D TECHNICAL SHEET

D.1 CRANE'S TECHNICAL DATA

Versions				2S	3S	4S	5S	6S	3SJ2	4SJ2
Max. net lifting moment			*t m* *kNm*	12.4 121	11.9 117	11.6 113	11.2 111	10.8 106	8.9 87.3	9.1 89.2
Max. dynamic moment			*daNm* *kNm*	15570 156					14120 141	
Capacity at min. hydraulic outreach Max rated capacity	hook [S2]		*kg*	2675	2535	2410	2290	2185	1100	1100
	grab [S1]		*kg*	2675	2535	2410	2290	2185	N/A	N/A
	min. outreach		*m*	4.63	4.71	4.80	4.88	4.96	8.05	8.27
Capacity at max. hydraulic outreach	hook [S2]		*kg*	1415	1045	780	575	420	380	230
	grab [S1]		*kg*	1415	1045	780	575	420	N/A	N/A
	max.outreach		*m*	8.53	10.66	12.80	15.03	17.26	16.22	18.35
Capacity of 1st man. extension	capacity		*kg*	1045	780	575	420	320	290	160
	max.outreach		*m*	10.91	12.96	15.11	17.26	19.36	17.80	19.89
Max. load height above the base for the last extension	hydraulic		*m*	10.8	13.0	15.1	17.4	19.6	19.8	22.0
	manual		*m*	17.4	19.6	21.6	21.6	21.6	21.4	23.5
Weight of crane without stabilizers			*kg*	1610	1725	1830	1930	2020	2065	2185
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*	70	61	52	35	29	23	23
Max. working pressure			*bar*	305						
Max. oil flow rate			*ℓ/min*	30						
			ℓ/min	60						
Power needed			*kW*	19.83						
			kW	39.65						
Oil tank capacity			*ℓ*	130						
Slewing angle			°	425°						
Gross slewing torque			*daNm* *kNm*	1420 14.2						
Max boom inclination for use with CE winch			°	75°						
Max. base inclination			°	4°					3°	
			°	3°					N/A	
Max. stabilizer force on the ground with stabilizers fully extended	ST		*daN*	8025					7280	
	EX		*daN*	6130					5560	
	SE		*daN*	4960					4500	
Max. stabilizer pressure on the ground with stabilizers fully extended	ST		*MPa*	3.2					2.9	
	EX		*MPa*	2.4					2.2	
	SE		*MPa*	2.0					1.8	
Lifting coversion factor, k			*kgm/bar*	50.05						
Distribution factor of dyn. moment on base, β			-	0.70						
Position of standard dead point (see D.6)			▲							

D.2 WINCH SETTINGS

TI1 - SINGLE LINE PULL

Versions		2S	3S	4S	5S	6S	3SJ2	4SJ2
Max line pull	*kg*	1000	1000	1000	1000	1000	N/A	N/A

TI1 - DOUBLE LINE PULL

Versions		2S	3S	4S	5S	6S	3SJ2	4SJ2
Max line pull	*kg*	1000	1000	1000	1000 (*)	1000 (*)	N/A	N/A
Start angle - pull% Final angle - pull%		-	-	-	65°-80% 75°-80%	70°-75% 75°-75%	-	-

TI2 - SINGLE LINE PULL

Versions		2S	3S	4S	5S	6S	3SJ2	4SJ2
Max line pull	*kg*	2000	2000	2000	2000 (*)	2000 (*)	N/A	N/A
Start angle - pull% Final angle - pull%		-	-	-	65°-60% 75°-60%	65°-60% 75°-55%	-	-

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

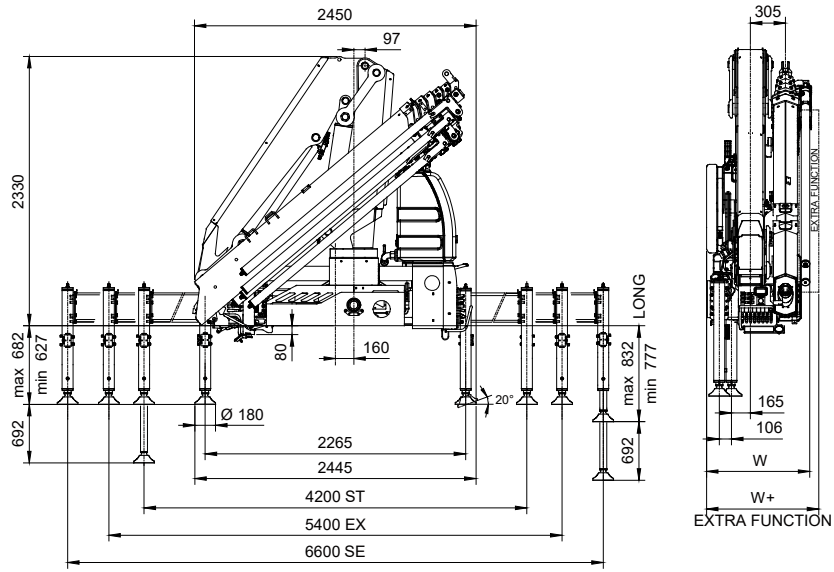
The table shows the total weights including oil inside the cylinders (fully retracted) and considering oil tank empty.

kg	Crane version						
Type of stabilizers	**2S**	**3S**	**4S**	**5S**	**6S**	**3SJ2**	**4SJ2**
ST-M	1820	1935	2040	2140	2230	2275	2395
EX-M	1880	1995	2100	2200	2290	2335	2455
EX-H	1915	2030	2135	2235	2325	2370	2490
SE-H	1970	2085	2190	2290	2380	2425	2545

Additional weight for TI1 winch: 95 kg
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
The weights may vary by ±3%

D.4 OVERALL DIMENSIONS

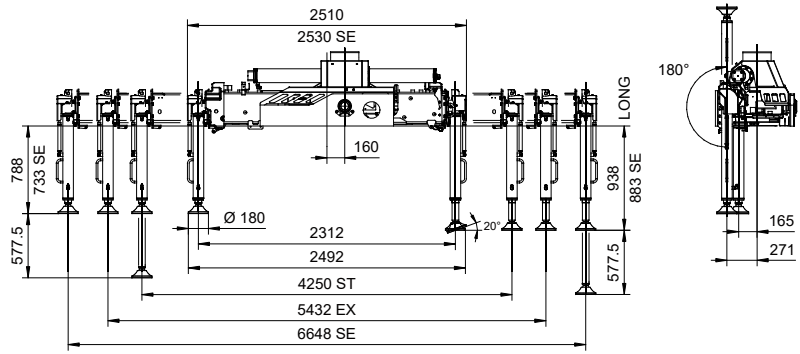
FIXED STABILIZERS LEGS



	2S	3S	4S	5S	6S
W (mm)	825	825	825	895	895
W+ (mm)	930 (*)	930 (*)	930 (*)	975 (**)	975 (**)

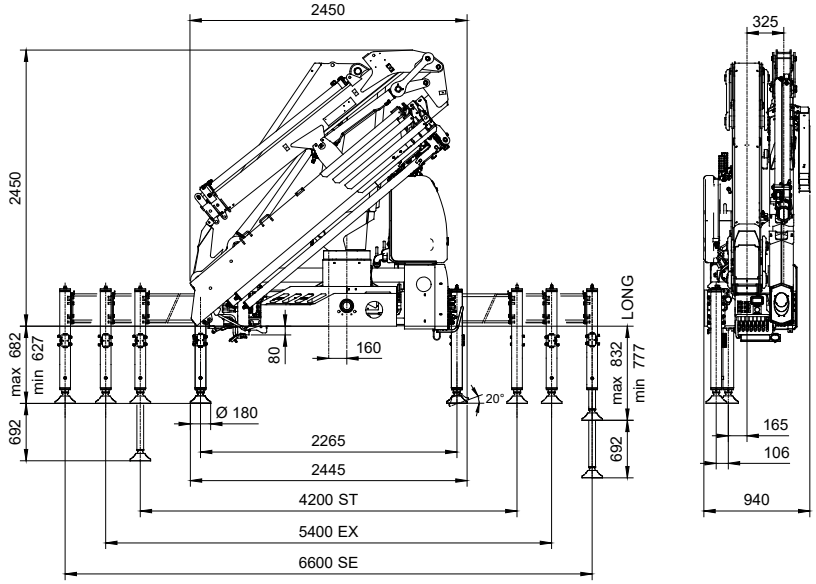
(*) activations with slides
(**) activations with hose reel

TURNING STABILIZERS LEGS

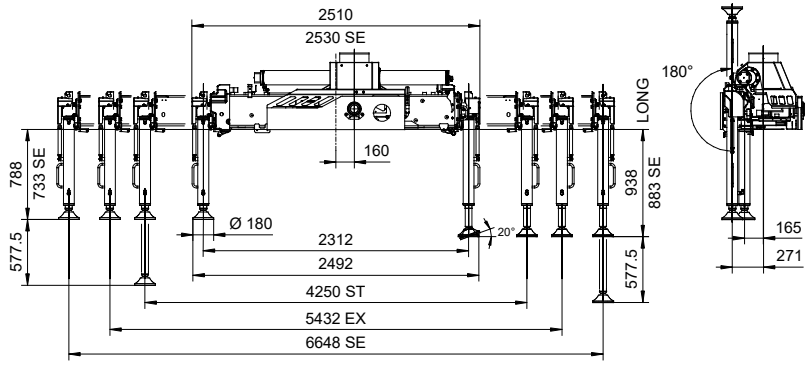


OVERALL DIMENSIONS
3SJ2

FIXED STABILIZERS LEGS

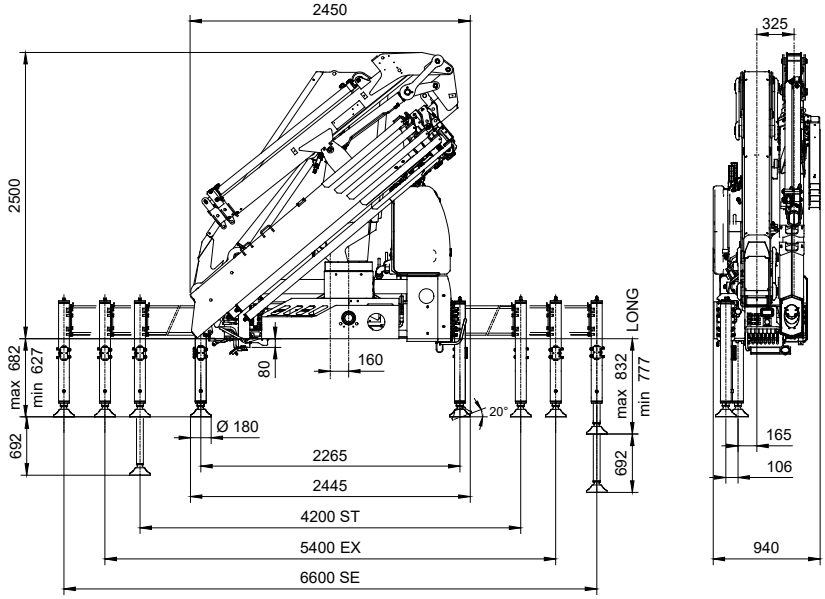


TURNING STABILIZERS LEGS

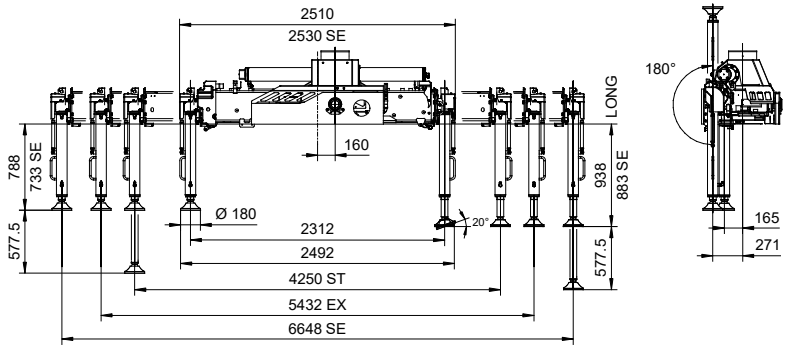


OVERALL DIMENSIONS
4SJ2

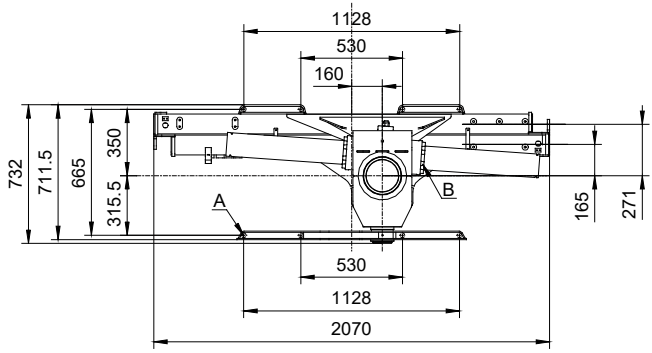
FIXED STABILIZERS LEGS



TURNING STABILIZERS LEGS



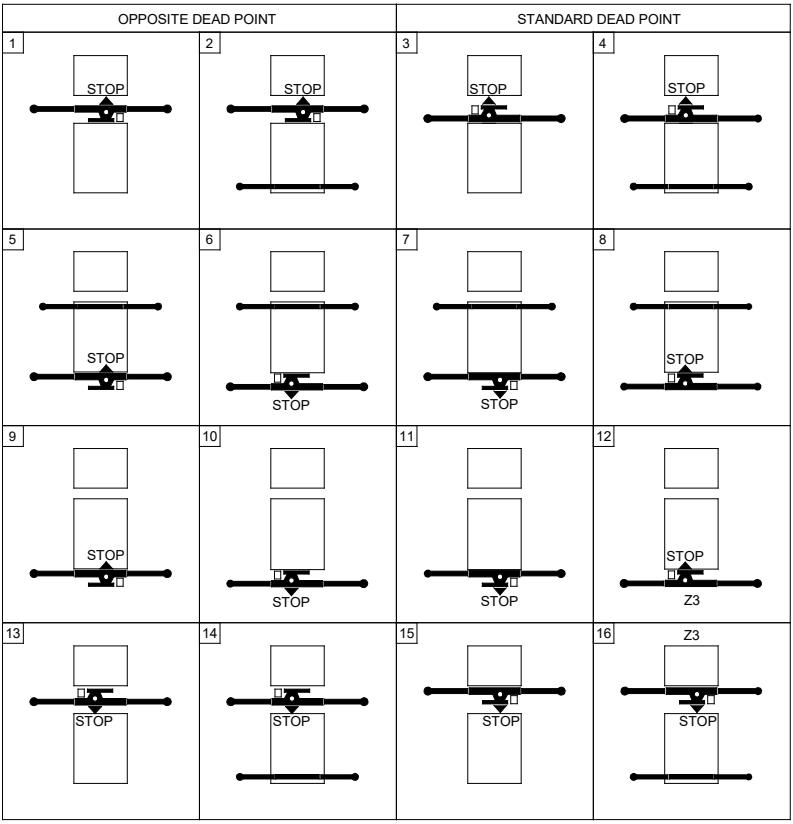
D.5 BASE DIMENSIONS AND MOUNTING BOLTS



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=65	80 Nm

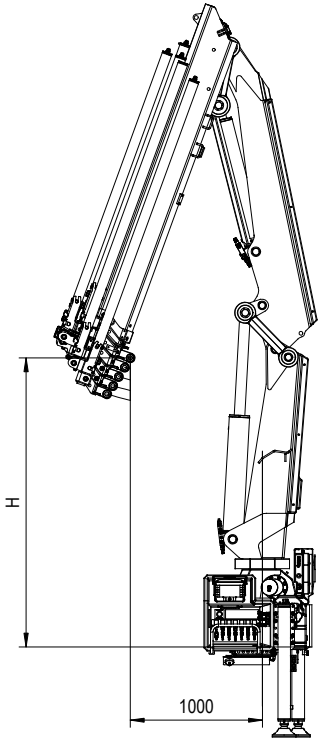
D.6 INSTALLATION TYPE NUMBER

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



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

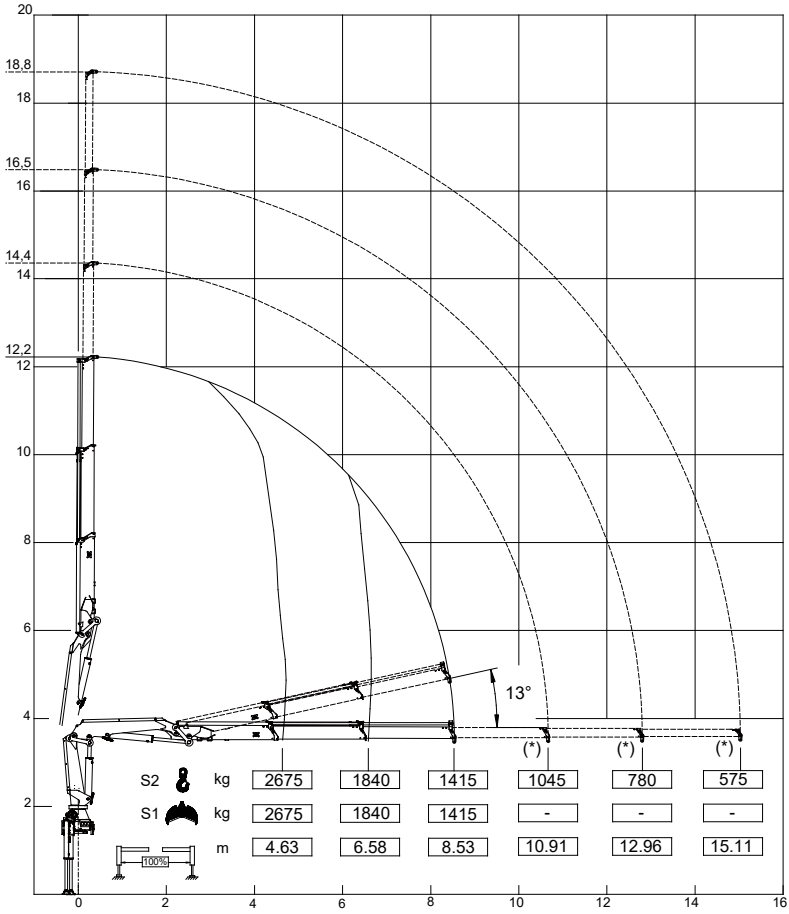
D.7 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
2S	2192
3S	2109
4S	2026
5S	1946
6S	1871

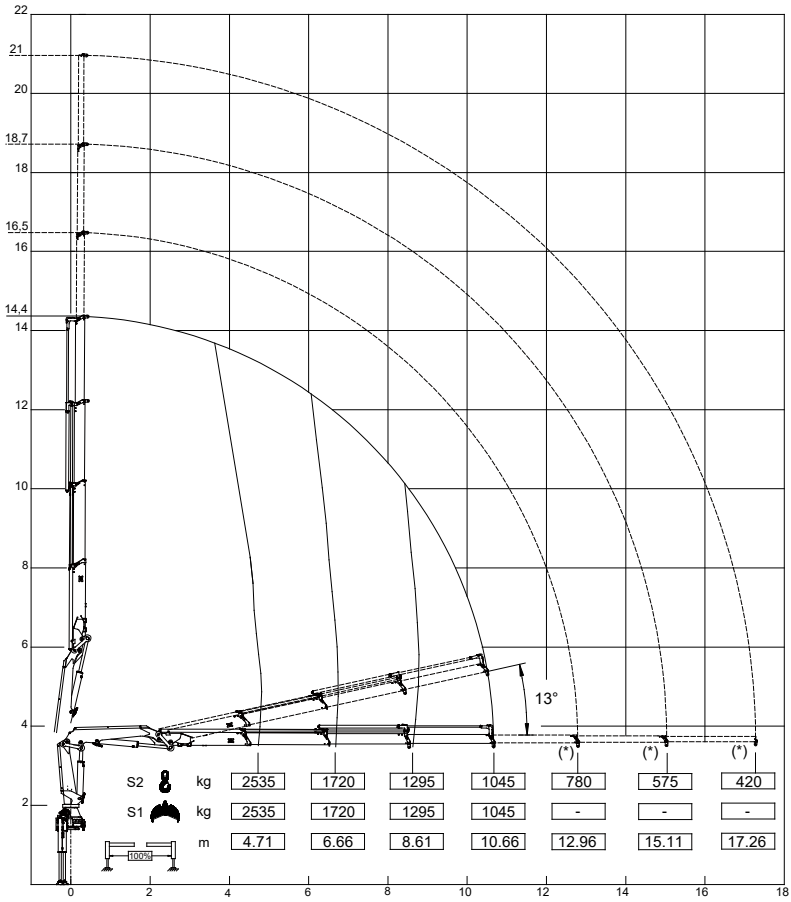
D.8 LOAD CHARTS FOR USE WITH HOOK/TOOL

915NG 2S



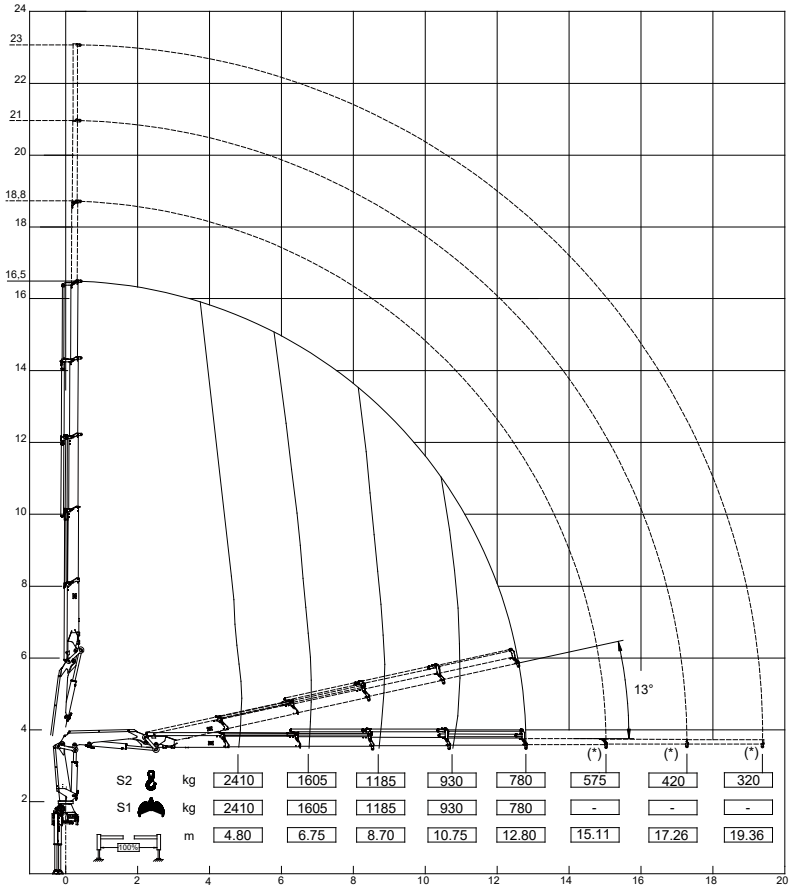
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS FOR USE WITH HOOK/TOOL
915NG 3S



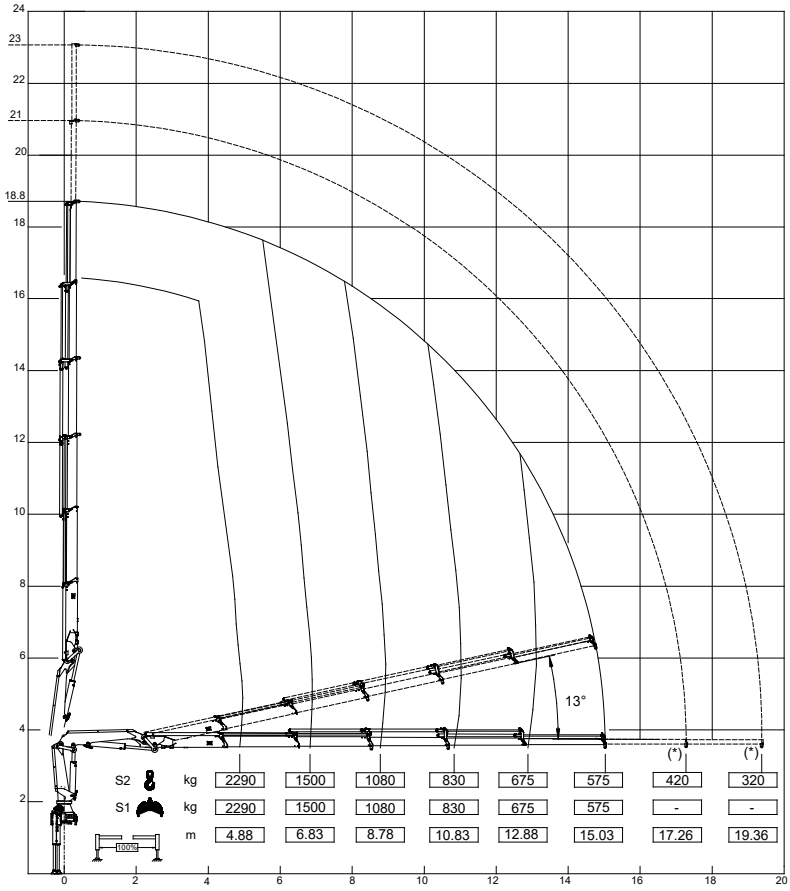
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS FOR USE WITH HOOK/TOOL
915NG 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

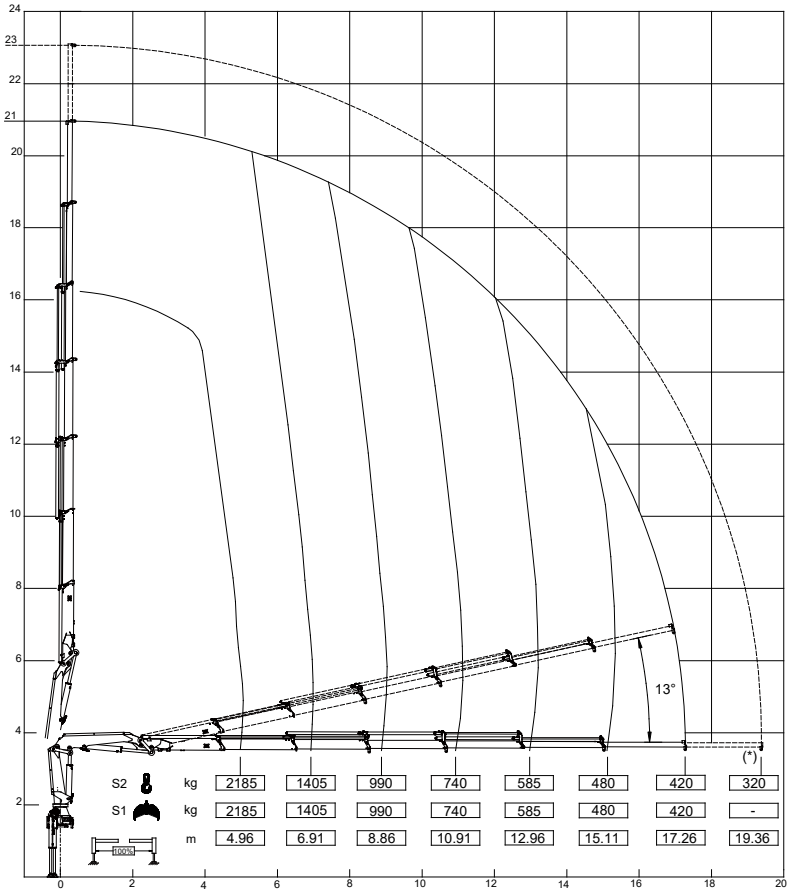
LOAD CHARTS FOR USE WITH HOOK/TOOL
915NG 5S



S2	kg	2290	1500	1080	830	675	575	420	320
S1	kg	2290	1500	1080	830	675	575	-	-
	m	4.88	6.83	8.78	10.83	12.88	15.03	17.26	19.36

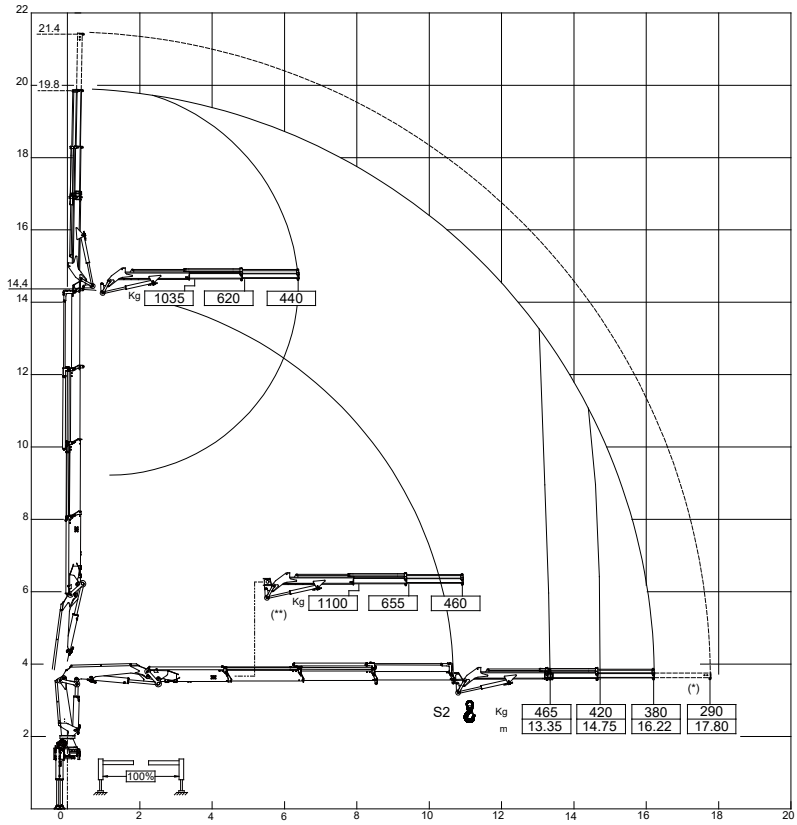
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS FOR USE WITH HOOK/TOOL
915NG 6S



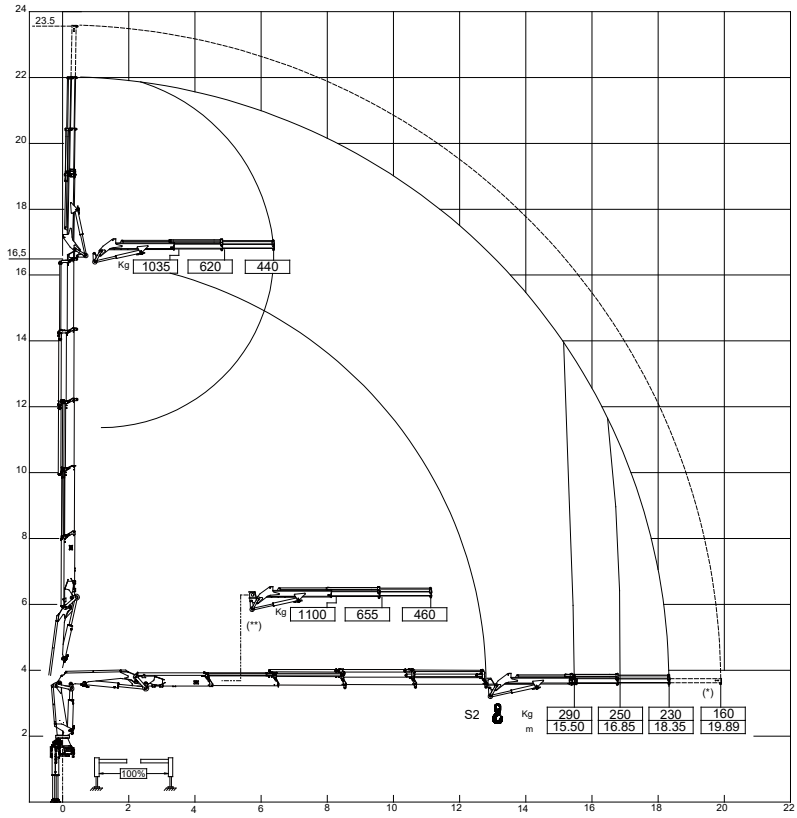
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS FOR USE WITH HOOK
915NG 3SJ2



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
(**) Max. lifting capacity of jib
The given rated capacities can be moved only by operating the jib.

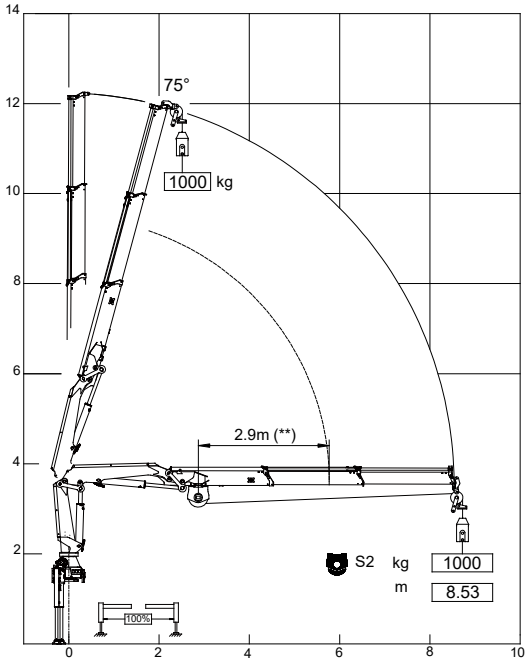
LOAD CHARTS FOR USE WITH HOOK
915NG 4SJ2



(*) Manual extensions (optional): these cannot lift additional hydraulic tools
(**) Max. lifting capacity of jib
The given rated capacities can be moved only by operating the jib.

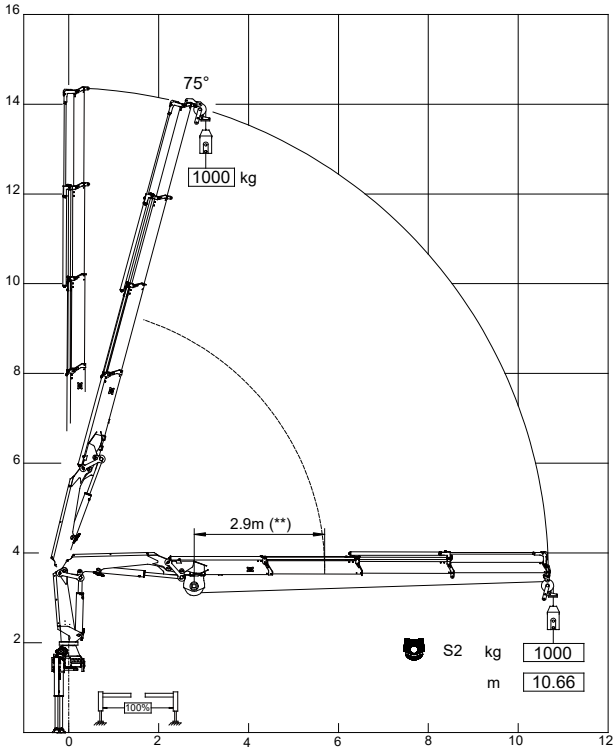
D.9 LOAD CHARTS FOR TI1 WINCH IN SINGLE LINE

915NG 2S + TI1 SINGLE LINE



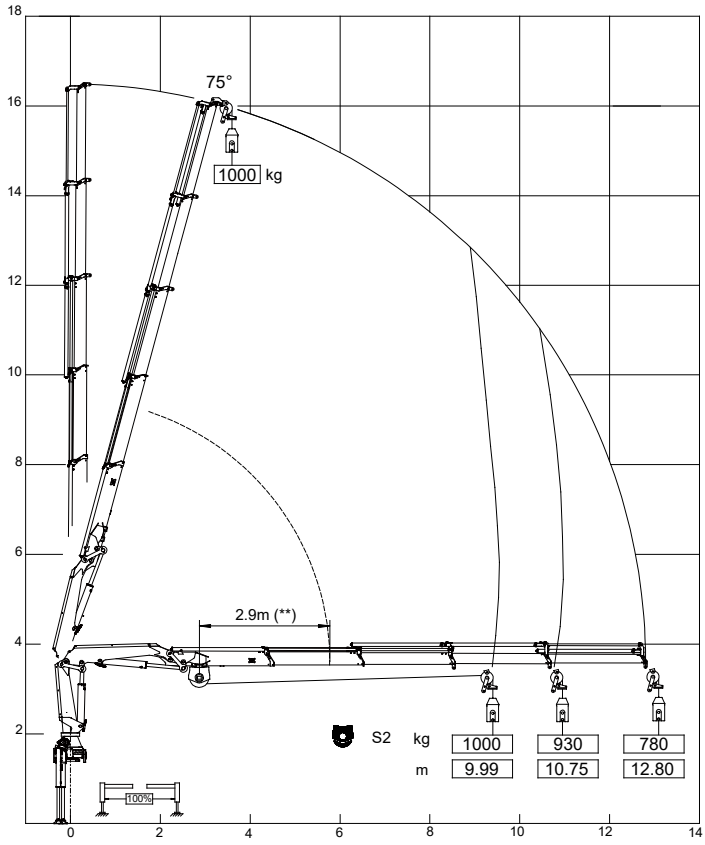
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
915NG 3S + TI1 SINGLE LINE



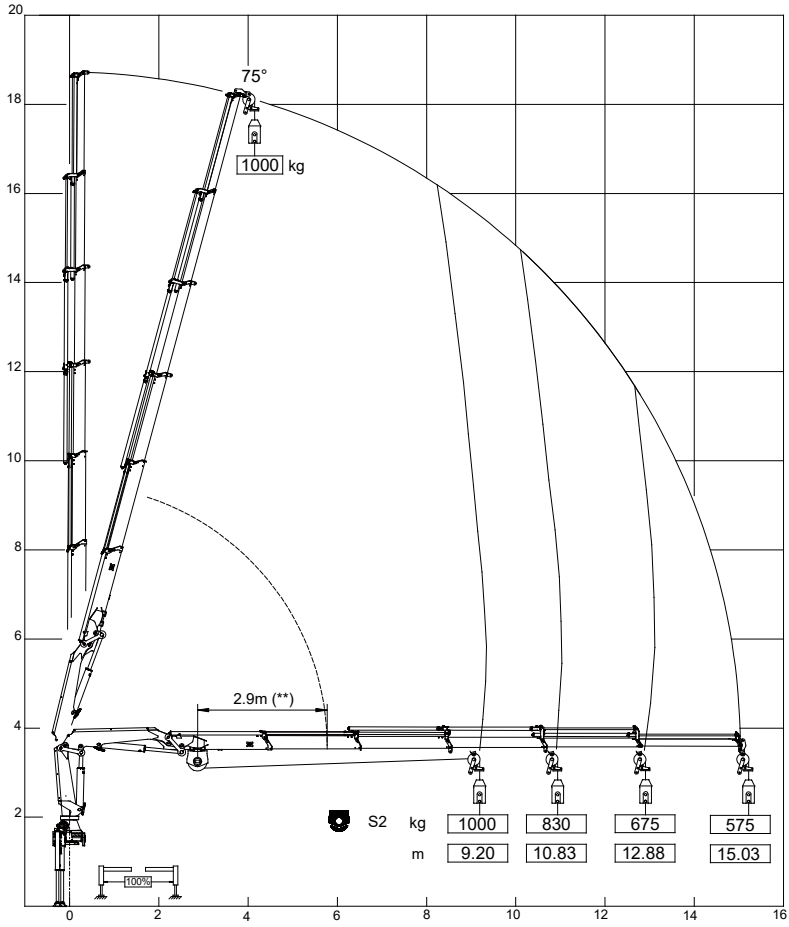
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
915NG 4S + TI1 SINGLE LINE



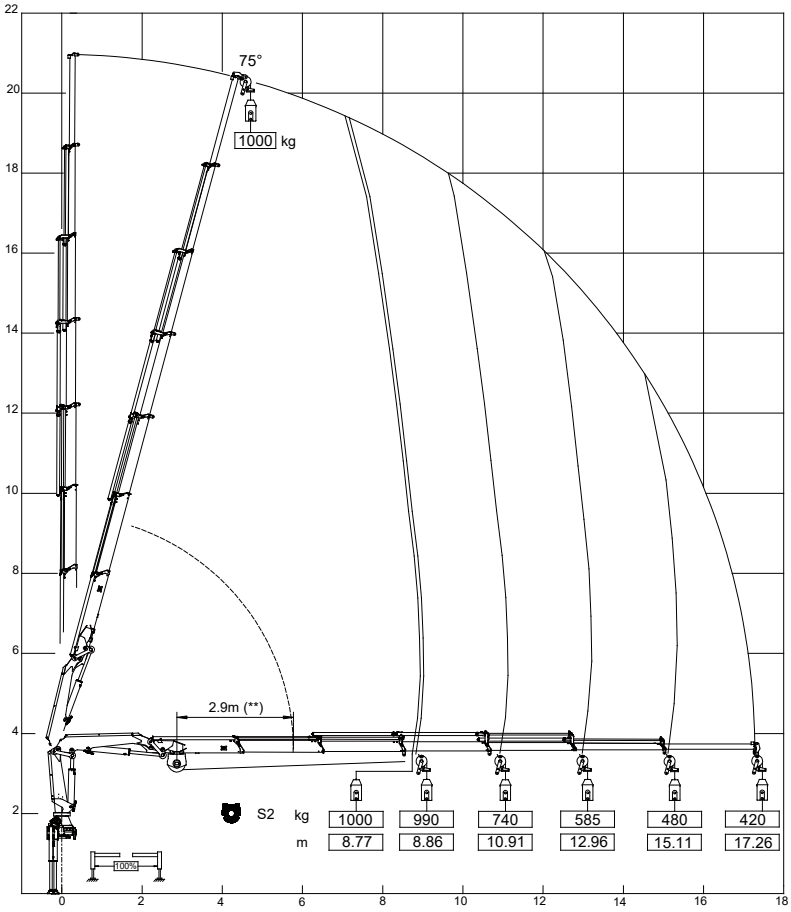
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
915NG 5S + TI1 SINGLE LINE



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

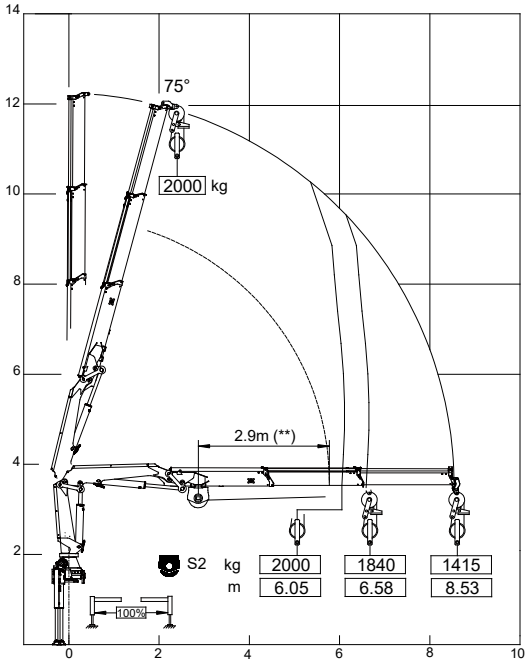
LOAD CHART FOR WINCH TI1 IN SINGLE LINE
915NG 6S + TI1 SINGLE LINE



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

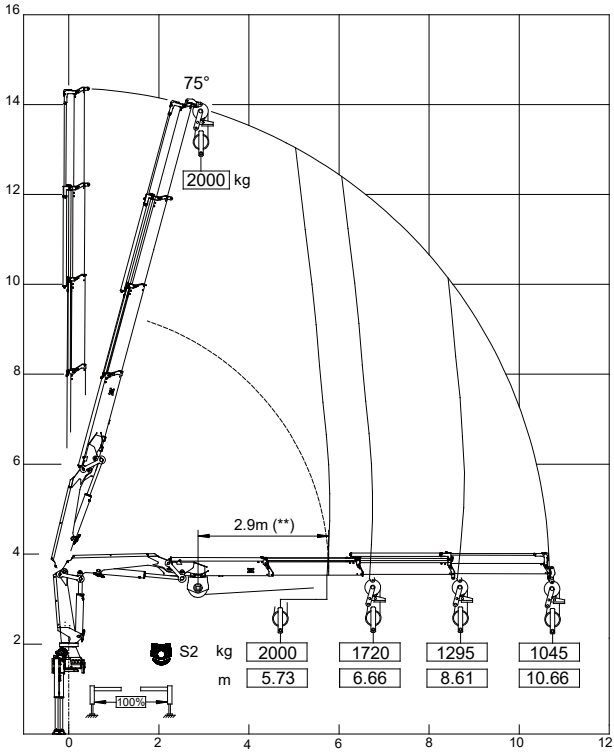
D.10 LOAD CHARTS FOR TI1 WINCH IN DOUBLE LINE

915NG 2S + TI1 DOUBLE LINE



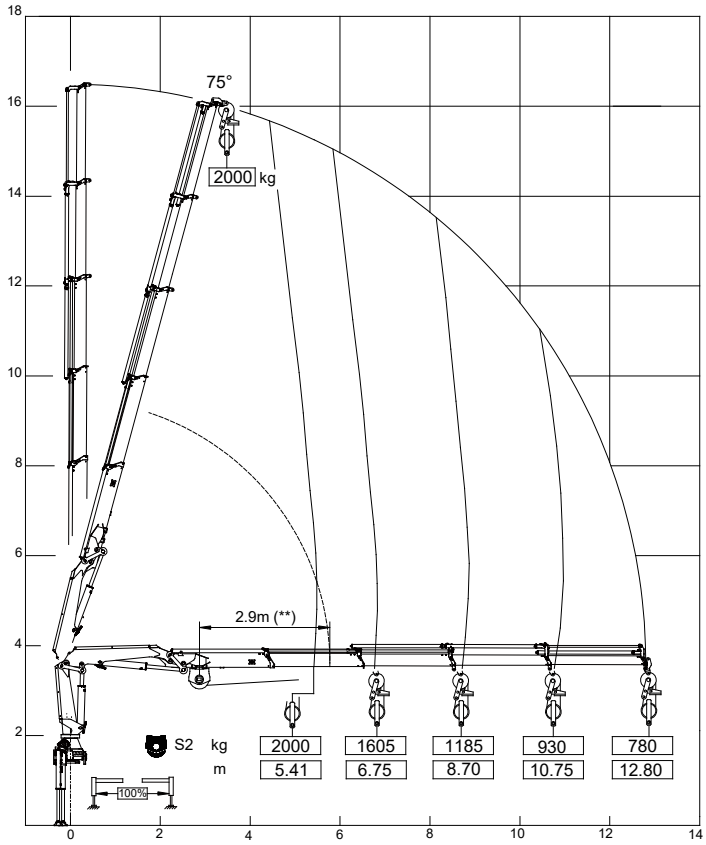
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
915NG 3S + TI1 DOUBLE LINE



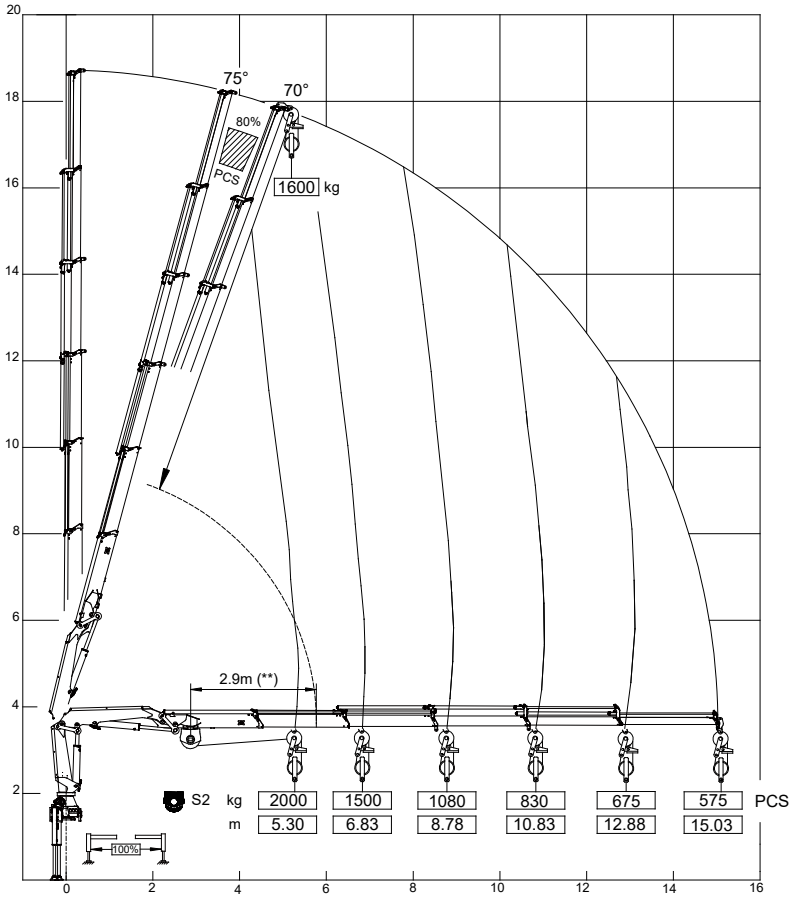
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
915NG 4S + TI1 DOUBLE LINE



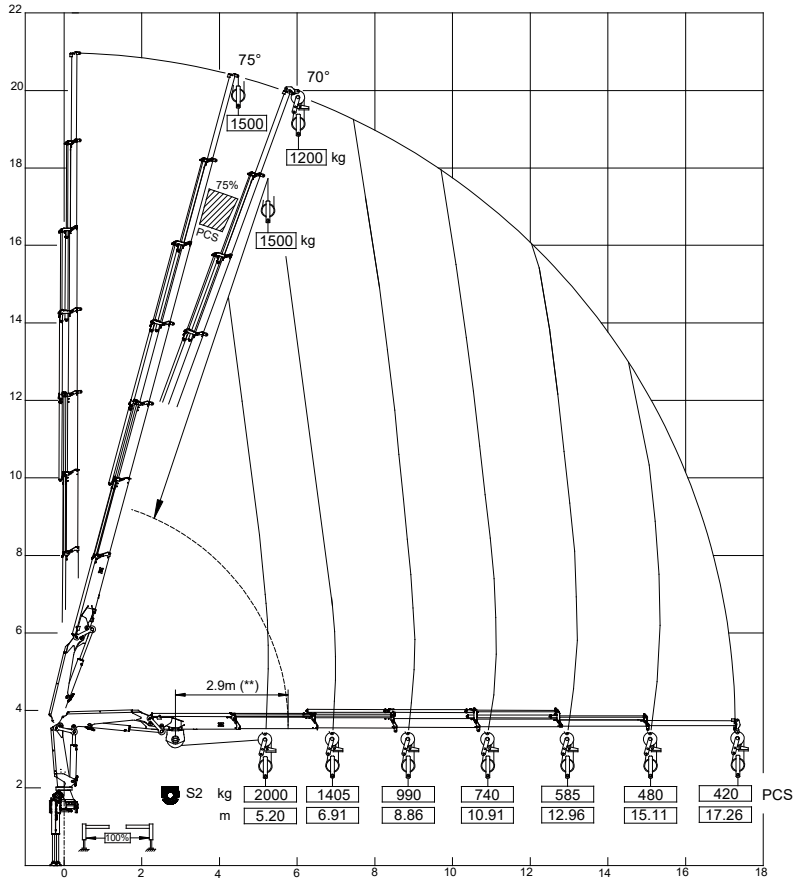
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
915NG 5S + TI1 DOUBLE LINE



(**) Minimum distance winch - pulley
Winch max. pull with PCS: 1000 kg
PCS: Pull Control System, present on CE/TOP cranes

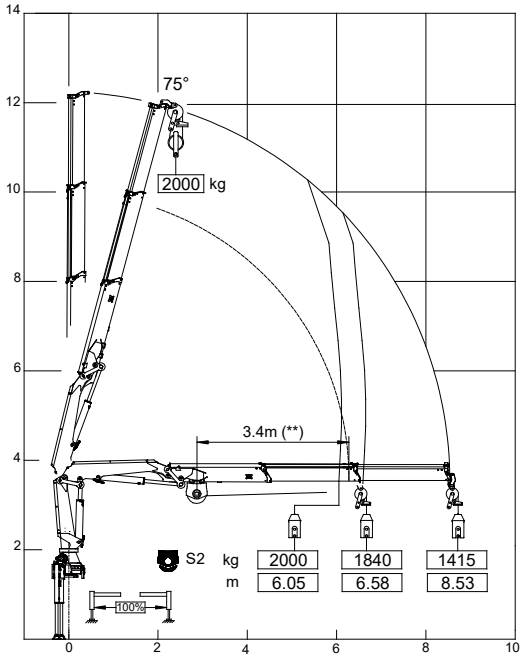
LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
915NG 6S + TI1 DOUBLE LINE



(**) Minimum distance winch - pulley
Winch max. pull with PCS: 1000 kg
PCS: Pull Control System, present on CE/TOP cranes

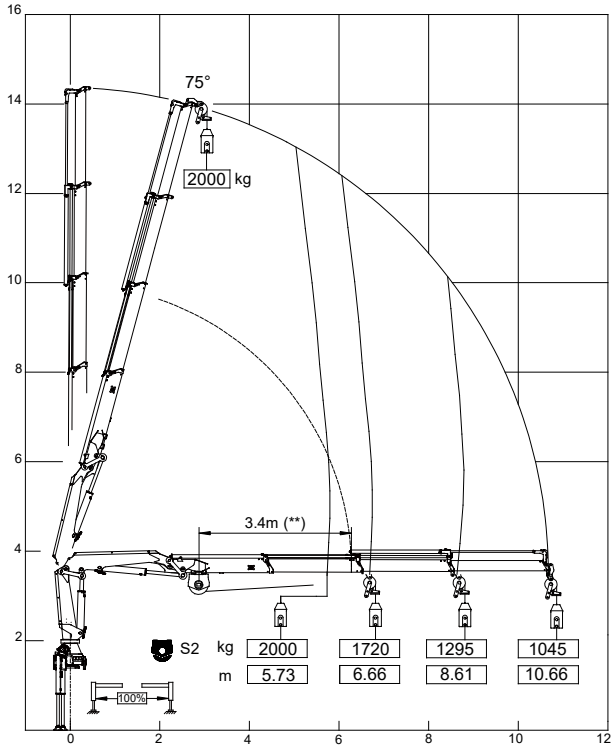
D.11 LOAD CHARTS FOR TI2 WINCH IN SINGLE LINE

915NG 2S + TI2 SINGLE LINE



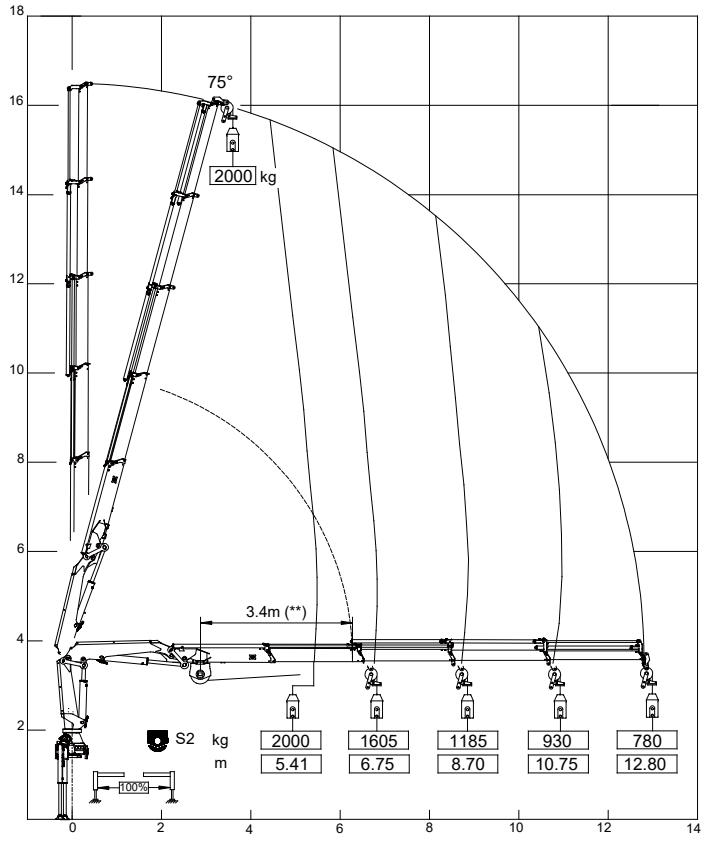
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
915NG 3S + TI2 SINGLE LINE



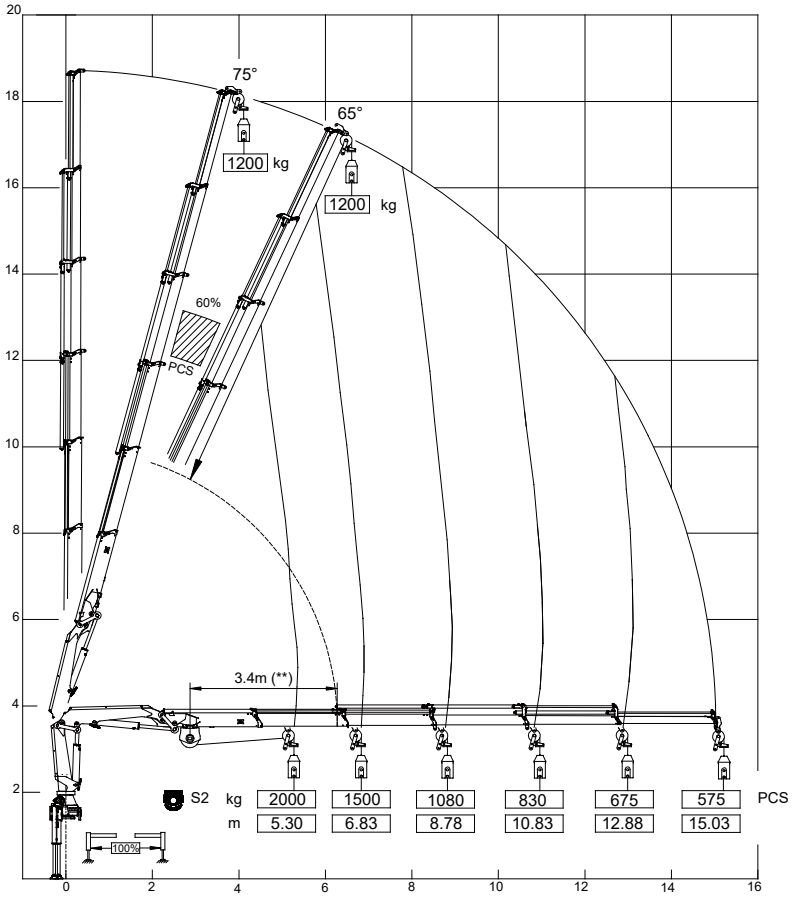
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
915NG 4S + TI2 SINGLE LINE



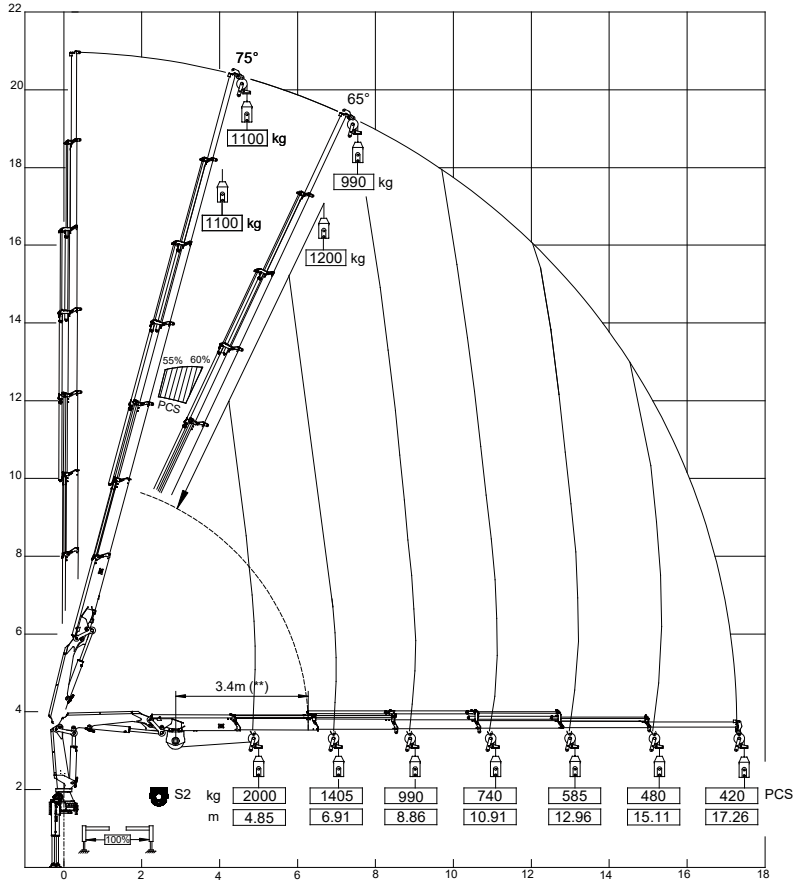
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
915NG 5S + TI2 SINGLE LINE



(**) Minimum distance winch - pulley
Winch max. pull with PCS: 2000 kg
PCS: Pull Control System, present on CE/TOP cranes

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
915NG 6S + TI2 SINGLE LINE

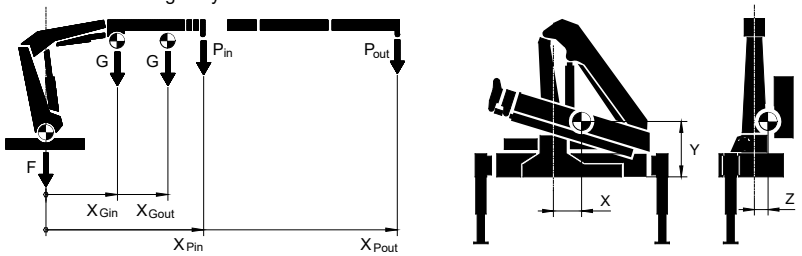


(**) Minimum distance winch - pulley
Winch max. pull with PCS: 2000 kg
PCS: Pull Control System, present on CE/TOP cranes

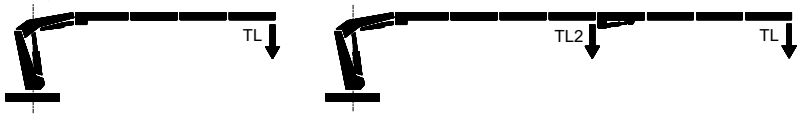
D.12 CENTERS OF GRAVITY AND TEST LOADS

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
TL2 = additional test load, to be hooked to the last hydraulic extension excluding jib boom
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

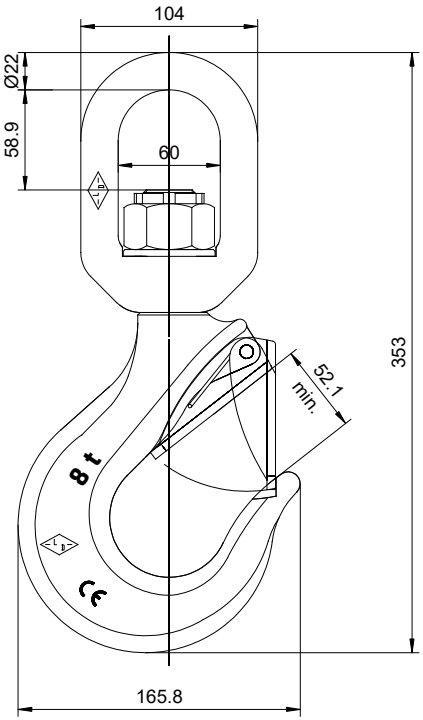
915NG	F kg	G kg	X_G in / out m	P in / out kg	X_P in / out m	TL (TL2) kg	X	Y mm	Z
2S	ST-M : 1185 EX-M : 1245 EX-H : 1280 SE-H : 1335	635	2.53 3.59	2675 1415	4.63 8.53	1769	213	716	6
3S		750	2.68 4.45	2535 1045	4.71 10.66	1317	205	738	24
4S		855	2.79 5.30	2410 780	4.80 12.80	1007	197	758	37
5S		955	2.88 6.13	2290 575	4.88 15.03	768	190	777	51
6S		1045	2.95 6.93	2185 420	4.96 17.26	588	182	795	64
3SJ2		1090	6.26 6.43	465 380	13.35 16.22	475 (103)	171	805	65
4SJ2		1210	7.21 7.36	290 230	15.50 18.35	288 (123)	176	839	81

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.

D.13 HOOK DATA

HOOK MOUNTED ON STANDARD BOOM
VERSIONS: 2S, 3S, 4S, 5S, 6S

DIMENSIONS

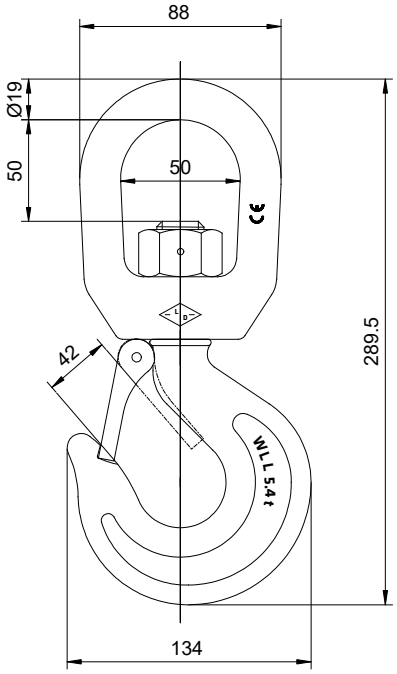


TECHNICAL PROPERTIES
Working load limit (WLL) : 8000 kg
Material: alloy steel
Weight: 6.2 kg
Swivel hook
Reference standard: DIN 15401

HOOK DATA

HOOK MOUNTED ON JIB BOOM
VERSION: 3SJ2 - 4SJ2

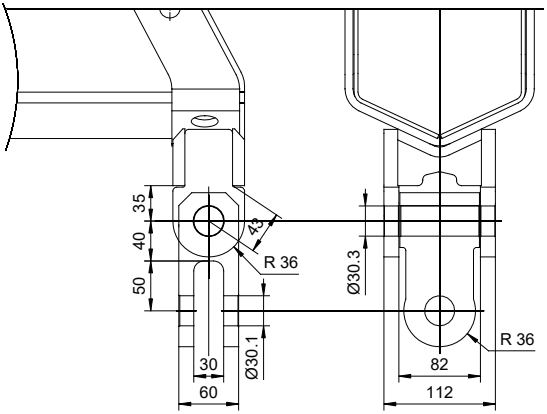
DIMENSIONS

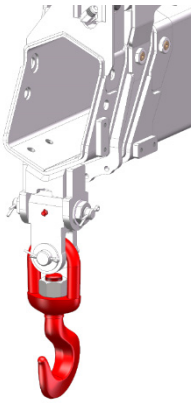


TECHNICAL PROPERTIES
Working load limit (WLL) : 5400 kg
Material: alloy steel
Weight: 3.2 kg
Swivel hook
Reference standard: DIN 15401

D.14 LOAD ATTACHMENT

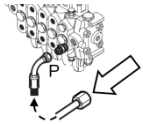
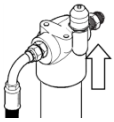
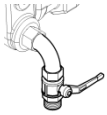
ATTACHMENT FOR HOOK AND LIFTING TOOL





D.15 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

915NG	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

915NG	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	21	30
2.boom cylinder	14	10
boom extension 1S (SGS active)	10	6
boom extension 2S (SGS active)	12	13
boom extension 3S (SGS active)	16	19
boom extension 4S (SGS active)	27	27
boom extension 5S (SGS active)	33	33
boom extension 6S (SGS active)	40	40
jib articulation cylinder	6	7
jib extension 2S	9	14

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.

915NG	Time interval min.	Max. load descent mm
2S	10	426
3S	10	533
4S	10	256
5S	10	300
6S	10	345
3SJ2	10	324
E4J3	10	367

CAPACITY OF HYDRAULIC SYSTEM

915NG	Cylinders extended ℓ	Cylinders retracted ℓ
2S	57	39
3S	65	44
4S	73	49
5S	81	55
6S	88	60
3SJ2	82	55
4SJ2	90	60

Capacities do not include the oil tank.

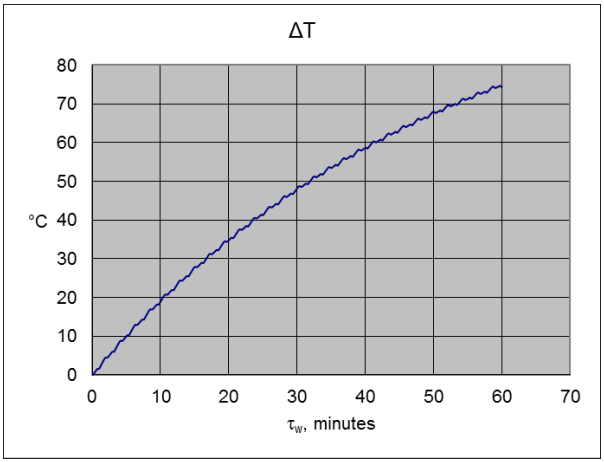
ADDITIONAL CAPACITY FOR HYDRAULICALLY OPERATED STABILIZER EXTENSIONS

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

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

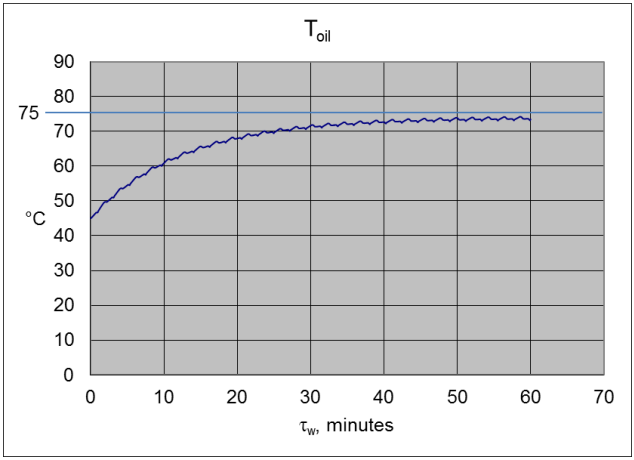
$$T_{env} + \tau_w > 57$$

where:
T_{env} : temperature of the environment (°C)
ΔT : difference in temperature between the oil and the environment (°C)
τ_w : working time (minutes)

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:

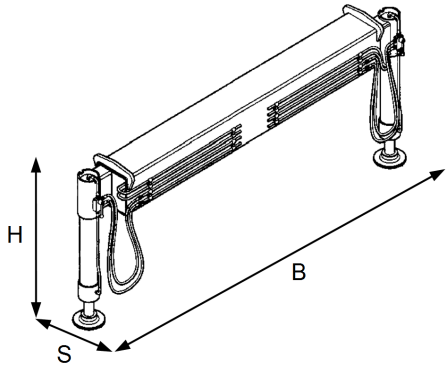
T_{env} (°C)	τ_w to exceed 75 °C (minutes)
45	no limit
48	35
50	25
52	20
54	15

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.)

D.17 ADDITIONAL STABILIZERS



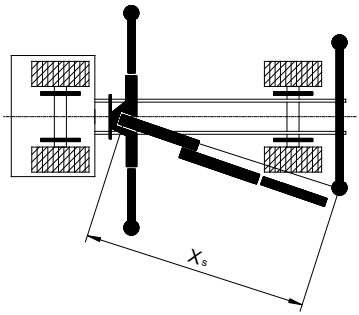
Additional stabilizers must be chosen so that:
- the installation is stable (see Installer Manual)
- the max. force acting on the additional stabilizers, F_s, is lower than the max. load allowed by the stabilizers itself, R_{max}.

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

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.

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)
2S	1415	H605-650	410	650	975	**1005**	98%	100%
3S	1045	H605-650	410	650	975	**635**	100%	65%
		H605-550	375	550	825	**670**	100%	81%
4S	780	H605-450	340	450	675	**440**	100%	65%
		H604-350	240	350	525	**540**	98%	100%
5S	575	H604-325	235	325	487,5	**340**	100%	70%
		H604-250	220	250	375	**355**	100%	95%
6S	420	H604-200	195	200	300	**225**	100%	75%

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/dm^3
(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

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	1415	H653-4 large	435	500	750	**980**	84%	100%
3S	1045	H653-4 large	435	500	750	**610**	100%	81%
4S	780	H653-4 large	395	350	525	**385**	100%	73%
5S	575	H653-4 small	250	240	360	**325**	100%	90%
6S	420	H653-4 small	235	180	270	**185**	100%	69%

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/dm^3
(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

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	1415	H634-0,25	170	4000	**1245**	100%	31%
3S	1045	H634-0,25	170	4000	**875**	100%	22%
4S	780	H634-0,25	170	4000	**610**	100%	15%
5S	575	H634-0,25	170	4000	**405**	100%	10%
6S	420	H634-0,25	170	4000	**250**	100%	6%

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

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	1415	H332-850	245	2200	**1170**	100%	53%
3S	1045	H332-850	245	2200	**800**	100%	36%
4S	780	H332-850	245	2200	**535**	100%	24%
5S	575	H332-850	245	2200	**330**	100%	15%
6S	420	H332-850	245	2200	**175**	100%	8%

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

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	1415	H415 1500-500	135	1500	**1280**	100%	85%
3S	1045	H415 1500-500	135	1500	**910**	100%	61%
4S	780	H415 1500-500	135	1500	**645**	100%	43%
5S	575	H415 1500-500	135	1500	**440**	100%	29%
6S	420	H415 1500-500	135	1500	**285**	100%	19%

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