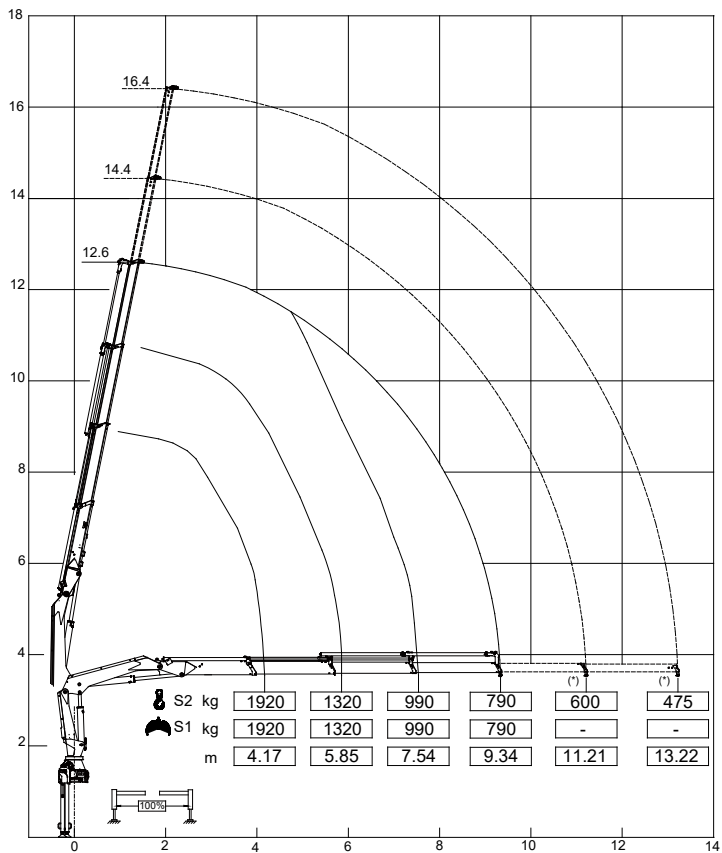
LOAD CHARTS FOR USE WITH HOOK/TOOL
809NG 2S



(*) 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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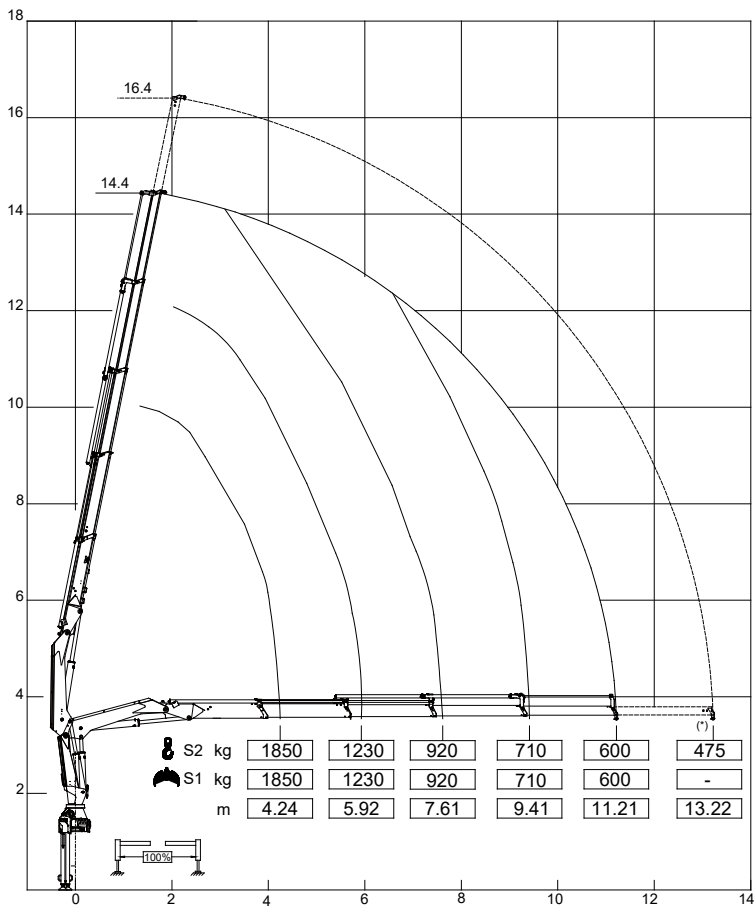
LOAD CHARTS FOR USE WITH HOOK/TOOL
809NG 3S



(*) 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
809NG 4S



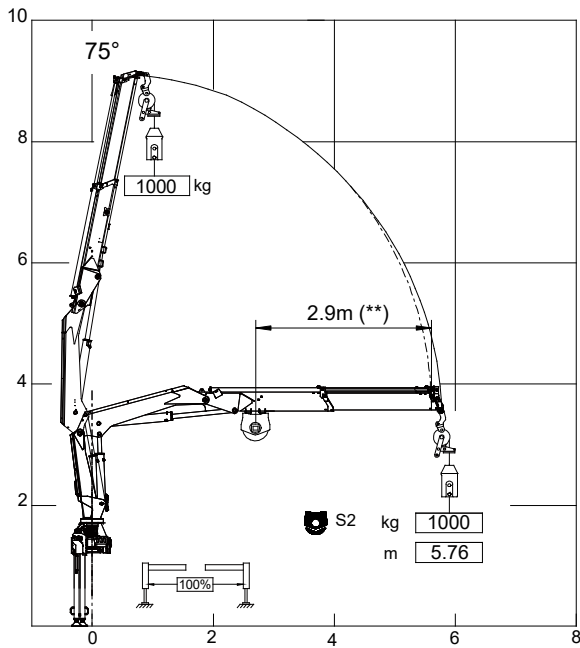
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D.9 LOAD CHARTS FOR T11 WINCH IN SINGLE LINE

809NG 1S + T11 SINGLE LINE



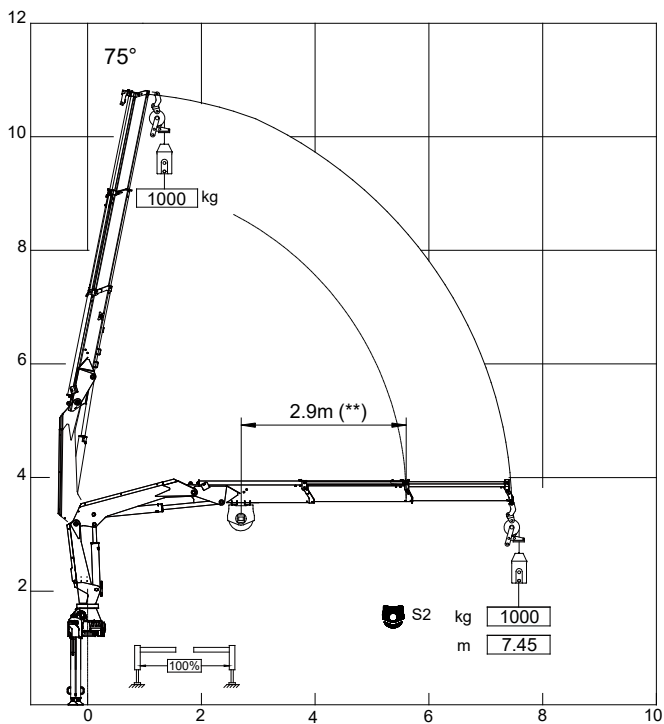
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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LOAD CHART FOR WINCH T11 IN SINGLE LINE 809NG 2S + T11 SINGLE LINE



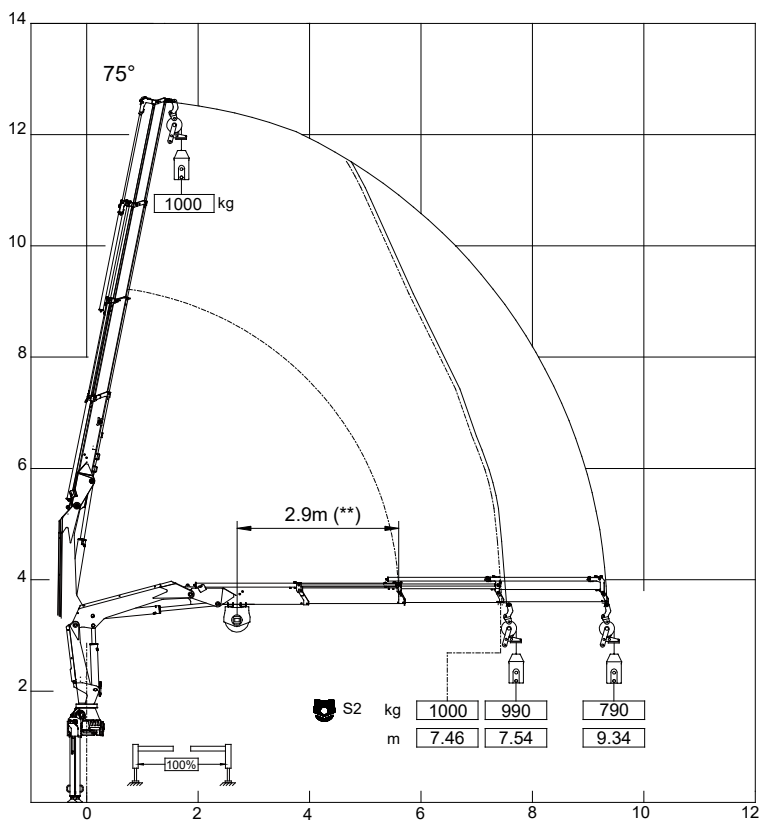
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

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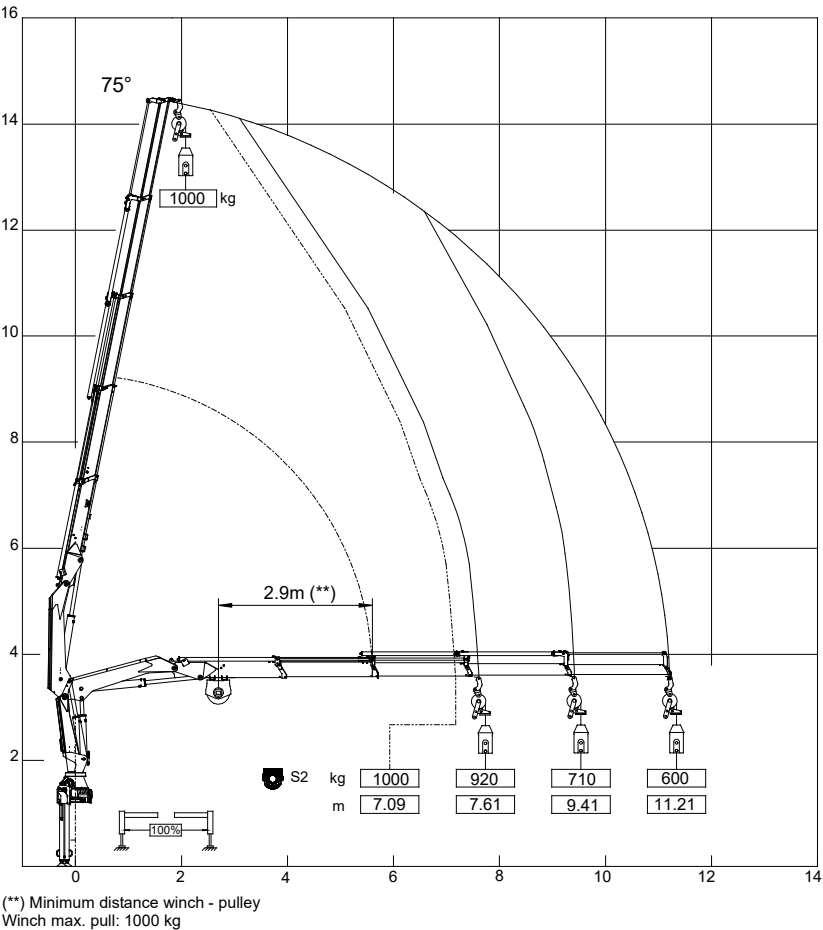
LOAD CHART FOR WINCH T11 IN SINGLE LINE 809NG 3S + T11 SINGLE LINE



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

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LOAD CHART FOR WINCH T11 IN SINGLE LINE
809NG 4S + T11 SINGLE LINE



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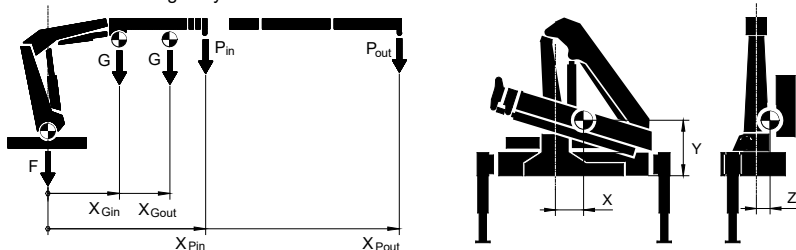
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D.10 CENTERS OF GRAVITY AND TEST LOADS

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

809NG	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 : 760 EX-M : 810 EX-H : 840 SE-H : 860	380	2.05 2.39	2130 1510	4.08 5.76	1888	148	619	-2
2S		460	2.23 3.07	2020 1095	4.08 7.45	1369	143	639	19
3S		540	2.35 3.80	1920 790	4.17 9.34	992	133	655	35
4S		610	2.44 4.50	1850 600	4.24 11.21	769	123	668	46

The data are relating to crane configuration with horizontal booms.

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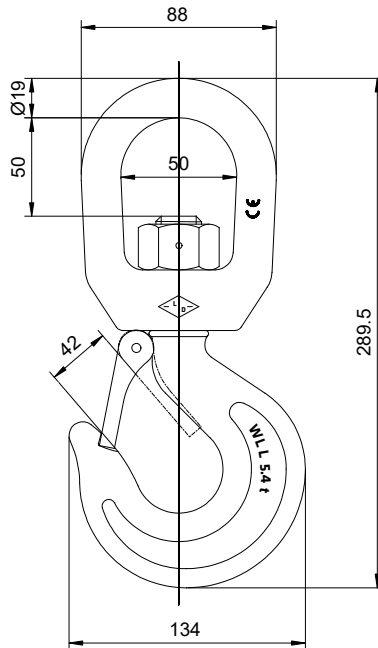
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D.11 HOOK DATA

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

DIMENSIONS



TECHNICAL PROPERTIES

Working load limit (WLL) : 5400 kg

Material: alloy steel

Weight: 3.2 kg

Swivel hook

Reference standard: DIN 15401

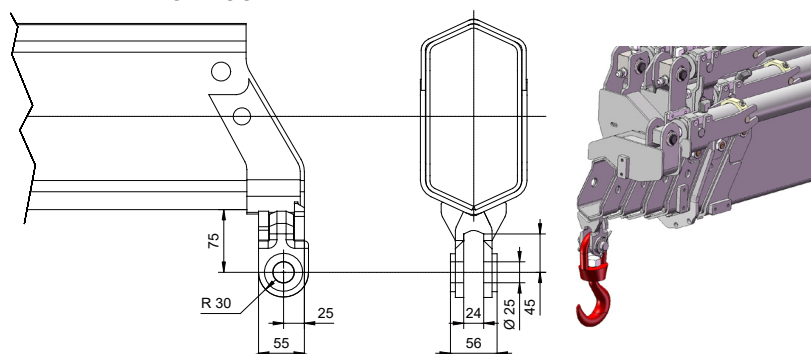
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D.12 LOAD ATTACHMENT

ATTACHMENT FOR HOOK



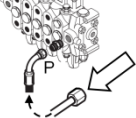
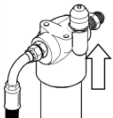
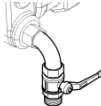
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D.13 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

809NG	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

809NG	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
boom extension 4S (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.

809NG	Time interval min.	Max. load descent mm
1S	10	288
2S	10	373
3S	10	467
4S	10	561

CAPACITY OF HYDRAULIC SYSTEM

809NG	Cylinders extended t	Cylinders retracted t
1S	34	23
2S	39	27
3S	46	31
4S	51	35

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.14 OIL COOLER



TECHNICAL SPECIFICATIONS

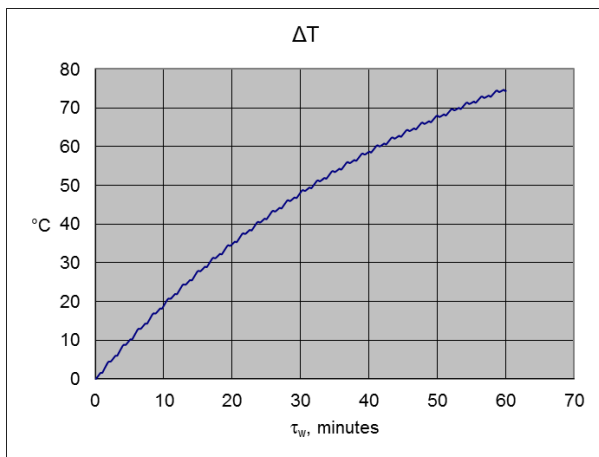
Heat transfer coefficient: 235 W/K (oil flow rate of 40 l/min)

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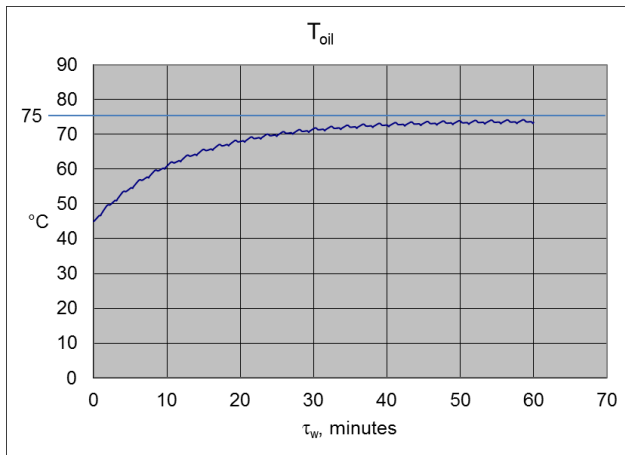
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However, when a crane equipped with oil cooler carries out a sequence of standard work cycles, the oil temperature exceeds 75 °C after the following working times:

T_{env} (°C)	τ_w to exceed 75 °C (minutes)
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.



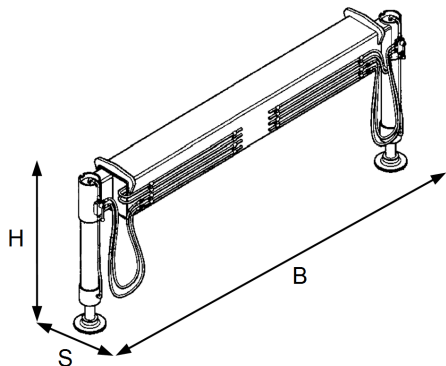
Notes:

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.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} .

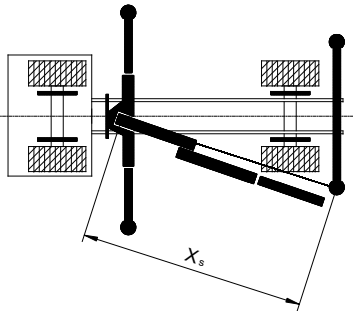
$$F_s = M_{dyn} / X_s \qquad F_s \geq 0.6 F_{sg}$$

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.



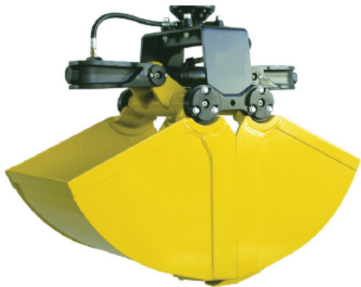
- In addition, CE additional stabilizer must be equipped with safety devices integrated with the crane's stability control system. Therefore we recommend to install the following models designed by the crane's manufacturer.

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⁾
1S	1510	H605-550	375	550	825	1135	79%	100%
2S	1095	H605-450	340	450	675	755	93%	100%
3S	790	H605-250	285	250	375	505	84%	100%
4S	600	H604-200	195	200	300	405	83%	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⁾
1S	1510	H653-4 large	435	500	750	1075	78%	100%
2S	1095	H653-4 large	395	350	525	700	84%	100%
3S	790	H653-4 small	275	120	180	515	58%	100%
4S	600	H653-4 small	275	120	180	325	76%	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⁾
1S	1510	H634-0,25	170	4000	1340	100%	34%
2S	1095	H634-0,25	170	4000	925	100%	23%
3S	790	H634-0,25	170	4000	620	100%	16%
4S	600	H634-0,25	170	4000	430	100%	11%

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

809NG

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⁾
1S	1510	H332-1330	265	1600	1245	100%	78%
2S	1095	H332-1330	265	1600	830	100%	52%
3S	790	H332-1330	265	1600	525	100%	33%
4S	600	H332-1330	265	1600	335	100%	21%

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

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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⁾
1S	1510	H415 2000-500	155	2000	1355	100%	68%
2S	1095	H415 2000-500	155	2000	940	100%	47%
3S	790	H415 1500-500	135	1500	655	100%	44%
4S	600	H415 1500-500	135	1500	465	100%	31%

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