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METHOD STATEMENT TITLE	Rev. A

Method Statement for Assembly and Disassembly of Crawler Crane at CAs 10m away from nearest track (For Model HS855HD)

	Prepared by:	Checked by:	Reviewed by:	Reviewed by:
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Date:	02/07/2024	02/07/2024	02/07/2024	02/07/2024

CONTENT

1. Introduction
2. Reference Documents
3. Details of Sub-Contractor/Specialist Sub-Contractor
4. Responsibilities for Activities described within Method Statement
5. Programme and Working Hours
6. Plant, Equipment & Material
7. Construction Methods / Construction Sequence
8. Safety
9. Environmental
10. Quality Control
11. Appendices

Appendix A – Risk Assessment

Appendix B – Crawler Crane Brochure and Data Sheet

Appendix B1 – HS855 Assembly Lifting Plan

Appendix B2 – Helping Crane ZCT900V532.1

Appendix B3 – Helping Crane LTM1060-3.1

Appendix C – Competent Person for Crawler Crane Assembly Certificate

Appendix D – Registered Electrician Details

Appendix E – Crawler Crane Assembly Checklist

Appendix F – Crawler Crane Inspection Checklist

Appendix G - Lifting detail for the heaviest part and Form 6 & 7 for the lifting gear to be applied

Appendix H – Emergency Contact List

1. Introduction (Overview of the operation/works)

This method statement covers the works procedure of the assembling and disassembling of the crawler crane to be deployed for the construction of Bored Pile works near CAs 10m away from the nearest track under MTR Contract 1701 – Oyster Bay Station and Associated Works. This is used to identify the risks associated with the works and provide related safety control measure to ensure the safety of the assembly/disassembly work to be taken place. The whole operation will be supervised by a competent person (CP) by plant department (Appointment letter of competent person refer to Appendix C).

The text provides a general guideline for the execution of works. Details of the work procedure contained herein may be reviewed periodically and modified based on the actual site conditions. Any scope change shall be reassessed to identify new risks associated to the works. Amendment for that procedures shall be submitted to MTR for approval before any execution.

2. Reference Documents (Identify relevant documents by name and reference number)

- Practice Note PNAP-24
- Practice Note RC No.14
- MTRCL-New Works Design Standards Manual -Section 3-Railway Engineering
- Hong Kong Transport Services Business Unit Requirements and information for contractor
- Hong Kong Transport Services Unit Railway Safety Rules
- MTRCL Working Paper No.6-Railway Protection- Revision B-December 2022
- MTRCL Contract 1701 Oyster Bay Station and Associated Works-(S2) Scope-Vol 4 (Book 4 of 9) Appendix AM-Clients Rules and Procedures for Working Within or Adjacent to the Railway
- MTRCL Contract 1701 Oyster Bay Station and Associated Works – Instructions TO Tenders, and
- MTRCL Contract 1701 Oyster Bay Station and Associated Works – Contract Data
- BUGN2023/21 (Issue/Rev:1.0)
- Code of Practice for Foundations 2017

3. Details of Sub-Contractor/Specialist Sub-Contractor

Main Contractor - China State Construction Engineering (Hong Kong) Limited
Sub-Contractor/Specialist Sub-Contractor – LT Sambo

4. Responsibilities for Activities described within the Method Statement

CSHK is responsible to inspect and carry out the construction works. The following persons, as listed in the table below, will attend the specific tool-box talk and be responsible for the activities:

Company	Name	Position
China State Construction Engineering (Hong Kong) Limited	Ted Leung	Construction Manager
	Johnson Fung	Deputy Construction Manager
	Li Yuk Wa	Assistant Construction Manager
	HE Fengqiao Anthony	Assistant Construction Manager
	William Lau	Site Agent
	Jack Wong	Engineer
	Jackie Lai	Engineer
	KU Chung Kan Ken	Engineer
	LO On Tat Andrew	Graduate Engineer
	Cheung Siu Kei	Superintendent
	Yeung Kim Ming	Deputy General Foreman
	KONG Tze Ho	General Foreman
	PAN Zhihao	Forman

	SO Ying Pui	Forman
	Wong Yu Fung	Senior Foreman

5. Programme and Working Hours (Start & finish date of operation/works)

The works commenced on July 2024. The general working hours will be from 08:00 – 19:00 daily, from Monday to Saturday. However, the work may be required to carry out beyond these working hours and CSHK has received the approval of Construction Noise Permit for 24 hours from EPD.

6. Plant, Equipment & Material (Identify type, model and specification of MAJOR plant & equipment)

All plants and equipment will be inspected prior to the mobilization on site to ensure that they are in good working condition and comply with the current regulations. The initial plants and equipment will be deployed to carry out the works are as follow and will be updated from time to time: -

6.1 Plant / Equipment

a. Crawler crane type as follow:

Item	Purpose	Manufacturer	Model	Q'ty	Remark
1	Lifting / Excavation	Liebherr	HS855 HD	2	
2	Assembly helping Crane	Liebherr	LTM1060-3.1	1	
3	Assembly helping Crane (backup)	中联重科	ZCT900V532.1	1	

b. Oxygen & acetylene flame cut – 4 sets

6.2 Manpower

Traffic controller will be provided to ensure no labour cross under the assembly / lifting operation during the assembly works. Designated banksman and foreman will be assigned and shall be present during all works periods to ensure no unauthorized entry to fenced-off areas.

Item	Manpower	Quantity
1	Lifting Supervisor	1
2	Foreman	1
3	Rigger	2
4	Banksman	1
5	Crane Operator	2
6	Plant Fitter	1

6.3 Material

Item	Material	Quantity
1	Hoisting rope	TBC
2	Wire rope	TBC
3	Lifting Gears (Shackle, Chain sling, etc.)	TBC
4	Gas Cylinders	TBC

7. Construction Methods / Construction Sequence Drawings

7.1 Preparation Work

Prior commencement of delivery of the crawler crane parts, a site visit shall be carried out to check on the site constraints and limitations for the crane parts delivery access and the area for the crane assembling/disassembling. The route and the type of transportation used shall be pre-determined to make sure it meets the site requirements and limitations. On top of that, firm and flat ground shall be provided to ensure it can sustain the loading of the said crane. Otherwise, adequate steel plate or shall be placed on the ground for the assembly/disassembly work areas if necessary.

7.2 Logistics Arrangement: Plant, labour and material

7.2.1 Scope of this method statement

The scope of this method statement covers the following activities:

a. Site preparation for the delivery of crane body and parts
b. Delivery of the crawler crane parts from the West gate and East gate to the W11 site area.
c. Assembly & disassembly of crawler crane in the W11 site area.
d. To set up the necessary protection, barricades such as water-filled barriers and other auxiliary works related to the assembly and disassembly of the crawler cranes.

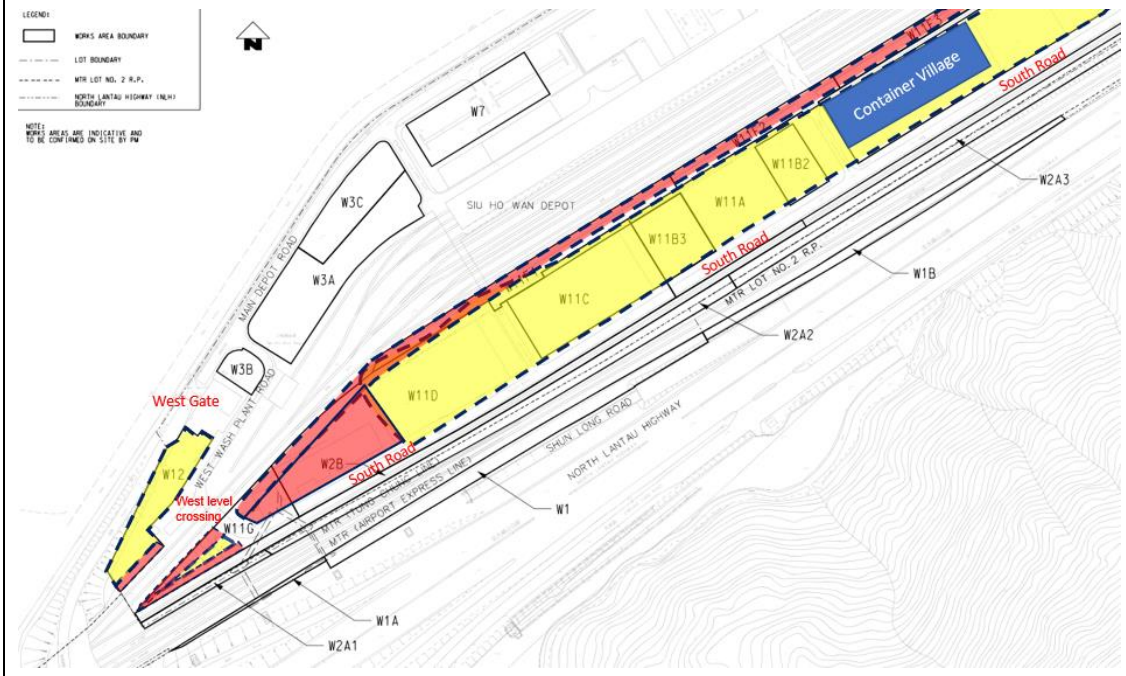
7.2.2 Working Area

The works areas which are fully enclosed by fencing or water-filled barriers and declared as Construction Areas (CAs), RSI training and EDOC are not required for labour working in these areas. However, for workers working at a distance less than 10m measured from the nearest track/OHL or any construction activities that may cause a potential impact on the OA, the RSR and EDOC procedure still apply as summary below:

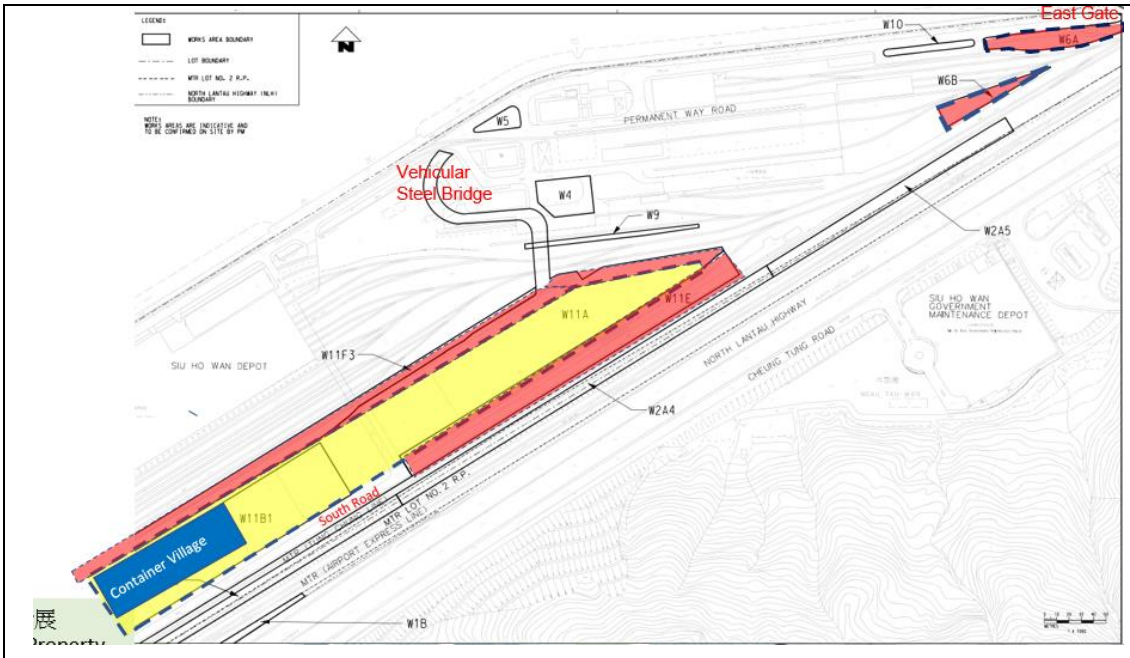
	CA	Non-CA & OA
< 10m Railway	EDOC required	EDOC required
> 10m Railway	EDOC not required	EDOC required

Referring to the layout below, the red area is the area where EDOC is required and the distance between the track and the working area is less than 10m. While the yellow area is EDOC not required, which the distance between the track and working area is greater than 10m.

In this method statement, we would cover the yellow part only for crawler crane assembly and disassembly work, mainly at W11 site area.



Western Part of the depot



Eastern Part of the depot

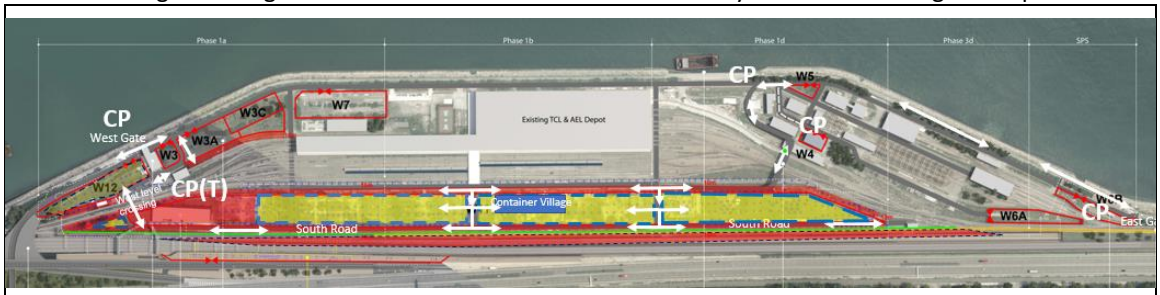
7.2.3 General Access and Crawler Crane Delivery Path to W11

The delivery of crawler crane parts is proposed to pass through the vehicular access bridge, we would also temporarily utilize the west gate (or east gate) via the west level crossing to deliver the crawler crane parts of height less than 4m (e.g up to 80-ton crawler crane). Approval from depot will be granted for transporting crawler crane parts between 4 to 4.2m. During delivery from the West gate, an escort vehicle with CPs would be deployed to escort the delivery vehicles. CP(T) would be stationed at the West Gate to check the vehicular

height, direct the traffic and communicate with the yardmaster continuously. Apart from the construction vehicles, a shuttle escorted by an escort vehicle would be arranged to directly carry the worker from the West Gate to the Container Village at W11 via the West level crossing.

We would also utilize the East gate with similar safety procedure same as West Gate would be deployed. The necessary permits/forms adhered to the main contractor or MTRC will be filled up before the access of the machinery. Machinery inspection shall be carried out by the safety personnel and relevant party. Nonetheless, we would hold regular workshops with RP/Yardmaster to go through current works within all CAs in order to identify and review any impact upon railway and/or depot operation. The rules and procedures for Railway Protection under the Railway Ordinance will be in accordance with Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers (PNAP ADV-33 / APP-24) and MTRCL working paper No.6-Railway Protection-Revision B-December 2022.

The details of general logistics should refer to the submitted security and traffic management plan.



The general layout for access to W11 through West Gate and East Vehicular Steel Bridge

7.2.4 Preparation for the Crawler Crane Transport

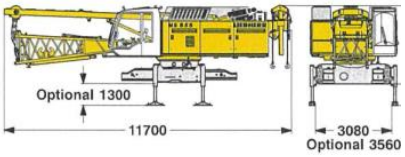
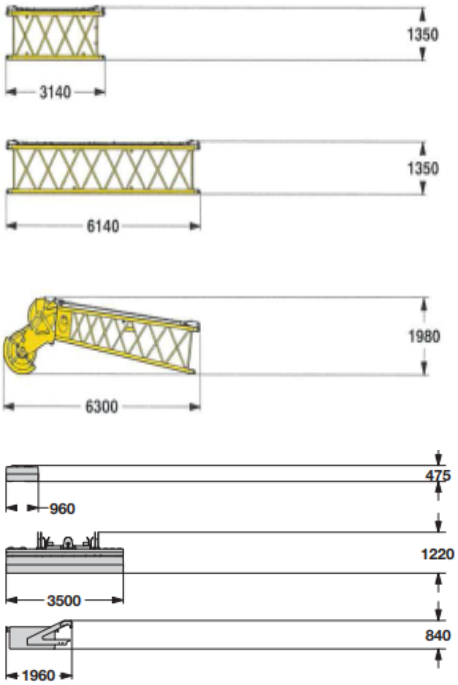
Since there is site limit for the height and road width clearance, all the crawler crane parts such as crane body, jib boom, counterweight, sliding shoes and associated lifting gear will be loaded on the low bed, trailer and flatbed which the total height with the parts shall be within the site height clearance of 4.2m. If the measured total height is more than 4m, “Permit to move” is required with the YM approval.

The following items will be checked by the crane provider before loading it to the load loader:

a. To secure the base crane on the trailer
b. Using the chain block or steel chain to wrap all parts of crawler crane
c. Tighten the chain block or steel chain to secure the machine on the trailer
d. Lower down the boom base to the rigid supporting and keep the wire in tension
e. Slewing lock pin is fixed
f. Swing brake is engaged
g. All levers in the neutral position
h. The base machine is at horizontal
i. Make sure no obstacles lying on the ground from the path of the trailer
j. All workers should stay outside the fatal zone of the crawler crane
k. After all loading material’s height on the low bed, trailer & flatbed shall not be over 4.5m

The part of the crawler crane and the method to transport it as below:

a. Type of crane: 80Ton HS855 Crane

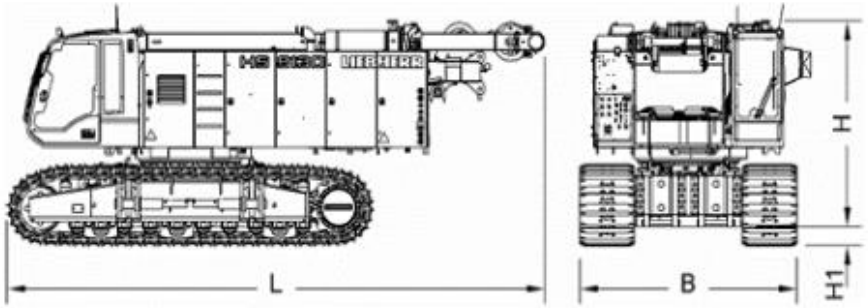
Type of vehicle to be used for transport	Parts of the Crane to be transported	Dimension of Crane Parts to be transport
Low bed x 1 no.	Crane body with boom foot, A-frame with crawler tracks (weight 58.7ton) The actual height please refer to the table below.	
Flatbed lorry x 8 nos.	1 no. boom section (3.14m length, 0.47 tons) 2nos. boom section (6.14m length, 0.73 tons) 1 no. boom head (6.3m length, 1.61 tons) **Counterweight (7.50 tons x 2nos, 17.33ton, 1.50 tons x 10nos) (The heaviest part)** (The lifting detail for the base counterweight and Form 6 & 7 for the lifting gear to be applied were listed in appendix G)	

Detailed information of the crane such as the crane technical data and other type of the lifting crane as mentioned in the section 6.1 a can be referred to the brochure and data sheet in Appendix B.

7.2.5 Setup of Helping Crane

Before setup the helping crane for assemble the crawler crane HS855, the ground bearing condition check shall be conducted by TWC to ensure the ground condition is satisfactory to support the helping crane and the assembling crawler crane.

Transportation Plan for Excavation Crane



Dimension of basic machine in transport position when narrow

Crane Model		H (mm)	H1 (mm)	H + H1 (mm)	Low Bed (mm)	Total (mm)	Q'ty	Remarks
HS855	80ton	3120	350	3,470	700*	4,170	1	-

The fasten transportation arrangement

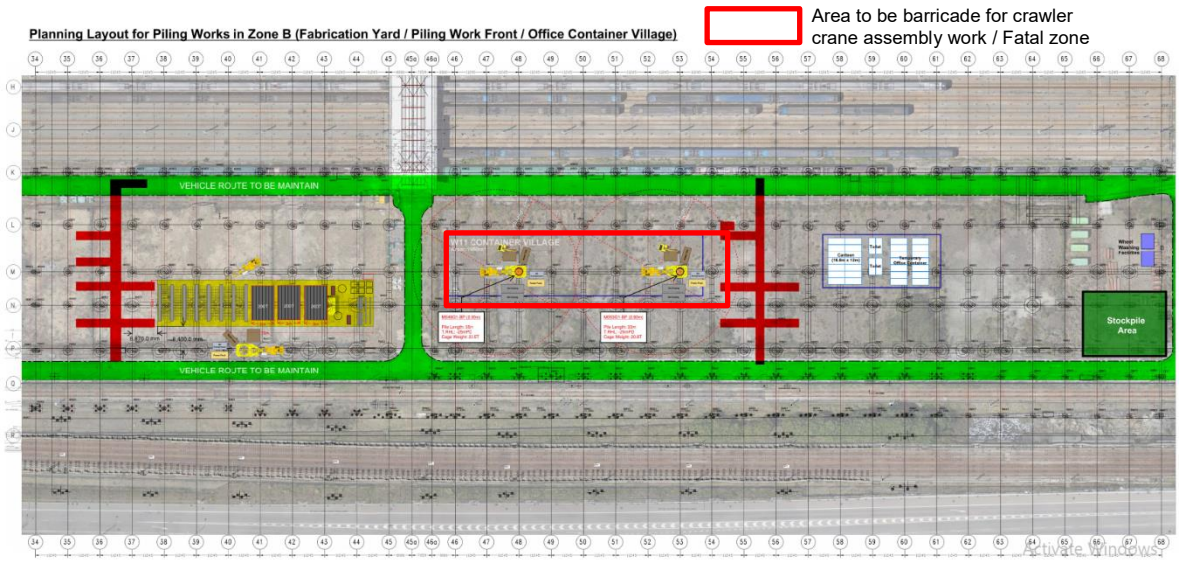
All the equipment shall be fastened on trailer or flatbed by tightness by chain block. It keeps stable during delivery time until to destination area.

Fasten the parts by chain block and wire on trailer/flatbed

7.2.6 Location of Assembly area in W11

Referring to the layout below, the proposed assembly area for the crawler crane will be along gridlines 46-54. Hence, the ground for this location shall be made good and compacted to ensure it can sustain the loading of the said crane before delivery of the crawler crane and parts (100kPa). Barricade for the crawler crane assembly area and fatal zone should be carried out before the installation work.

Barricade around the assembly area and the fatal zone before installation work



7.2.7 Crawler Crane Body and Parts Unloading and Assembly

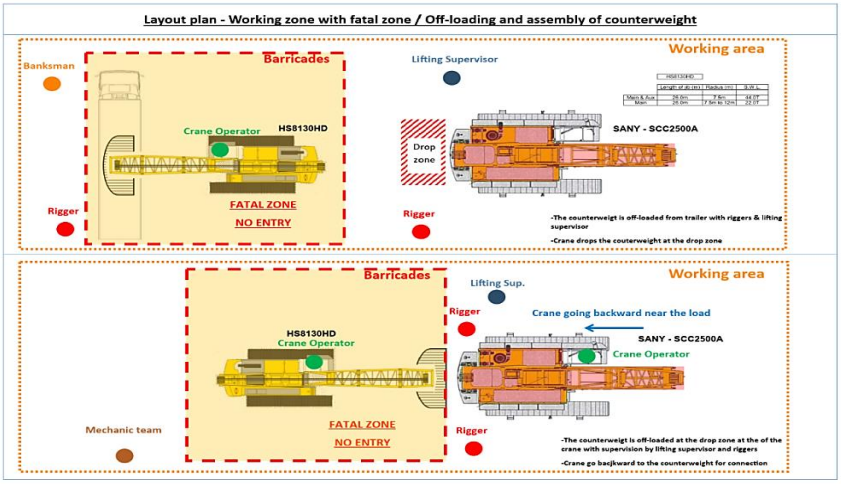
A safety/task briefing shall be carried out before starting the unloading or assembly of the crane body. All lifted loads shall be checked each time before lifting to ensure the load will not exceed the permissible capacity of the helping crane (lorry with crane). In order to ensure the load will not exceed the permitted load, designated banksman shall be provided and checking the load by the standard crane load indicator.

The following items are to be carried out/verified. A checklist provide in Appendix E for further reference.

a. Collect the team member details including their names, position and contact numbers during the task briefing.
b. Appointment Letter of Competent Person and lifting crew with relevant certificates in assemble team. (Refer to Appendix C).
c. Collect the crawler crane details including operator details
d. Collect the list of lifting gears with valid certificates
e. The lifting plan will be provided which follows the site situation accordingly.

f. All the lifting procedures will follow the instruction by a Competent Person and Safety Supervisor to fulfil the site situation. Permit to lift should be acquired prior lifting.

g. Competent Person, lifting supervisor Certified Crawler Crane and electrician (Refer to Appendix C & D).



Working zone with fatal zone (approximately 25m x 25m)

7.2.8 Procedure of Assembly of Crawler Crane

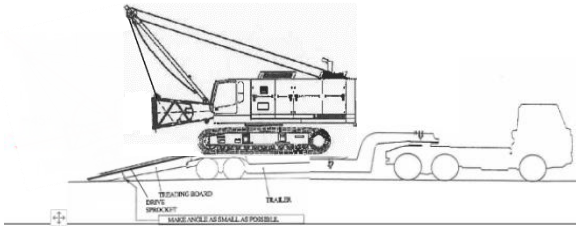
7.2.8.1 Unloading of Crawler Crane Body

The crawler crane body will be delivered with the low bed trailer to the assembly site location. Before the unloading of the crawler crane body, the following items shall be verified/checked by the Competent Person (CP) and operator to make sure it is safe to perform the next step.

- Slewing lock bar is engaged
- Swing brake is engaged.
- The surface of treading board is free of grease.
- Chains and wedges are removed.
- All levers in neutral position.
- No obstacles on the treading board.
- All hoses are connected correctly.
- The ground of fence off area is firm and flat
- No oil leakage of propel motors and hydraulic hoses.
- Make sure no obstacles lying on the ground from the path of the trailer.
- All workers should stay outside the fatal zone of the crawler crane

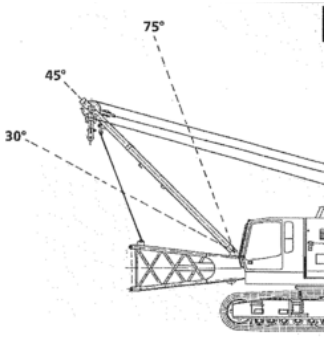
The slewing lock bar must be engaged and verified

a. Once the previous items have been verified, the crane operator can drive the crawler crane body off the trailer. Start the engine and set the engine to approximately 1000 rpm.



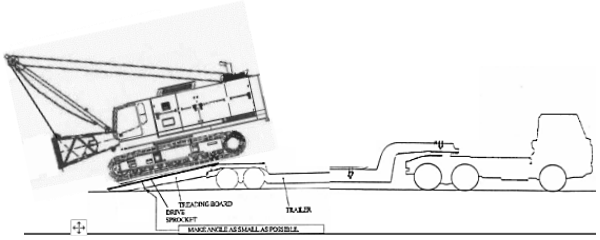
The crane body to be set up for driven off the trailer

a. By operating the boom hoist, raise the A-frame to ~45° (Make sure the A-frame does not exceed the maximum angle of 75°), banksman and foreman shall cooperate with crawler crane operator by walkie talkie and signal. They shall control the crane body to move 1m and suspend 30 seconds for checking the balance of A-frame within 45° and not exceed 75°.



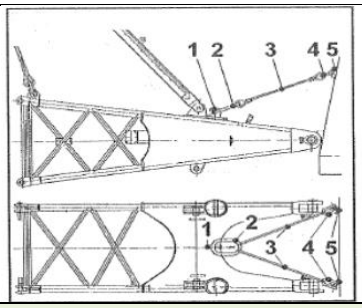
A-frame shall be held at 45° and must not exceed the maximum angle of 75°.

b. Trailer operator to lower the trailer treading board for the crawler crane operator to drive off the crawler crane from the trailer with the drive sprocket to the front.



A-frame shall be held at 45° and must not exceed the maximum angle of 75°.

c. Once the crawler crane body touches down to the ground, the transport ropes and fasteners components must be removed.



Transport ropes and fastener components to be removed from the crawler crane.

From starting the crawler crane assembling process until completion. The prevention to be alerted as below:

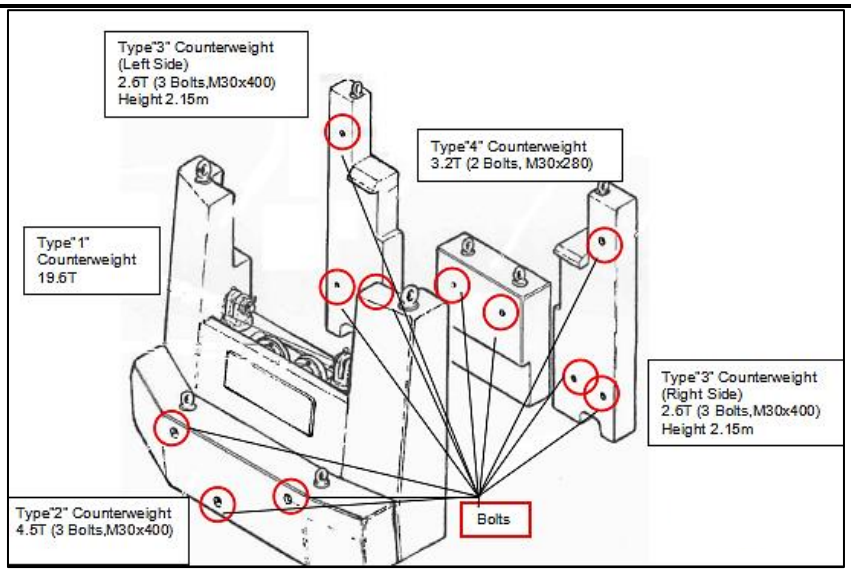
- To prevent any workers from being struck by crawler crane by slewing motion
- Do not allow anyone to get close to the crane when it is in initial use.
- Keep clear on the sides and the rear of the crane.
- Appoint the banksman to give effective signals to the crane operator where the operator does not have clear and unrestricted view of its vicinity.
- Using the reversing video device to provide the operator with rear-side views on a monitor for preventing the accident.

All the action shall be monitoring by lifting supervisor during the assembling.

7.2.8.2 Counterweight installation by helping crane

Before the counterweight installation, the following items shall be verified/checked by the Competent Person (CP) and operator to make sure it is safe to perform the next step.

- Swing brake is engaged.
- Workers must wear safety harnesses hooked on designated area.
- 2 units of mounting rope are in working condition.
- No obstacles on the counterweight mounting frame
- Firm and Flat ground condition.
- Correct lifting gear



Indication for the counterweight installation sequence

a. As referring to the illustration above, the general sequence of the counterweight installation is Type "1" followed by Type "2" followed by Type "3"(Right side) followed by Type "3" (Left side) and lastly is Type "4" counterweight to be installed.
b. Attach the sling and tagline to the Type "1" counterweight.
c. Operate the helping crane to lower down the Type "1" counterweight on the ground.
d. Attach the sling and tagline to the Type"2" counterweight.
e. Operate the helping crane to lift and mount the Type "2" counterweight to the Type "1" counterweight.
f. Attach the sling and tagline to the Type "3"(Right side) counterweight.
g. Operate the helping crane to lift and mount the Type "3"(Right side) counterweight to the Type "1" counterweight.
h. Attach the sling and tagline to the Type "3"(Left side) counterweight.
i. Operate the helping crane to lift and mount the Type "3"(Left side) counterweight to the Type "1" counterweight.
j. Attach the sling and tagline to the Type "4" counterweight.
k. Operate the helping crane to lift and mount the Type "4" counterweight to the Type "1" counterweight.
l. Insert and tighten the bolts for all the counterweight (total 11 bolts).

All the assembly team workers shall wear the safety harness before they work at height. We shall use the working platform ladder to work at height.

Safety harness

Working Platform Ladder

The counterweights shall be installed by helping crane, the LG could be released if the level could be reached by hand level. Otherwise, using a working platform to reach the release LG level. The below photo could shown the situation.

During the assembling counterweights

The workers required to work on top of crawler crane, the procedure as below:

a) Install the fence on the top of crawler crane **(AREA 2 – Pic 1)**

- Set up the crane low working platform on ground or working platform ladder **(AREA 1 – Pic 1)**
- Access the crane low working platform and go to the crawler crane top by crane vertical ladder
- Install the safety harness to the vertical ladder and install fencing on the top of crane. **(AREA 2 – Pic 1)**

b) Tightness of the counterweights on crane's body

- Before the tightness of the pins for the top counterweight, the mechanic could fix the safety harness to the rigid point in **Pic 2**.

Pic 1

Pic 2

7.2.8.3 Assembling the Main Boom by Helping Crane

Before assembling the main boom, the following items shall be verified/checked by the Competent Person (CP) and operator to make sure it is safe to perform the next step.

As the jib height for HS855 is only 1350mm, all assembly works (including pin installation, guy rope connection) will be completed on firm ground. Workers will not need to stay on the cabin or the jib during the assembly.

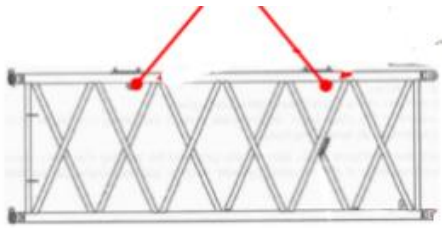
- Swing brake is engaged.

- Workers must wear the safety harness.
- A suitable platform must be provided for overhead work
- No one is allowed to work or stay inside and under boom insert

The boom combination for the different crane assemblies can be referred to the table below:

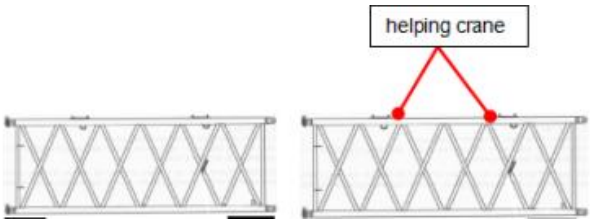
Boom Combination	90Ton HS855 Crane
Boom Foot	5.5 m
Boom Section	3.0 m
Boom Section	6.0 m
Boom Section	6.0 m
Boom Head	5.5 m
Total Length of Boom	26.0 m

a. Attached sling and tagline to 6m boom insert for the 6m boom section.



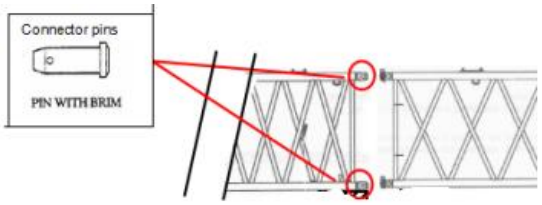
Slinging point of 6m boom insert (Position of the designated lifting points refer to the manufacturer)

b. Operate the helping crane to lift the 6m boom section on the ground.
c. Repeat the same steps for the next 3m and 6m boom sections.
d. Operate the helping crane to align the top connectors of the 3 or 6m boom insert to the front of the 3 or 6m boom insert.



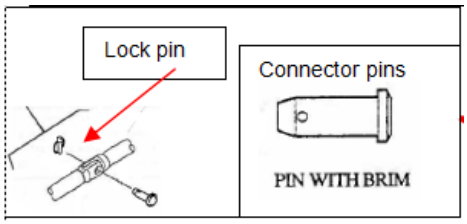
Use of helping crane to install the boom connection

e. Insert the top connector pins first (pin with brim) by working platform from the outside, then insert lower connector pins (pin with brim) from the outside



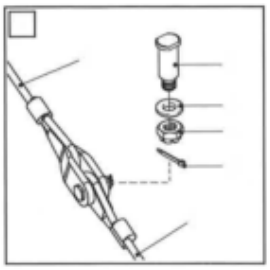
Boom connection

f. Insert the lock pins to secure them to connector pins.



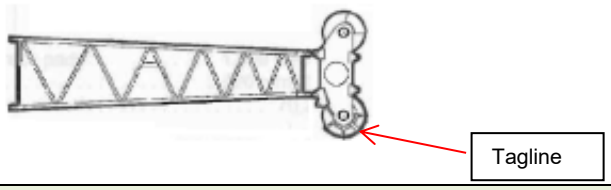
Detail of the boom connection

g. To connect the main boom guy ropes on the top of the boom according to the below sketch. Make sure the boom guy ropes are appropriately connected and placed on top of the boom before disconnect it from the boom insert.



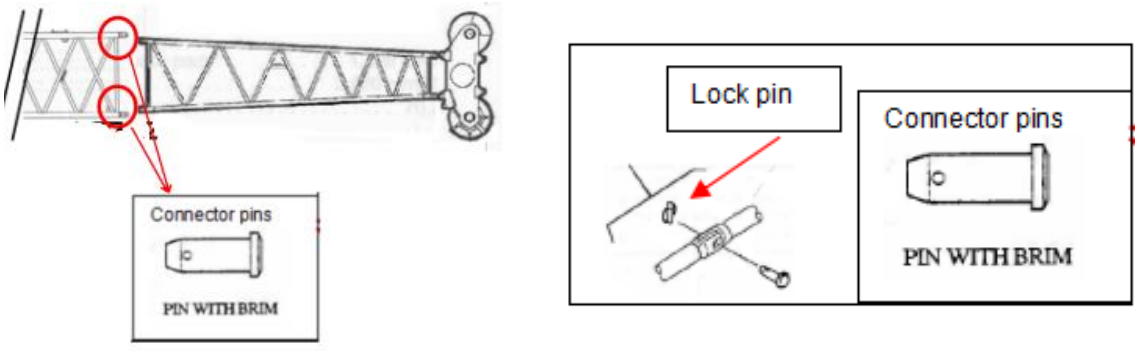
Detail connection of the boom guy rope

h. Be reminded that shorter intermediate pieces should be mounted closer to base boom
i. Attach sling and tagline to boom tip.
j. Operate the helping crane to align the top connectors of the boom tip to the front of the pre-assembled boom.



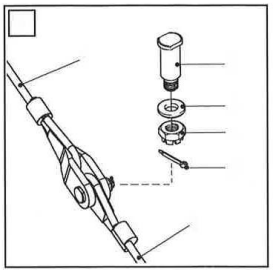
Boom tip and tag line location.

k. Insert the top connector pins first (pin with brim) from the outside, then insert lower connector pins (pin with brim) from the outside. Afterward, insert the lock pins to secure them to connector pins as shown in below illustration.



Boom head and boom connection

I. Connect the main boom guy ropes on the top of the boom according to the below arrangement. Make sure the boom guy ropes are appropriately connected and placed on top of the boom before disconnect it from the boom tip

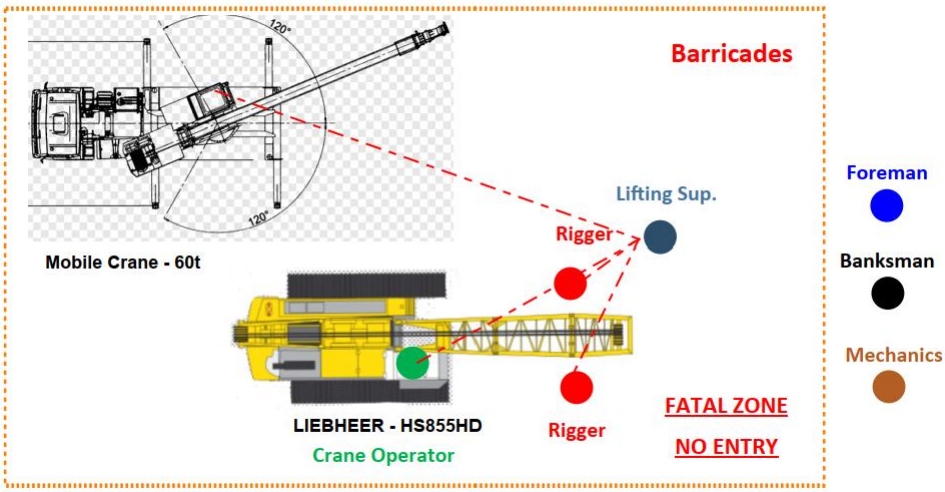


Connection arrangement of the boom guy ropes.

We shall lift the mast at the lifting points same as shown photo.

The lifting points shall be marked up by lifting supervisor, rigger shall follow up the lifting point for rigging. After rigging, the lifting supervisor shall double check the rigging condition is good and follow 3,3,3 lifting procedure.

7.2.8.4 Assembling the Main Boom to the Base Boom



The layout plan for boom assembling of HS855HD

The minimum assembling crew inside the fatal zone. 2 riggers shall in charge boom connection, 2 crane operators shall be inside the cranes, Foreman, Banksman and Mechanics shall standby from outside during the boom assembling. The Lifting Supervisor shall in charge all the lifting, communicating with riggers and crane operators.

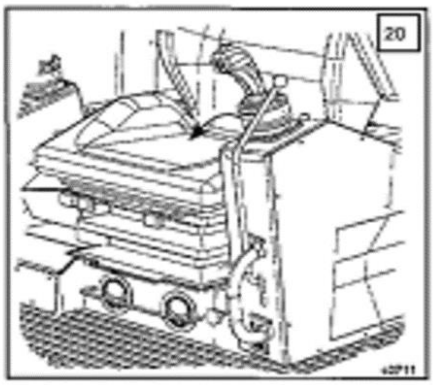
The control measure to prevent the assemble crew under the mast during assembly of main boom process as below:

- Minimize the riggers during the assembling boom jib.
- The lifting supervisor is easy to control 2 riggers when connecting boom jib.
- Foreman and Banksman shall block anyone to enter the fatal zone during the boom assembling.

a. The erection of A-frame by lower the safety lever to enable the control functions without any working at height.

Erecting the A-frame

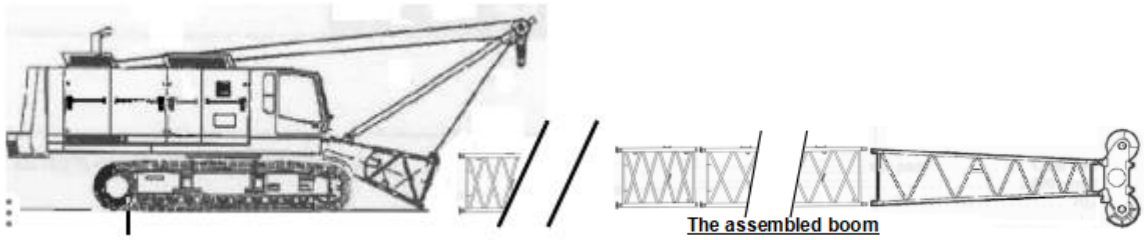
- Lower the safety lever to enable the control functions (Figure 20).



Base boom and main boom assembly position

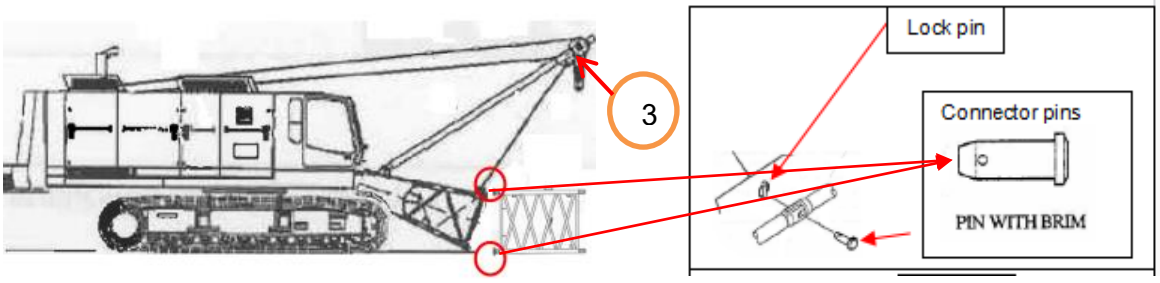
b. Operate the base machine with base boom to move forward to the rear of assembled main boom.

c. Place the rigid supports under the assembled main boom, section boom and boom head.



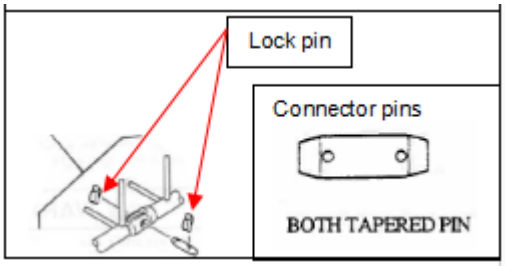
Base boom and main boom assembly position

d. Align the top connectors of the base boom to the area of assembled main boom.
e. Tap to insert the top connector pins first (pin with brim) by working platform from the outside, then insert lower connector pins (both tapered pin) from the outside.
f. The connector pins could be installed on ground level by assembling workers, if top portion of connector pins need to be adjusted, the working platform ladder shall be used.



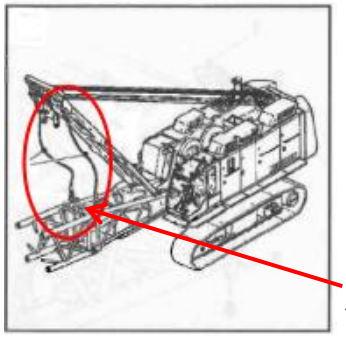
Connection of the base and main booms

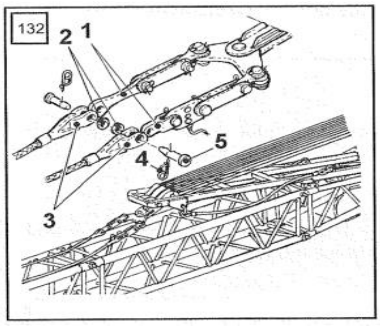
g. Insert the lock pins to secure them to connector pins.



Connection of the base and main booms

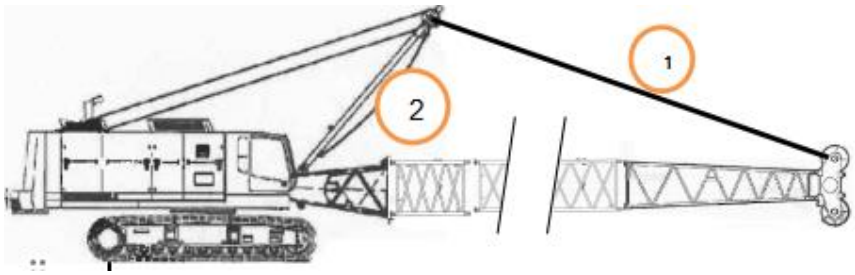
h. Lower down the A-frame (to approximately 0°), then disconnect the mounting rope ② between the A-frame and base boom according to the illustration. (The A-frame should be maintained at the position and do not raised it until step h.)





Mounting rope to be disconnected

i. Connect the main boom guy rope ① to the main boom tensioner ③ according to the illustration. Make sure the boom guy ropes are appropriately connected. Once the above steps have been carried out, all the rigid supporting under the main boom shall be removed. (The A-frame should be maintained at the position and do not raised it until step h.)
j. Check and ensure all the temporary fixing for the main boom guy ropes on the boom top and removed.

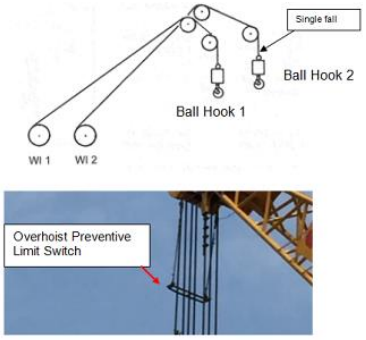


Indication for the main boom and mounting rope

k. Raise the A-frame until the main boom guy ropes become slightly tension.
l. Fix back the mounting rope to A-frame.

7.2.8.5 Load Line Reeving of Main Hoist Wire and Auxiliary Hoist Wire

a. Play the wire rope from the front drum and reeve the wire rope to the ball hook in single fall according to illustration sketch.
b. Pass the wire through the weight of the over hoist preventive limit switch, and secure it with the rope socket.
c. Repeat the previous step for the rear drum.
d. Connect the over hoist limiter by electrician with valid license
e. Check all the pins, bolts, retaining springs and mountings connected correctly before go to the next step.



Wire rope, ball hook and limit switch arrangement

f. The assembling crew are doing the reeving / unreeving on the ground level, the wire could be unreeving by the crane itself without working at height.
g. The wire reeving is pulled out by the helping crane. The wire shall be adjusted by the tag line which is controlled by assemble crew on the ground without working at height.
h. In case the tag line needs to adjust, connection and disconnection that we shall use the working platform ladder to conduct it.

7.2.8.6 Commissioning and Load Test of the Crane

The crawler crane must be inspected and tested by the registered Professional Engineer after the completion setup for the crawler crane. The following items shall be checked to ensure the crawler crane is safe to be used and a checklist is provided in the Appendix E for further reference. Upon the completion of the inspection, the crawler crane will be signed off and is safe to perform the work.

a. Before rising up the boom, CP and operator must check and confirm
- Crawler shoes are fully extended
- All the counterweight is installed on the crane. Bolts and nuts connected correctly.
- Pins on the boom section are placed and secured with lock pins
- Pins on the guy lines are placed and secured with lock pins
- A-frame is fully extended
- Reeving of main hoist rope and auxiliary hoist rope in both drums are correct. Wire ropes do not jump out from the pulleys.
- Over hoist preventive limit switches for both hoist ropes are secured correctly on the boom tip
- Lubrication to the pulleys on the boom tip and jib tip

b. Test the hook over hoist preventive devices
- Cut-off the hoisting function of load hook
- Cut-off the hoisting function of boom

c. Test the boom overturn preventive device at 78°
- Alarm from ASLI (Inside the cabin)
- Cut-off hoisting function of Front & Rear drums
- Cut-off hoisting and lowering function of the boom from limit switch

d. Test the boom lowering preventive device at 30°
- Cut-off lowering function of the boom
- Cut-off hoisting function of front & rear drums
- Alarm from ASLI (both inside and outside the cabin)
- Red light from 3-colour ASLI external lamp

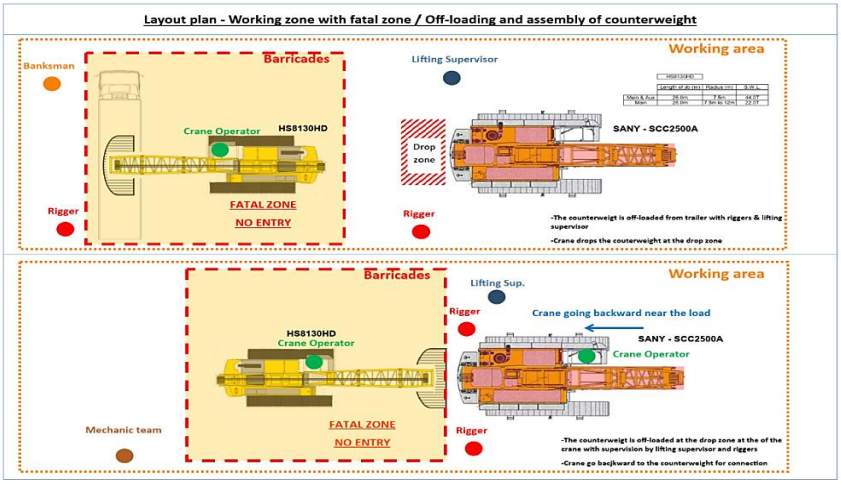
e. Calibrate the loading motor
   - Conduct the no load test
   - Conduct the on-load test

f. Test the overload preventive device and alarm (sound & light)
g. Test the swing alarm (sound & light)
h. Test the function of 360° CCTV & ultrasonic device
i. Conduct the load test by R.P.E and issue the Form 3 and Form 5 certification. Load chart of the respective crawler crane shall be referred to Appendix B.
j. Conduct the C.P.I inspection and issue the On-site Permit by site team.
k. Issue the plant permit by Project Team before the crane operation.

7.2.9 Crawler Crane Disassembly

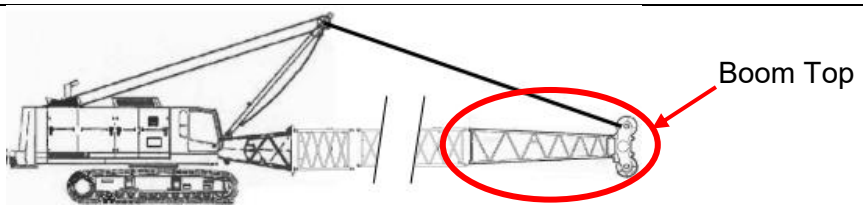
7.2.9.1 Pre-Dismantle Checking Arrangement

a. Fence off the disassembly area and set up the fatal zone with the barricade.



Working zone with fatal zone

b. Set the engine speed to 1000rpm and lowering the boom, the boom has to be parallel to the crawler shoes.
c. When the boom angle is less than 30 degrees, boom lowering is automatically stopped, and the warning alarm sounds.
d. The boom can be lowered further onto the ground with boom tip supported by rigid support by pressing the “assembly mode”.
e. Continue to lower the boom onto the ground with boom top supported by rigid support.
f. When the boom angle is less than 30 degrees, place the hooks on the ground slowly.



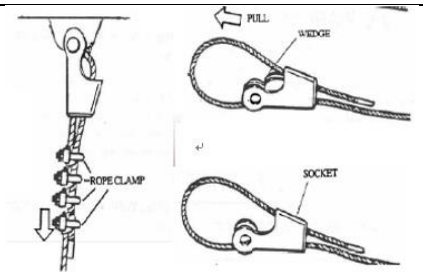
Lowering the boom to the ground

7.2.9.2 Unreeving the main hoist rope and auxiliary hoist rope

a. Ensure that the boom top and the ball hook are placed firmly on the ground before disconnect to the wire rope. To make sure no one is work or stay inside or under boom insert.
b. Disconnect the rear drum over hoist limit by registered electrician.

Limit switch to be removed from the boom tip

c. Disconnect the wiring between the cable reel and the basic machine side, and install the short circuit cap to the basic machine side wiring.
d. Confirm that the ball hook is set in the stabilized condition, remove the auxiliary wire rope socket and clamp from the rope end.
e. Hoist up the rear hoist drum slowly to wind the auxiliary wire rope back to rear drum.

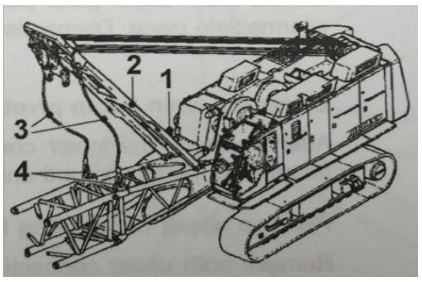


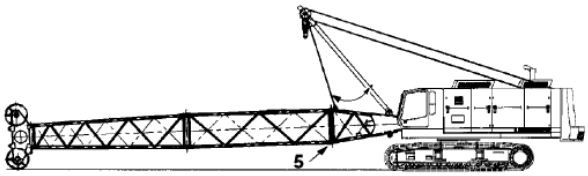
Method to remove the auxiliary wire rope

f. Repeat the same steps from the above step “a” to step “e” to unreeve the front drum wire rope.

7.2.9.3 Dismantling the Boom Guy Lines

a. Slowly move the A-frame forwards and lay down the boom guy ropes on the main boom.
b. Disconnect the boom guy ropes from the A-frame by removing the connecting pins
c. Detach the mounting rope from the A-frame (Point 1 & 2)
d. Pull the mounting rope forward and attach to the boom base (Point 3 & 4)
e. Raise the A-frame until the mounting rope in tension.
f. Full body safety harness with double lanyards fixed to designated anchorage point

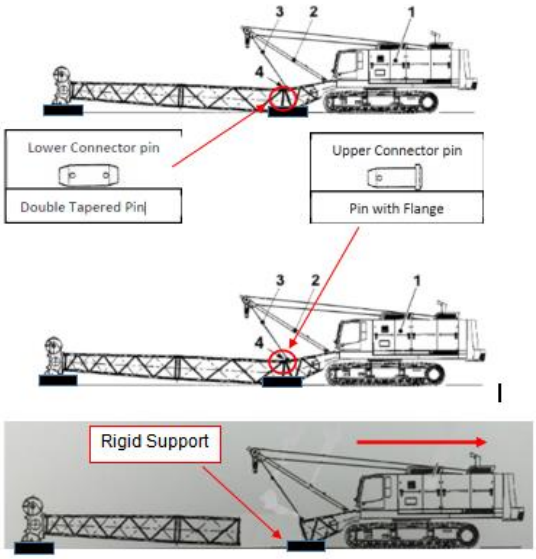




Indication for dismantling of boom guy lines

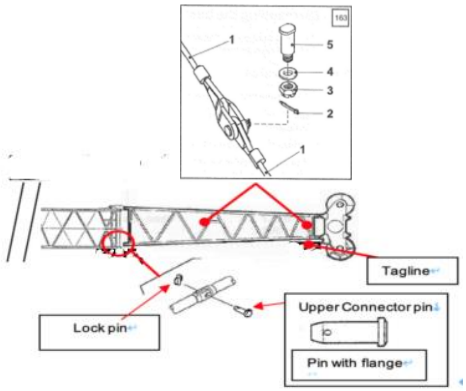
7.2.9.4 Dismantling of Main Boom

a. To disconnect the main boon section with boom base, remove the lower connecting pins (double tapered pin) on the boom base.
b. Place the rigid supports under the assembled main boom.
c. Lower the boom base until the main boom touch the ground
d. Remove the Upper connecting pins (Pin with Flange) on the base boom
e. Raise up the base boom to leave the ground. Move the crane (base machine) backward, fence off the machine.



Dismantle of main boon section with boom base

f. To disconnect the boom tip and boom insert by helping crane, attach the sling and tagline to the guy ropes.
g. Slightly tension the sling to hold the guy line.
h. Remove the connecting bolt on the guy line.
i. Separate the guy ropes with the aid of helping crane.
j. Attach sling and tagline to the tip boom. Lift it with slightly tension and draw out the bottom side connector pins (pin with flange).
k. Then draw out the upper side connector pins (pin with flange).



Dismantle of boon tip and boom insert

l. Lifting the boom tip by helping crane to the temporary storage area.
m. Repeat the above steps to dismantle the remaining boom.

7.2.9.5 Dismantling of Counterweight on the Crawler Crane

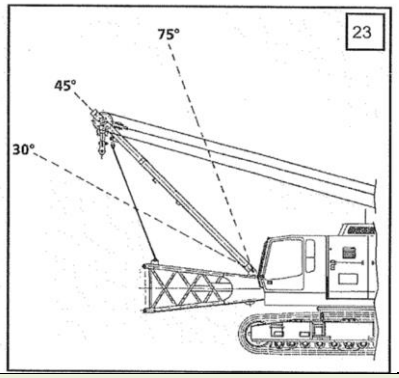
a. Attach tagline, shackles and sling to the counterweight.
b. Dismantle the counterweight mounting bolts through from top and the washers.
c. Operate the helping crane to lift up and mount the base machine of counterweight to the temporary storage area.
d. Repeat above step to dismantle counterweight until finish the dismantle work.

7.2.9.6 Loading the Base Machine to the Trailer

a. Barricade the trailer and base crane area.
b. Start the engine and set the engine speed to approximately 1000rpm.
c. Engage the swing lock.

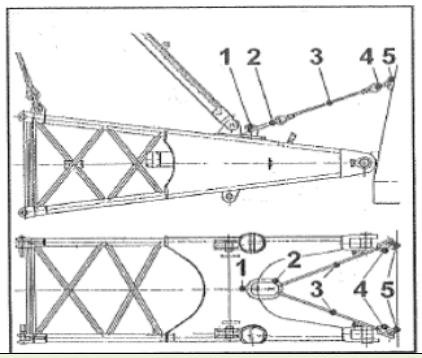
The slewing lock bar must be engaged and verified

d. Raise the A-frame by operating the boom hoist winch to ~45°.



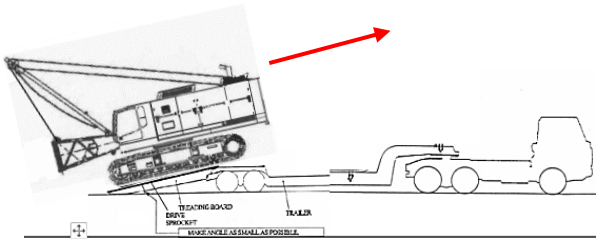
Boom hoist winch to ~45°

e. Install the transport ropes (Include fastened components) and low down the A-frame.



Transport rope and fastened components to be installed

f. Using the trailer's trend boards to load the machine on the trailer with drive sprocket at upper position.



Reverse to load the base crane to the trailer

g. Switch off the engine and secure the machine on the trailer. Ensure the swing brake and slewing lock bar are engaged.

7.2.9 Welfare Facility and Smoking Point

In each work area, there will be a welfare facility and designated smoking points provided for workers. In each of the smoking points, preventive fire measures would be provided as below.

Preventive fire measures at smoking point

8. Safety (Risk Assessments)

Risk Assessment attached in Appendix A has been prepared for all general activities. Specific safety procedures and precautions have been developed for all site operatives to follow. The Construction Team Leader together with the RSO, will supervise the implementation and make adjustment according to the actual site operations, in order to maintain a safe and amicable working environment.

General Site Safety

With reference to the Project Safety Plan, the following items need to be instituted through the course of the works described within this method statement.

All staff and workers must go through a briefing by the Project Manager / Site Agent / Engineer before commencement of any works. All staff and workers on site shall obtain an approved and valid "Mandatory Basic Safety Training". All workers shall attend site safety induction training and register according to Construction Worker Registration Ordinance. Pre-use inspection and maintenance shall be conducted for all plant / equipment before commencement of work.

Risk Assessment

All the potential hazards, consequences and mitigations will be analysed in the risk assessment attached in the Appendix A.

The Engineer and Supervisor shall attend method statement and risk assessment training conducted by Safety Training Officer.

Plant & Equipment

All plant shall have valid test certificates and equipped with all safety accessories. Critical parts inspection (CPI) shall be conducted by a competent person before commencement of works. Relevant statutory forms shall be kept available and updated at all times.

Lifting Appliances and Lifting Gears (LALG)

All lifting appliances and gears in connection to the assembly and disassembly of the crawler crane shall be inspected by a competent person and marked with the safe working load. Besides safety working load, owner

mark should be marked on lifting gear. Statutory certificate shall be recorded properly prior to commencement of works. The condition of all lifting gears shall be inspected periodically; colour code system shall be displayed to identify condition of all the lifting gears. Independent lifeline should not be fixed on fencing.

Lifting Operation

All lifting operations shall be supervised by CSHK Designated Lifting Supervisor and the rigging and signalling carried out by CSHK Designated Rigger. During the assembly and disassembly of the crawler crane, all lifting operation shall be properly planned and safely carried out in accordance with the requirements of the construction Site (Safety) Regulations. Lifting plan shall be reviewed weekly.

Site Safety Induction Training Course

All workers shall attend an induction course conducted by the Safety Officer. The Safety Officer shall explain the necessary safety requirements as identified in the risk assessment record and the Project Manager / Site Agent / Engineer in charge of the work shall explain the system of work to his supervisors and workers. The appropriate language of the workers shall be used in all briefing and training courses.

Fire Prevention

All flammable materials shall be stored in a safe location in accordance with the Factories and Industrial Undertaking Regulations.

Safe hot work procedures, including hot-work-permit shall be implemented. Work area inspection shall be carried out by the site personnel such as engineer or foreman to sign off before the work being carried out. Fire extinguisher shall be provided at the work area which accessible to get whenever required.

9. Environmental (Environmental aspect & impact identification as well as mitigation measures)

The works shall follow relevant mitigation measures as required under the Environmental Permit (EP)/EP submission and Contractor's Environmental Management Plan (EMP).

The following mitigation measures will be followed:

Impact of the assembly and disassembly of the crawler crane activities to the surrounding environment shall be monitored regularly and dealt with promptly. This shall be done by close supervision of the assembly and disassembly of the crawler crane works and briefing to workers for environmental matters.

Aspect	Impact	Measure
Use of machinery on land	Noise	- Proper maintenance of equipment - Scheduling of work - Select silent type PME
	Oil leak or spill	- Provide drip tray for stationary machine and stored chemicals - Proper maintenance of machinery
	Emission of dark smoke	- Proper maintenance of equipment

Works shall be carried out in accordance with the Environmental Permit. Construction Noise Permit (CNP) has obtained and works shall be carried out during working hours stipulated in the CNP.

10. Quality Control (Inspection and Test Plan including hold points)

	To ensure the attainment of the required standard of works, the methods of working and the required works standards / acceptance criteria are defined in the method statement, inspection & Test plans and are communicated to relevant staff and workers carrying out the works. Day to day routine inspections of the works will be carried out by the Construction Team Leader, Site Engineers and Foreman as appropriate, to ensure that all works are performed following the requirements of these documents. Specific quality checks shall be carried out in accordance with the provided checklist for the before and after for the assembly of the crawler crane work as attached in Appendix E (Before) & Appendix F (After).
11.	**Appendices** (Identify and include additional information in the submission package)
	Appendix A – Risk Assessment Appendix B – Crawler Crane Brochure and Data Sheet Appendix B1 – HS855 Assembly Lifting Plan Appendix B2 – Helping Crane ZCT900V532.1 Appendix B3 – Helping Crane LTM1060-3.1 Appendix C – Competent Person for Crawler Crane Assembly Certificate Appendix D – Registered Electrician Details Appendix E – Crawler Crane Assembly Checklist Appendix F – Crawler Crane Inspection Checklist Appendix G - Lifting detail for the heaviest part and Form 6 & 7 for the lifting gear to be applied Appendix H – Emergency Contact List Appendix – Inspection and Test Plan(ITP) (Nil) Appendix – Temporary Works Design (Nil) Appendix – Catalogue for Equipment (Nil) Appendix – Shop Drawing (Nil)