D TECHNICAL SHEET

D.1 CRANE'S TECHNICAL DATA

Versions				1S	2S	3S	4S	5S
Max. net lifting moment			*t m* *kNm*	15.8 155	15.0 147	14.6 143	14.2 139	13.7 135
Max. dynamic moment			*daNm* *kNm*	19700 197				
Capacity at min. hydraulic outreach Max rated capacity	hook [S2]		*kg*	3490	3310	3150	3005	2875
	grab [S1]		*kg*	3490	3310	3150	3005	2875
	min. outreach		*m*	4.54	4.54	4.62	4.71	4.78
Capacity at max. hydraulic outreach	hook [S2]		*kg*	2475	1775	1305	980	740
	grab [S1]		*kg*	2475	1775	1305	980	740
	max.outreach		*m*	6.34	8.14	10.20	12.27	14.39
Capacity of 1st man. extension	capacity		*kg*	N/A	1305	980	740	535
	max.outreach		*m*	N/A	10.36	12.34	14.39	16.49
Max. load height above the base for the last extension	hydraulic		*m*	8.6	10.3	12.3	14.3	16.4
	manual		*m*	N/A	16.4	18.4	18.4	18.4
Weight of crane without stabilizers			*kg*	1525	1660	1775	1880	1970
Weight of stabilizers		ST-M	*kg*	250				
		EX-M	*kg*	340				
		EX-H	*kg*	375				
		SE-H	*kg*	410				
Weight of 1st man. extension			*kg*	N/A	69	60	43	38
Max. working pressure			*bar*	280				
Max. oil flow rate			*ℓ/min*	40				
			ℓ/min	60				
Max. power needed			*kW*	24.3				
			kW	36.4				
Oil tank capacity			*ℓ*	130				
Slewing angle			°	425				
Gross slewing torque			*daNm* *kNm*	2170 21.7				
Max. base inclination			°	4°				
			°	3°				
Max boom inclination for use with CE winch			°	75°				
Max. stabilizer force on the ground with stabilizers fully extended		ST	*daN*	10090				
		EX	*daN*	7720				
		SE	*daN*	6250				
Max. stabilizer pressure on the ground with stabilizers fully extended		ST	*MPa*	3.96				
		EX	*MPa*	3.03				
		SE	*MPa*	2.46				
Lifting coversion factor, k			*kgm/bar*	64.85				
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		1S	2S	3S	4S	5S
Max line pull	*kg*	1000	1000	1000	1000	1000

TI1 - DOUBLE LINE PULL

Versions		1S	2S	3S	4S	5S
Max line pull	*kg*	1000	1000	1000	1000	1000

TI2 - SINGLE LINE PULL

Versions		1S	2S	3S	4S	5S
Max line pull	*kg*	2000	2000	2000	2000	2000 (*)
Start angle - pull% Final angle - pull%	10° 2 %	-	-	-	-	65°-100% 75°-60%

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

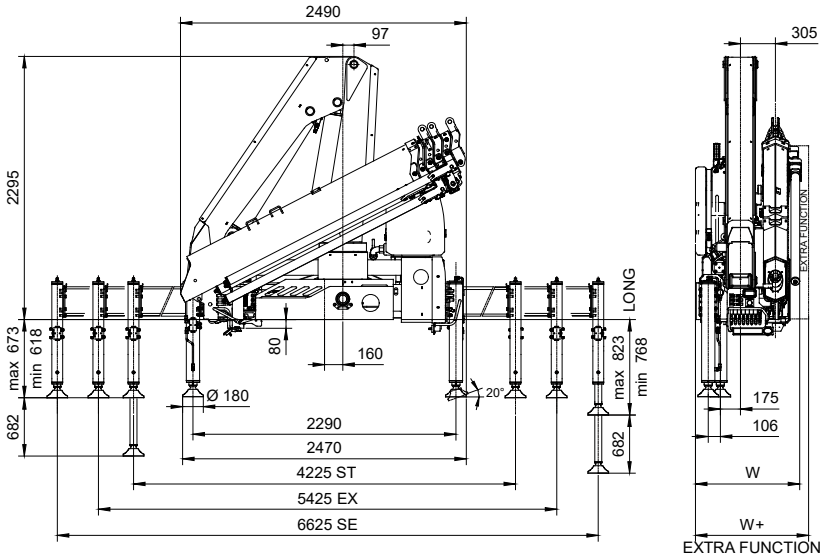
The table shows the total weights including oil inside the cylinders (fully retracted) and considering oil tank empty.

kg	Crane version				
Type of stabilizers	**1S**	**2S**	**3S**	**4S**	**5S**
ST-M	1775	1910	2025	2130	2220
EX-M	1865	2000	2115	2220	2310
EX-H	1900	2035	2150	2255	2345
SE-H	1935	2070	2185	2290	2380

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

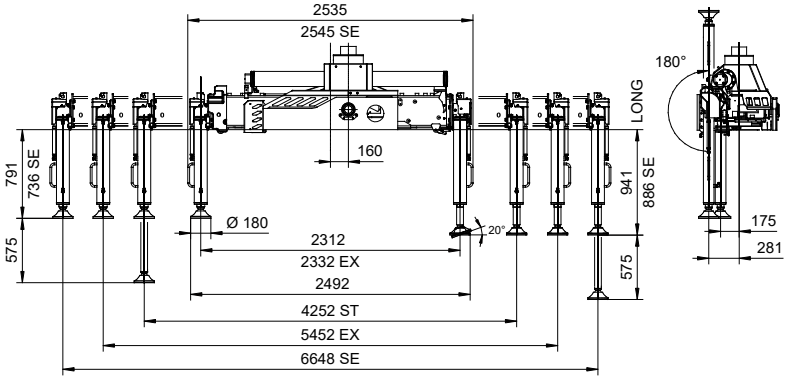
FIXED STABILIZERS LEGS



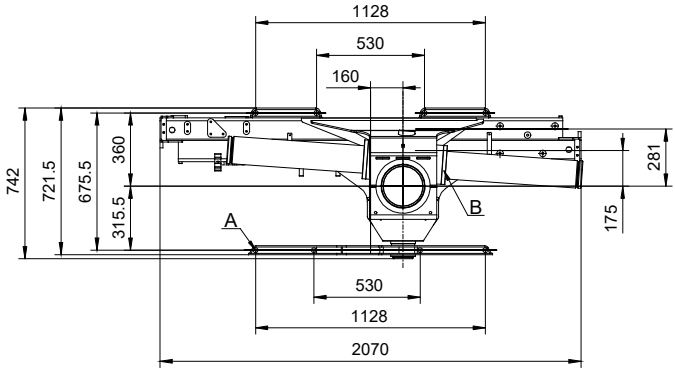
	1S	2S	3S	4S	5S
W (mm)	825	825	825	825	905
W+ (mm)	940 (*)	940 (*)	940 (*)	940 (*)	985 (**)

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

TURNING STABILIZERS LEGS



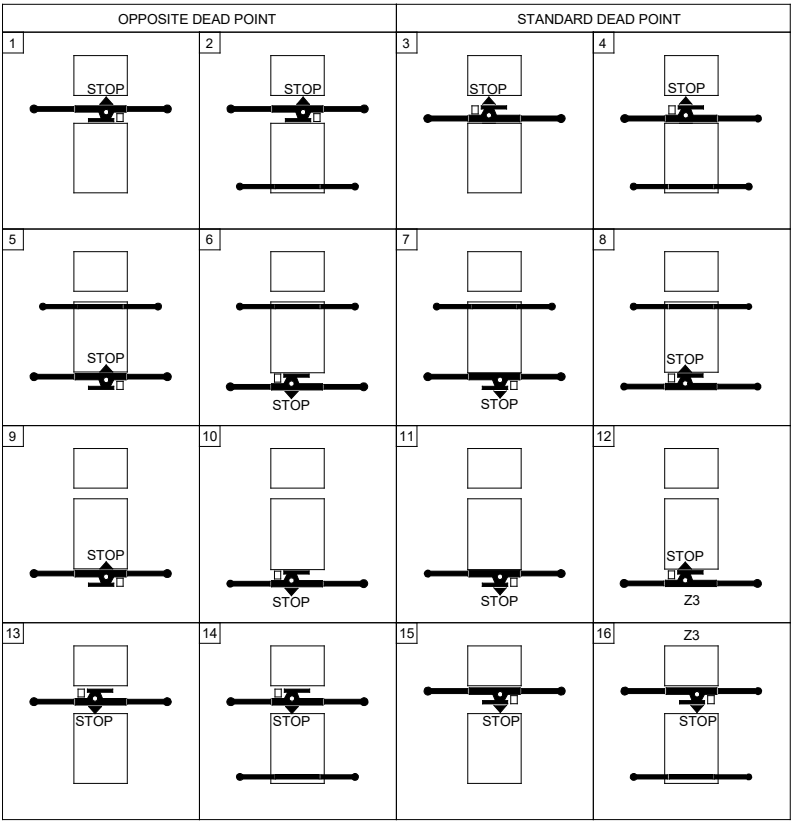
D.5 BASE DIMENSIONS AND MOUNTING BOLTS



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=40	80 Nm

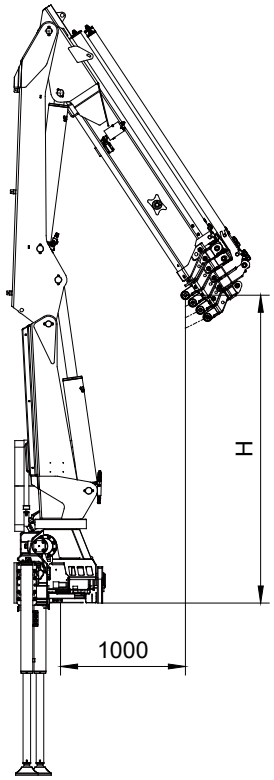
D.6 INSTALLATION TYPE NUMBER

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



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

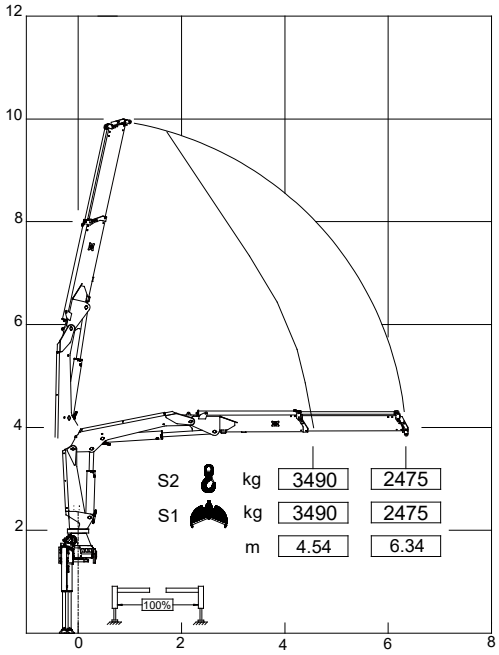
D.7 LIFTING HEIGHT CLOSE TO THE COLUMN



Version	H mm
1S	2435
2S	2435
3S	2346
4S	2258
5S	2173

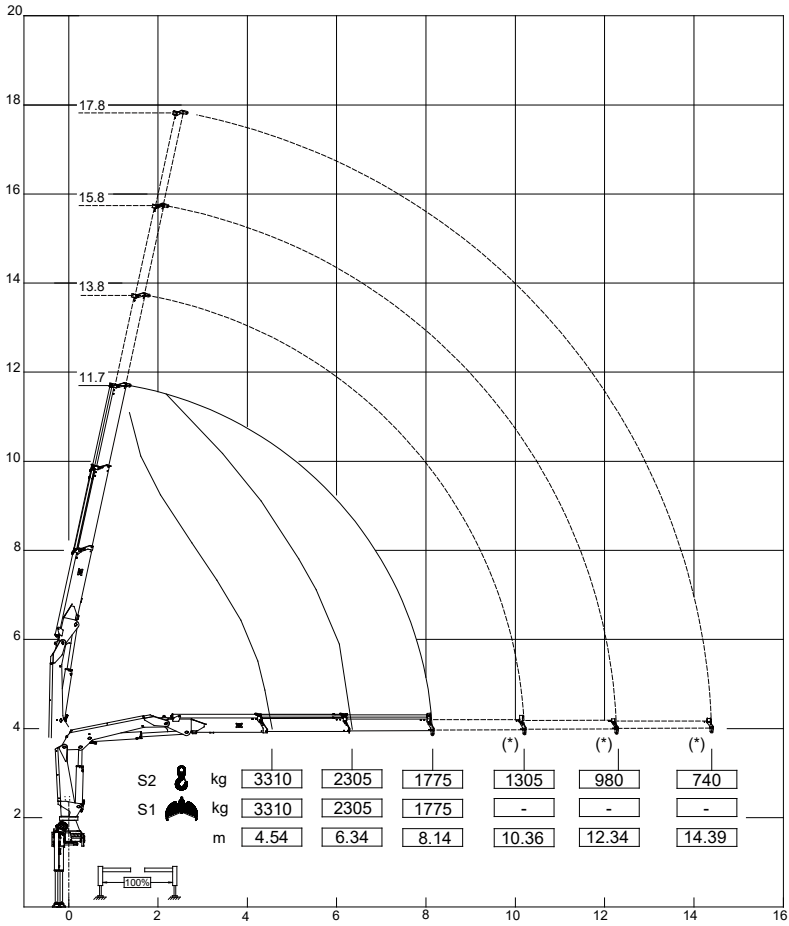
D.8 LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL

817NG 1S



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

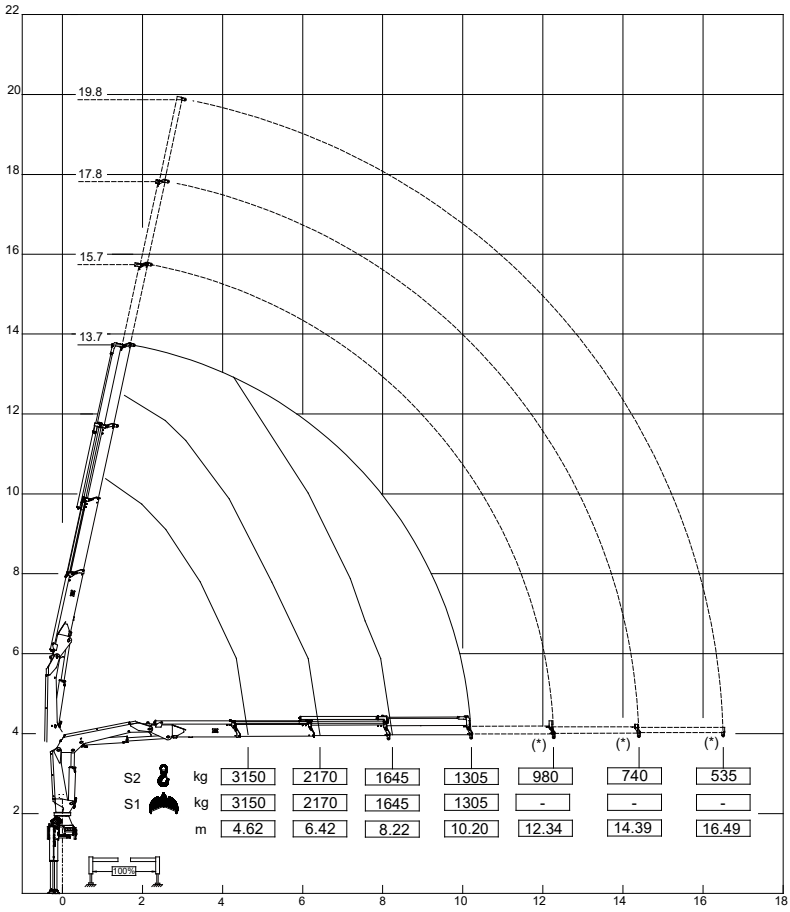
LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL
817NG 2S



					(*)	(*)	(*)
S2	kg	3310	2305	1775	1305	980	740
S1	kg	3310	2305	1775	-	-	-
	m	4.54	6.34	8.14	10.36	12.34	14.39

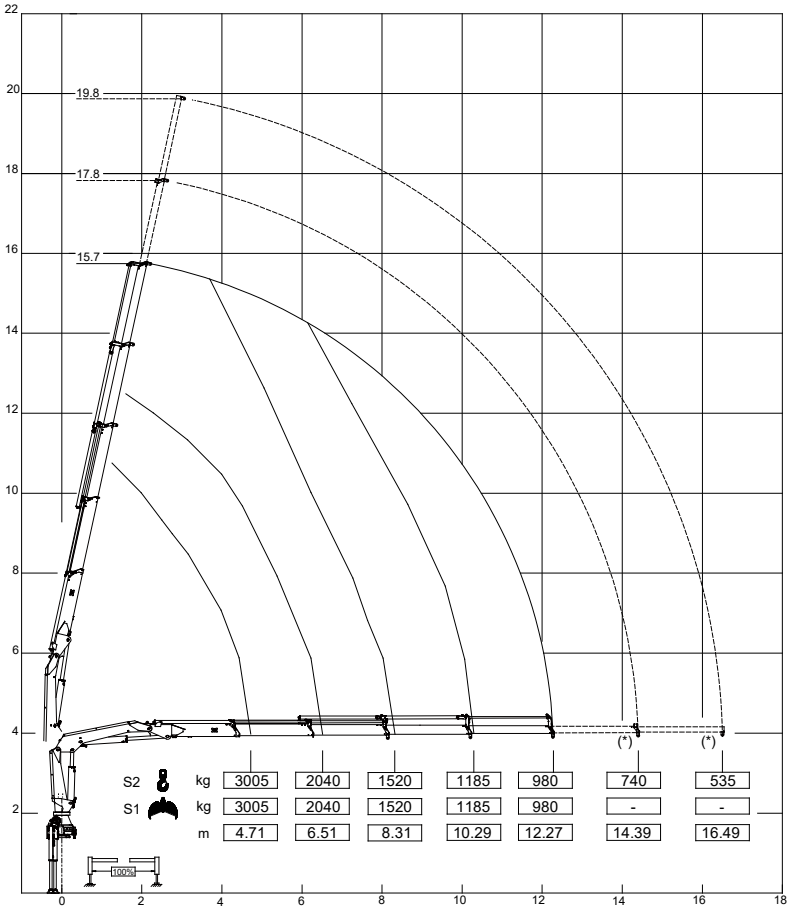
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL
817NG 3S



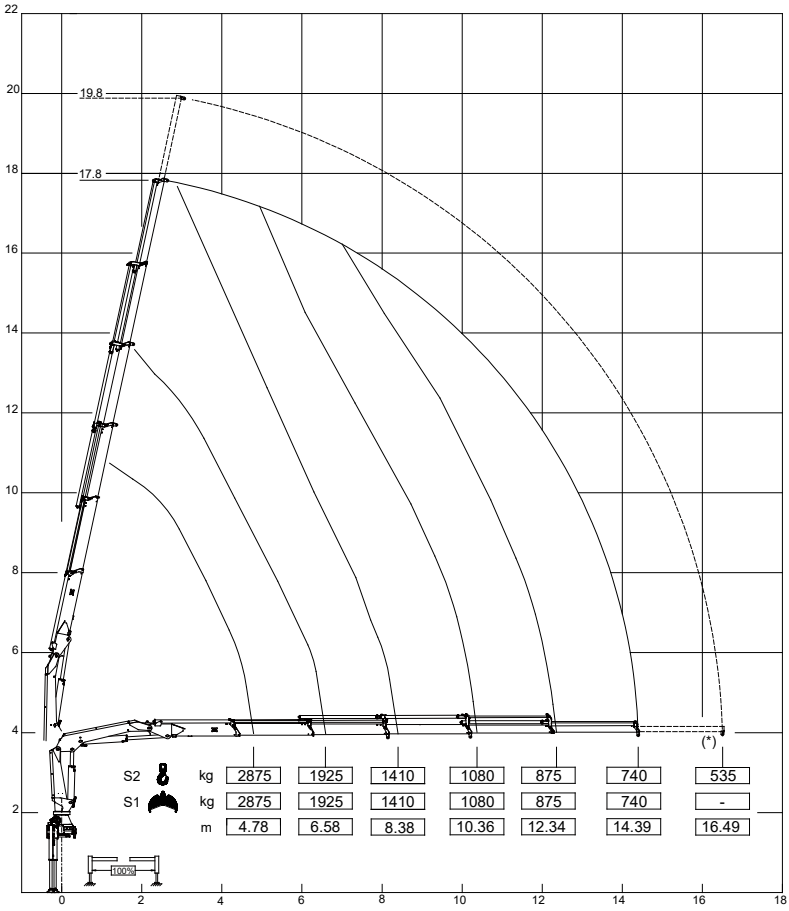
(*) Manual extensions (optional): these cannot lift additional hydraulic tools
If an additional lifting tool is mounted, the rated capacities shall be reduced by the tool's weight

LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL
817NG 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

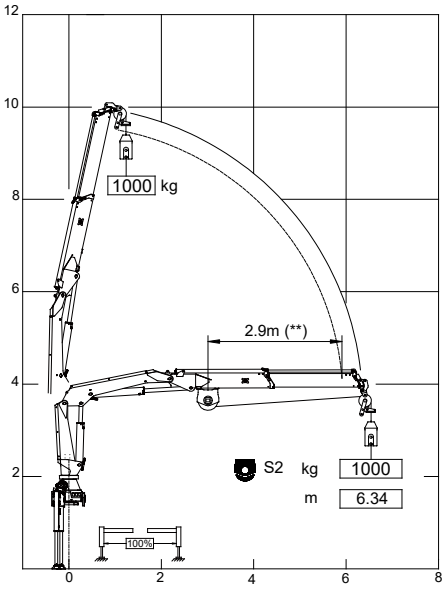
LOAD CHARTS LOAD CHARTS FOR USE WITH HOOK/TOOL
817NG 5S



(*) 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

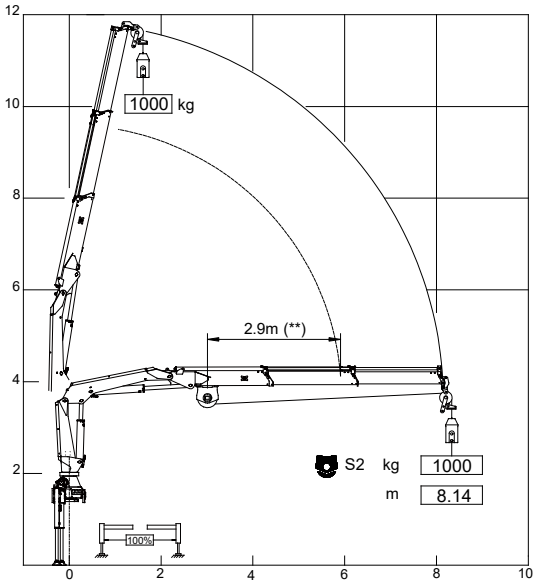
D.9 LOAD CHARTS FOR TI1 WINCH IN SINGLE LINE

817NG 1S + TI1 SINGLE LINE



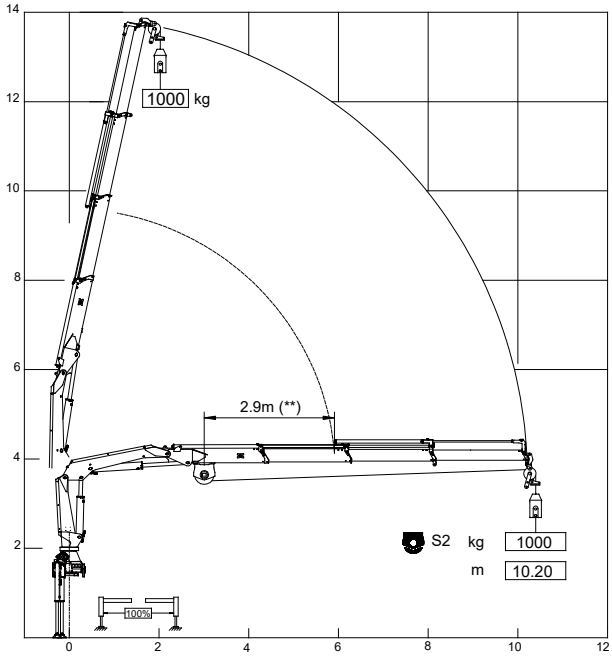
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
817NG 2S + TI1 SINGLE LINE



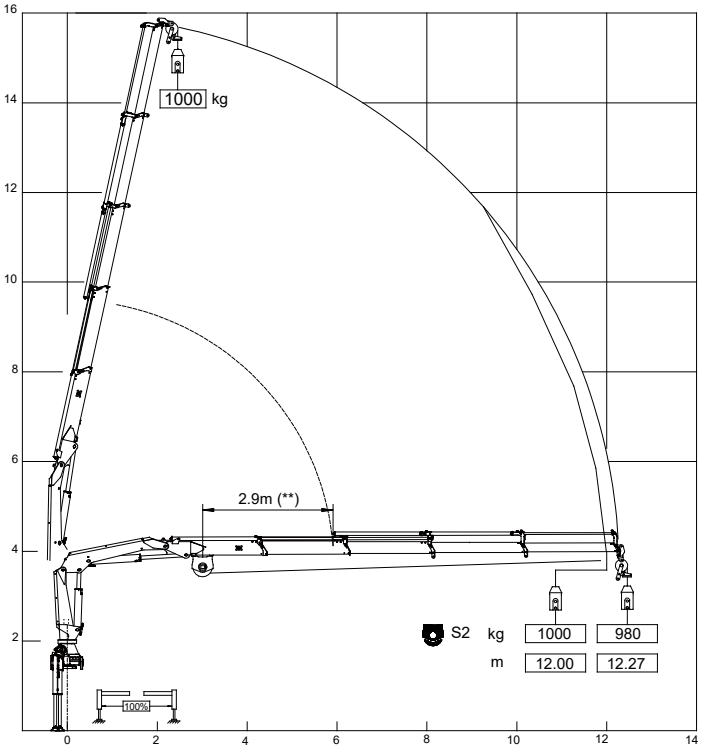
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
817NG 3S + TI1 SINGLE LINE



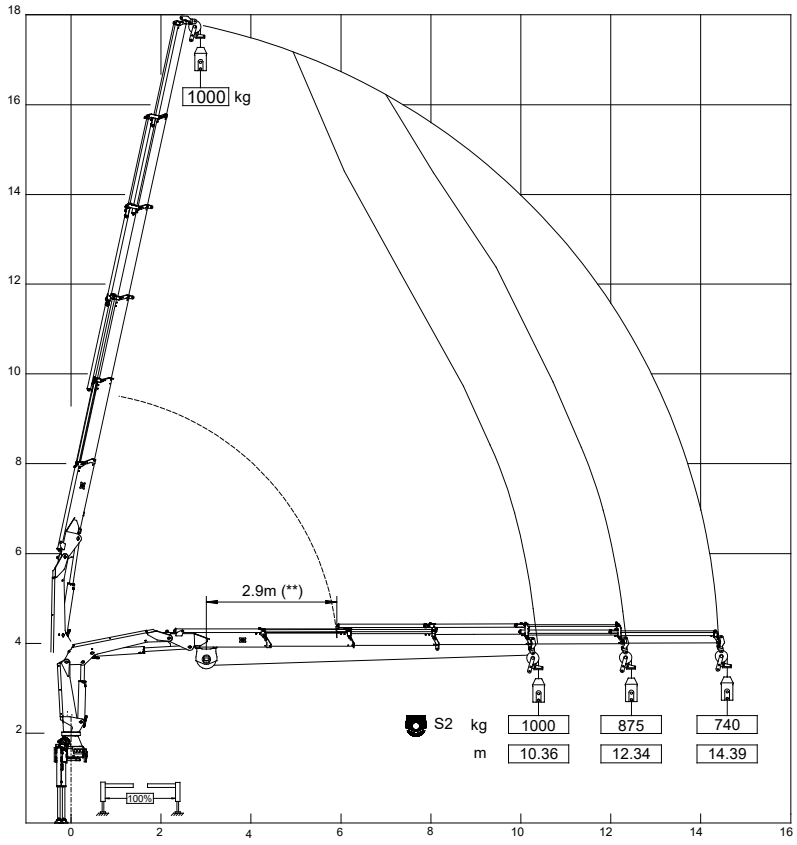
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN SINGLE LINE
817NG 4S + TI1 SINGLE LINE



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

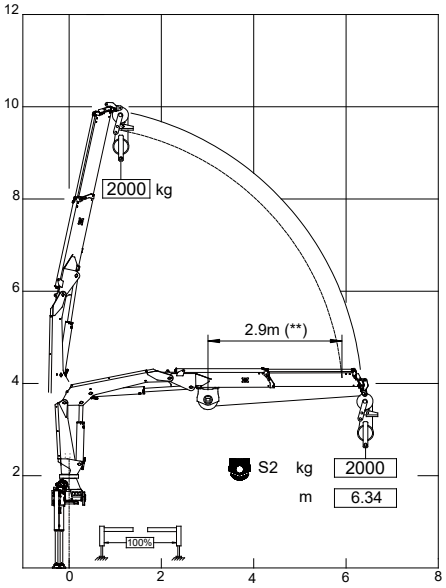
LOAD CHART FOR WINCH TI1 IN SINGLE LINE
817NG 5S + TI1 SINGLE LINE



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

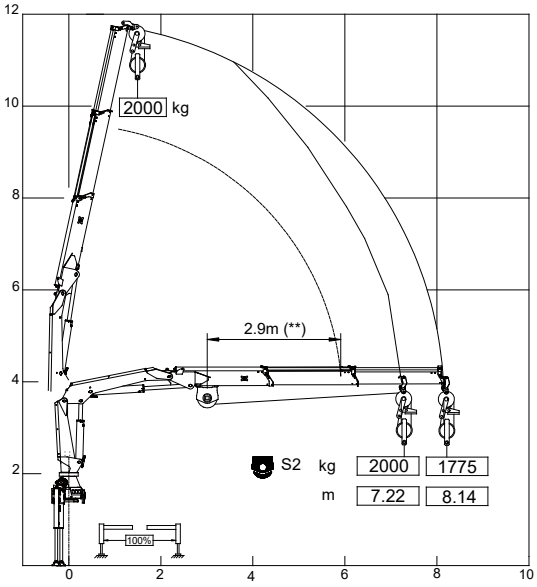
D.10 LOAD CHARTS FOR TI1 WINCH IN DOUBLE LINE

817NG 1S + TI1 DOUBLE LINE



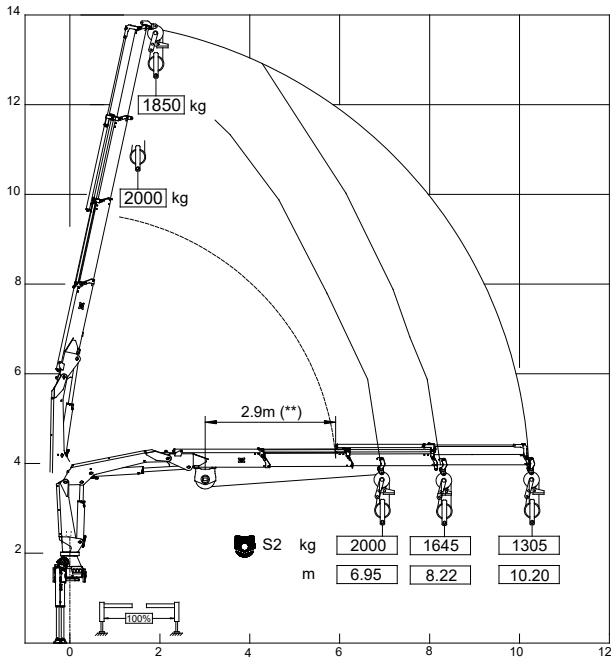
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
817NG 2S + TI1 DOUBLE LINE



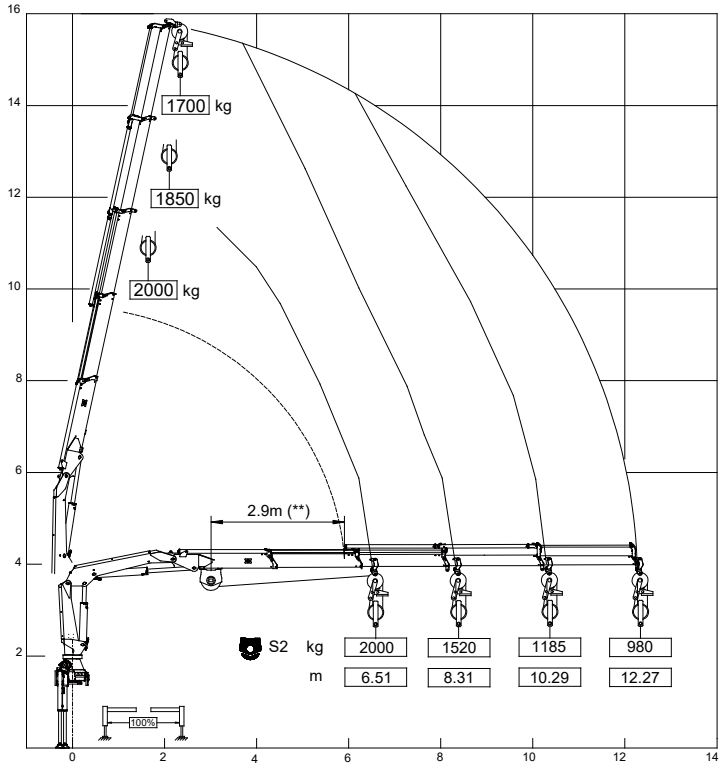
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
817NG 3S + TI1 DOUBLE LINE



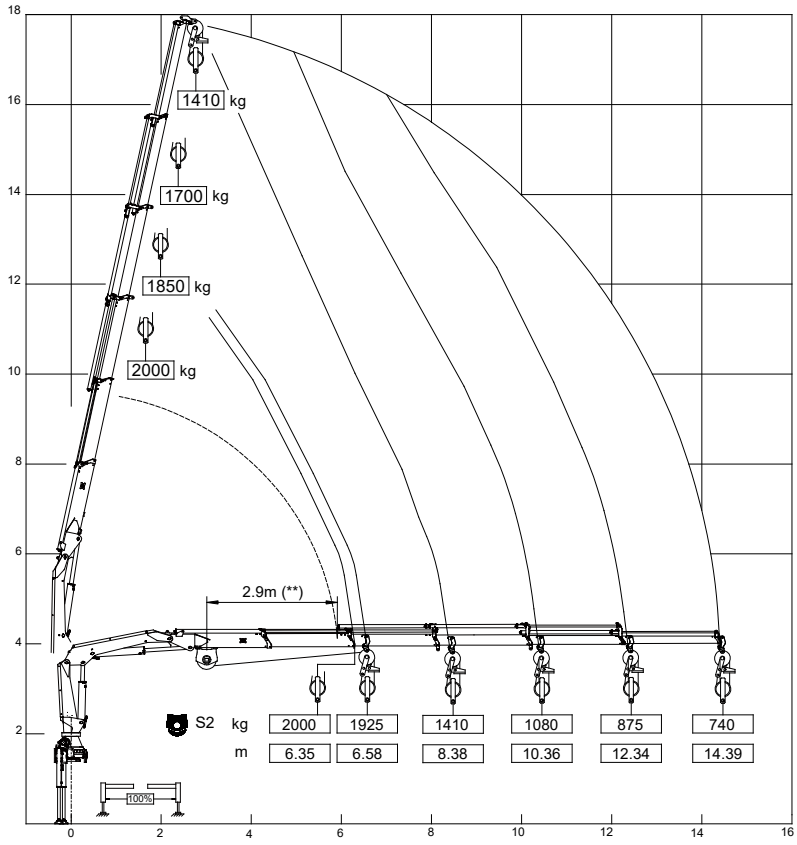
(**) Minimum distance winch - pulley
Winch max. pull: 1000 kg

LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
817NG 4S + TI1 DOUBLE LINE



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

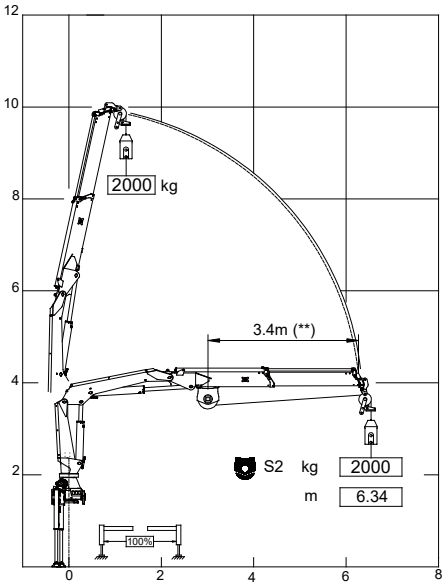
LOAD CHART FOR WINCH TI1 IN DOUBLE LINE
817NG 5S + TI1 DOUBLE LINE



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

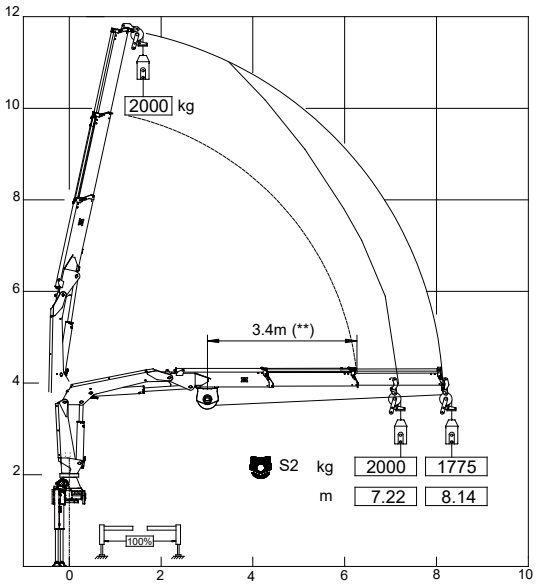
D.11 LOAD CHARTS FOR TI2 WINCH IN SINGLE LINE

817NG 1S + TI2 SINGLE LINE



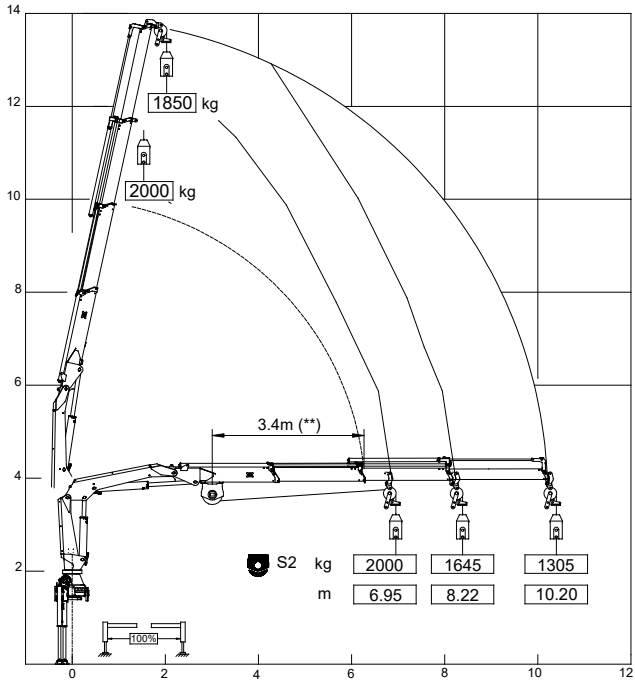
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
817NG 2S + TI2 SINGLE LINE



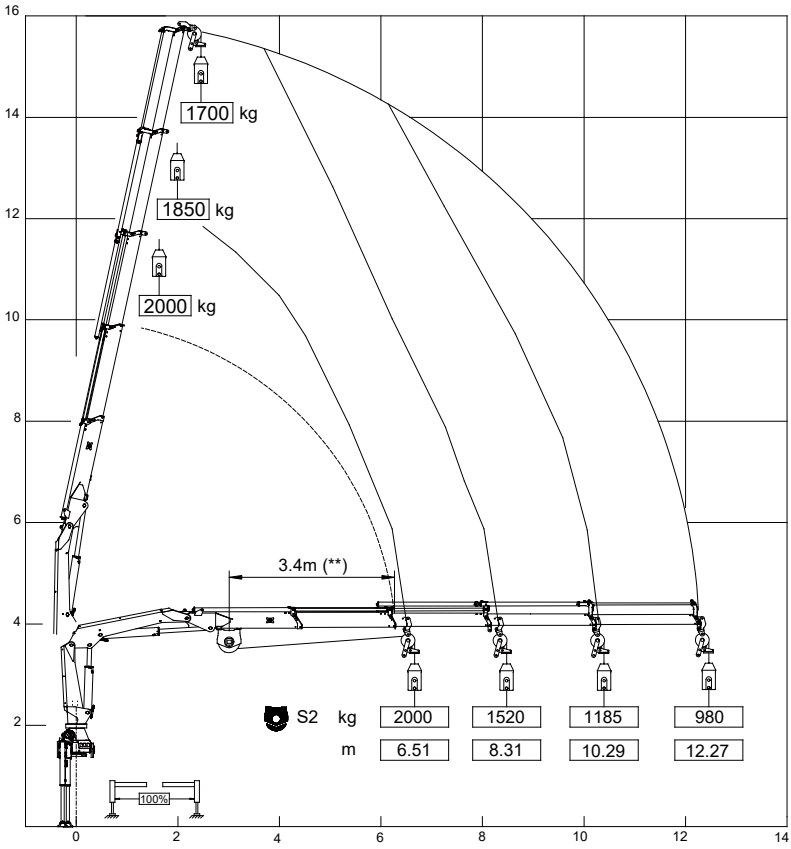
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
817NG 3S + TI2 SINGLE LINE



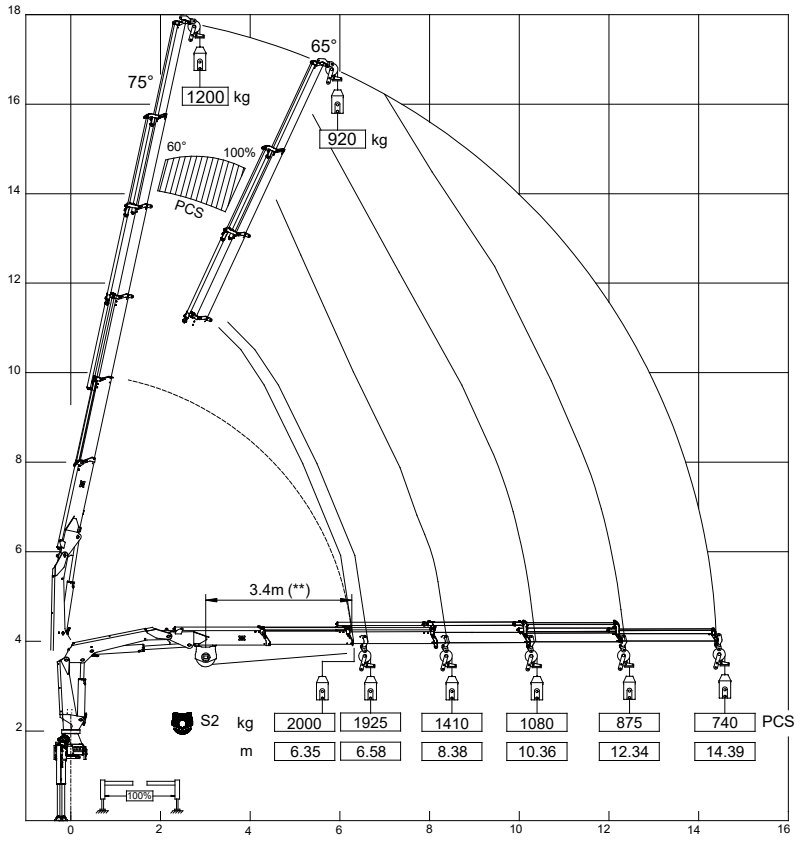
(**) Minimum distance winch - pulley
Winch max. pull: 2000 kg

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
817NG 4S + TI2 SINGLE LINE



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

LOAD CHART FOR WINCH TI2 IN SINGLE LINE
817NG 5S + TI2 SINGLE LINE

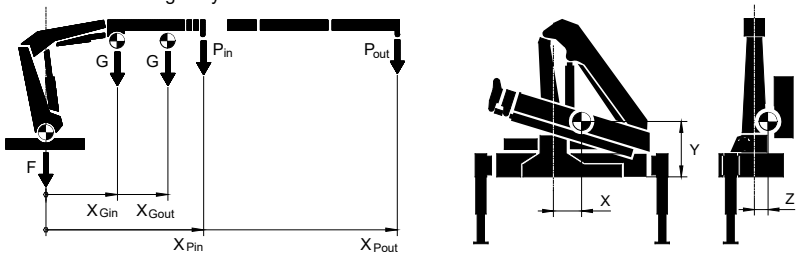


(**) Minimum distance winch - pulley
Winch max. pull with PCS: 2000 kg
PCS: Pull Control System, present on CE/TOP cranes

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
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

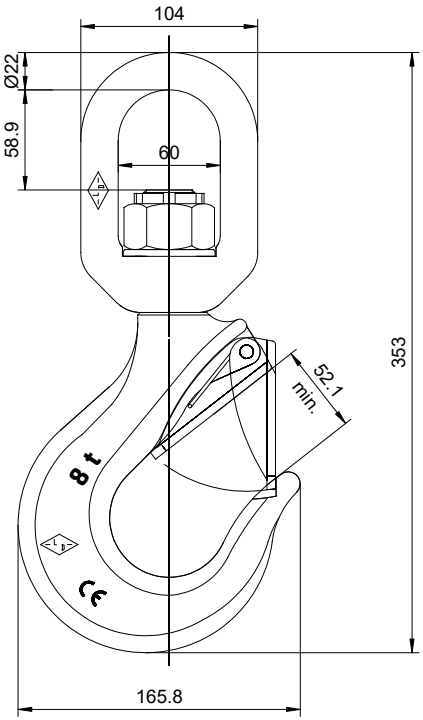
817NG	F kg	G Kg	X_G in / out m	P in / out kg	X_P in / out m	TL kg	X	Y	Z
							mm		
1S	ST-M : 1160 EX-M : 1250 EX-H : 1285 SE-H : 1320	615	2.26 2.62	3490 2475	4.54 6.34	3094	229	720	-7
2S		750	2.46 3.73	3310 1775	4.54 8.14	2219	223	733	17
3S		865	2.60 4.10	3150 1305	4.62 10.20	1636	212	743	35
4S		970	2.70 4.84	3005 980	4.71 12.27	1253	200	752	48
5S		1060	2.78 5.52	2875 740	4.78 14.39	969	189	762	62

The data are relating to crane configuration with horizontal booms.

D.13 HOOK DATA

HOOK MOUNTED ON STANDARD BOOM
VERSIONS: 1S, 2S, 3S, 4S, 5S

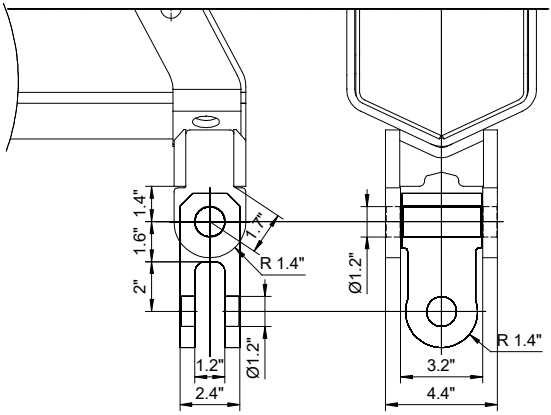
DIMENSIONS

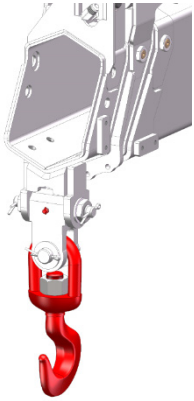


TECHNICAL PROPERTIES
Working load limit (WLL) : 8000 kg
Material: alloy steel
Weight: 6.2 kg
Swivel hook
Reference standard: DIN 15401

D.14 LOAD ATTACHMENT

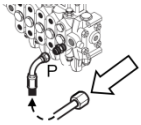
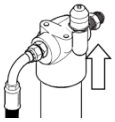
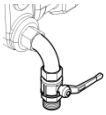
ATTACHMENT FOR HOOK AND LIFTING TOOL





D.15 HYDRAULIC SYSTEM

FITTINGS FOR CONNECTION TO PUMP

817NG	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

817NG	Extension time s	Retraction time s
Slewing (180°)	20	20
1.boom cylinder	16	29
2.boom cylinder	22	15
boom extension 1S (SGS active)	5	6
boom extension 2S (SGS active)	9	12
boom extension 3S (SGS active)	14	18
boom extension 4S (SGS active)	19	24
boom extension 5S (SGS active)	24	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.

817NG	Time interval min.	Max. load descent mm
1S	10	317
2S	10	407
3S	10	510
4S	10	245
5S	10	288

CAPACITY OF HYDRAULIC SYSTEM

817NG	Cylinders extended ℓ	Cylinders retracted ℓ
1S	61	43
2S	70	48
3S	77	53
4S	85	58
5S	91	63

Capacities do not include the oil tank.

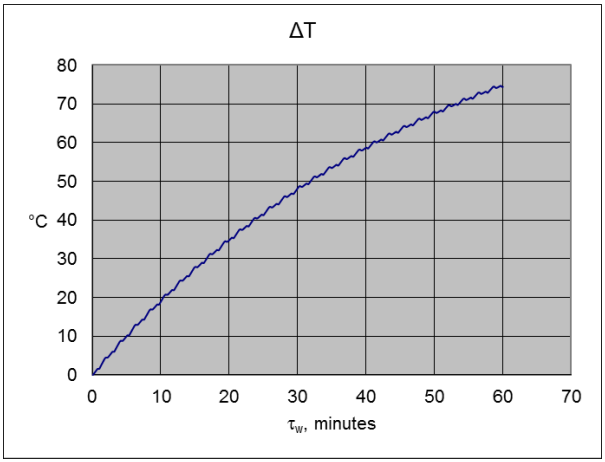
ADDITIONAL CAPACITY FOR HYDRAULICALLY OPERATED STABILIZER EXTENSIONS

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

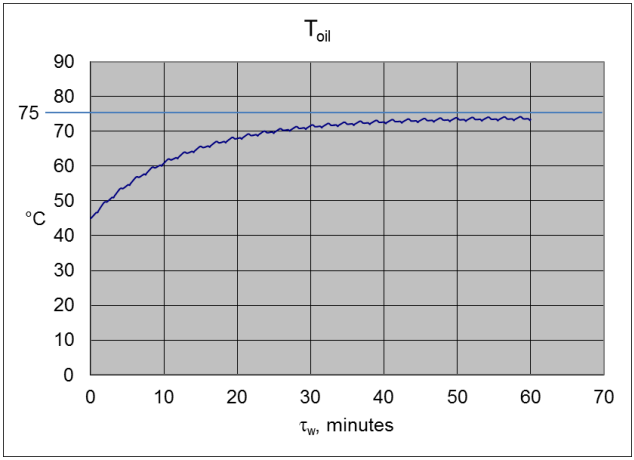
$$T_{env} + \tau_w > 57$$

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:

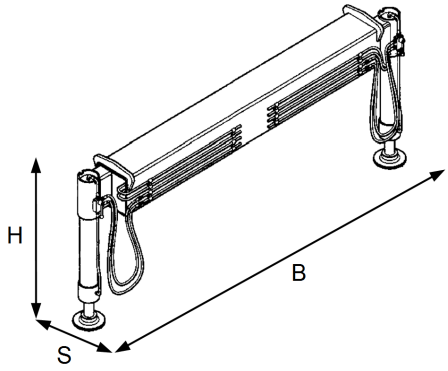
T_{env} (°C)	τ_w to exceed 75 °C (minutes)
45	no limit
48	35
50	25
52	20
54	15

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



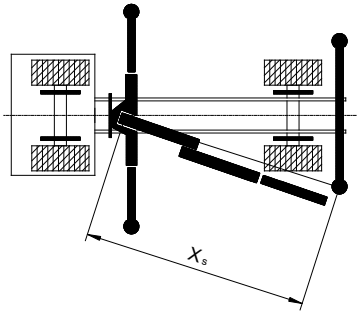
Additional stabilizers must be chosen so that:
- the installation is stable (see Installer Manual)
- the max. force acting on the additional stabilizers, F_s, is lower than the max. load allowed by the stabilizers itself, R_{max}.

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

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)
1S	2475	H605-650	410	650	975	**2065**	56%	100%
2S	1775	H605-650	410	650	975	**1365**	78%	100%
3S	1305	H605-650	410	650	975	**895**	100%	92%
		H605-550	375	550	825	**930**	92%	100%
4S	980	H605-450	340	450	675	**640**	100%	95%
		H604-350	240	350	525	**740**	78%	100%
5S	740	H604-325	235	325	487,5	**505**	98%	100%
		H604-250	220	250	375	**520**	80%	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/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]
1S	2475	H651-5 large	635	500	750	**1840**	56%	100%
2S	1775	H653-4 large	435	500	750	**1340**	67%	100%
3S	1305	H653-4 large	435	500	750	**870**	91%	100%
4S	980	H653-4 large	395	350	525	**585**	94%	100%
5S	740	H653-4 small	250	240	360	**490**	82%	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/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)
1S	2475	H634-0,25	170	4000	**2305**	100%	58%
2S	1775	H634-0,25	170	4000	**1605**	100%	40%
3S	1305	H634-0,25	170	4000	**1135**	100%	28%
4S	980	H634-0,25	170	4000	**810**	100%	20%
5S	740	H634-0,25	170	4000	**570**	100%	14%

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)
1S	2475	H332-850	245	2200	**2230**	99%	100%
2S	1775	H332-850	245	2200	**1530**	100%	70%
3S	1305	H332-1300	265	1600	**1040**	100%	65%
4S	980	H332-1300	265	1600	**715**	100%	45%
5S	740	H332-1300	265	1600	**475**	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: 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)
1S	2475	H415 2000-500	155	2000	**2320**	87%	100%
2S	1775	H415 2000-500	155	2000	**1570**	100%	79%
3S	1305	H415 1500-500	135	1500	**1135**	100%	76%
4S	980	H415 1500-500	135	1500	**815**	100%	54%
5S	740	H415 1500-500	135	1500	**575**	100%	38%

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