



Standard Operating Procedure

Procedure Name:	Assembly of modular spreader bars		
Author:	Steve Smallman		
Approved By:			
Version	1.0	With Effect from	7/2/14
Review Date	1/1/15	Document Number	SOP 22

1. Aim of procedure

To identify and formalise the risks and control processes involved in the assembly of modular spreader bars (Modulift/Maxirig).

Considerable discussion is held on a regular basis regarding the process to be followed, technical aspects and requirements for assembly of our modulift and maxirig spreaders. There is also much misinformation regarding the use and re-use of bolts used to make up these spreaders.

Both the modulift and maxirig bars consist of several sections of pipe at pre-determined length, fitted with flanges at each end. Each bar also comprises two end sections fitted with top and bottom holes at one end and a flange at the other.

Sections are bolted together at the flanges using hi-tensile bolts. These flange sections mate together given sufficient tension on the bolts and provide the structural strength of the bars. Therefore, flat and solid connections are vital to ensuring the structural stability of the bar.

We have consulted the manufacturers and the following procedure is common to both modular bars.

2. Scope of application

This procedure applies to all personnel, regardless of employment status, engaged in assembling Wheeler Cranes modular spreader bars.

3. References


Manufacturer's specifications for the relevant bar.

4. Pre-requisites

Persons undertaking this work must be familiar with the operation of the torque wrench used and the selected rattle gun (if used).

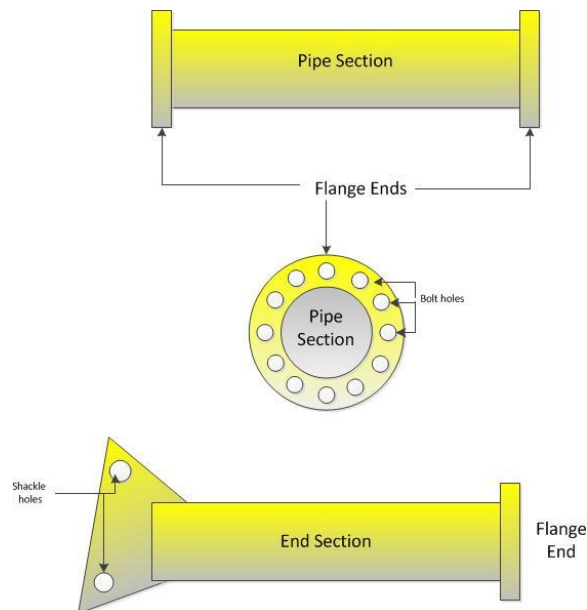
Persons must have access to stands and mechanical lifting aids.

Manufacturers specifications for component assembly and torque settings.

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5. Procedure

- Figure 1 below identifies the components of the bars to be discussed in this procedure. Figure 1 is a diagram for illustration purposes only.



- The correct length of the bar is clearly communicated by the allocator to the person making up the bar.
- Personnel are to ensure they understand which bar is to be made up. There are at the time of writing two modular bars in use with distinctly different characteristics. We have:
 - Maxirig – 85T MRC, 12m maximum length, pipe diameter approx. 300 mm
 - Modulift – 32T MRC, 8m maximum length, pipe diameter approx. 150mm
 - Each bar consists of two end sections either bolted directly together or bolted to one or more pipe sections to form the desired length.
- The person making up the bar is to ensure they understand the correct sequence of components to make up the desired length. To ensure they make up the bar correctly. The sequence of components (sections) is to be written down.
- The person making up the bar must ensure they have the correct torque setting for the torque wrench. This setting is to be written down at the same time as the component sequence is written down.
- Personnel are to use mechanical lifting equipment to move the bar and its components around in the yard. Only personnel holding an appropriate high risk work licence for the




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machine used is to operate the machine. Only persons holding a dogman's ticket are to dog any crane.

7. When assembling components care should be taken to ensure that end sections are correctly aligned so that when in use the top of the bar is in the same plane at both ends.
8. Rattle guns may be used to remove nuts.
9. Bolts are to be removed by hand from the flange ends. If the flange ends have bound onto the bolts. Nuts must be replaced onto the bolt prior to using any hammer to start bolts moving out of the flange.
10. Nuts and bolts removed from the bar are to be re-assembled and nuts run up the thread for its full length. Any nut/bolt that cannot be run up the full length of the thread by hand must be discarded as the nut or bolt may have been stretched or the thread damaged.
11. When re-assembling the bar, sections are to be placed in close contact with each other.
12. Each section is to be inspected for damage prior to assembly. Any damage noted should be reported to the office immediately.
13. Flange facings are to be inspected to ensure they are clean and free from dirt, grease and excessive rust.
14. Holes are to be aligned by rotating the bar. Hand tools may be used to align holes. **BOLTS ARE *NOT* TO BE DRIVEN THROUGH HOLES.**
15. It is unimportant which direction the bolts are passed through the flange holes, however, for ease of assembly, all bolts on each flange are to be passed through from the same side.
16. When re-assembling the bar, rattle guns may be used to run nuts up the thread, however, the rattle gun must be removed before the nut comes into contact with the flange.
17. Tightening of bolts must follow the cross pattern sequence (12 o'clock, 6 o'clock, 11 o'clock, 5 o'clock etc.).
18. Tightening of bolts must be performed using a torque wrench set to the manufacturers nominated setting (see attachments for settings).
19. Once all bolts on a flange are torqued to the required setting, each bolt must be re-checked with the torque wrench.
20. Once the bar is made up to the required length, the overall length of the bar is to be checked using a tape measure to ensure the accuracy of the configuration.
21. Prior to completing configuration, shackles attached to the bar are to be inspected to ensure they are adequate to the task to be performed, in good condition and tagged, prior to the bar being loaded or set aside for loading.
22. All bolts not required for the configuration are to be stored in a receptacle marked for the bar.
23. All bolts not required for the configuration are to have the nuts run up the full length of the thread by hand to ensure that the bolt and nut are undamaged and in an appropriate condition for re-use
24. Bolts and nuts that require unusual force to do up, i.e. cannot be run up by hand, are not to be used. These nuts and bolts are to be handed to the mechanic to arrange replacement.

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25. On return to the yard, the bar is to be inspected for damage. Any damage is to be noted and the office informed immediately.
26. Personnel handling the bar are to use appropriate mechanical lifting devices and to return the bar to its assigned cradle.

6. Approval

Approved for introduction 7/2/14



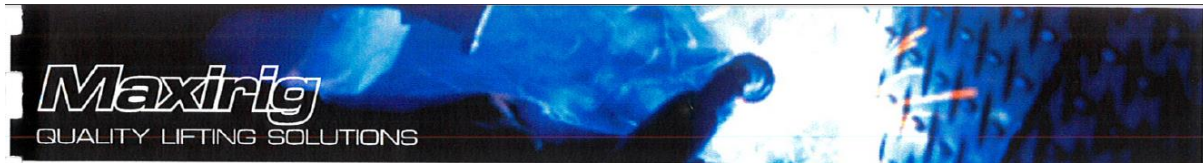
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General Manager



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Maxibar (140Nm):



Load Chart

LENGTH	WLL (T)			APPROXIMATE SLING LEG LENGTH (Mtrs)			APPROXIMATE HEADROOM (Mtrs)			COMBINATIONS						TARE WEIGHT (KG)
	60°	90°	120°	60°	90°	120°	60°	90°	120°	End Lugs	0.5Mtr	1.0Mtr	2.0Mtr	3.0Mtr	4.0Mtr	
1.5	85.0	70.0	48.0	1.500	1.061	0.761	1.300	0.750	0.433	2						388
2.0	85.0	70.0	46.0	2.000	1.414	1.014	1.733	1.000	0.577	2	1					475
2.5	85.0	70.0	45.0	2.500	1.768	1.268	2.167	1.250	0.722	2		1				500
3.0	85.0	70.0	44.0	3.000	2.121	1.521	2.600	1.500	0.866	2	1	1				587
3.5	85.0	70.0	42.0	3.500	2.475	1.775	3.033	1.750	1.010	2			1			549
4.0	85.0	70.0	41.0	4.000	2.828	2.028	3.466	2.000	1.155	2	1		1			636
4.5	85.0	68.0	39.0	4.500	3.182	2.282	3.900	2.250	1.299	2		1	1			661
5.0	85.0	66.0	38.0	5.000	3.535	2.535	4.333	2.500	1.444	2	1	1	1			748
5.5	85.0	63.0	36.0	5.500	3.889	2.789	4.766	2.750	1.588	2		1		1		711
6.0	85.0	60.0	34.0	6.000	4.242	3.042	5.200	3.000	1.732	2	1	1		1		798
6.5	85.0	57.0	33.0	6.500	4.596	3.296	5.633	3.250	1.877	2			1	1		760
7.0	85.0	54.0	31.0	7.000	4.949	3.549	6.066	3.500	2.021	2	1		1	1		847
7.5	85.0	51.0	29.0	7.500	5.303	3.803	6.500	3.750	2.165	2		1	1	1		872
8.0	84.0	48.0	28.0	8.000	5.656	4.056	6.933	4.000	2.310	2	1	1	1	1		959
8.5	78.0	45.0	26.0	8.500	6.010	4.310	7.366	4.250	2.454	2				1	1	860
9.0	74.0	42.0	24.0	9.000	6.363	4.563	7.799	4.500	2.598	2	1			1	1	947
9.5	69.0	40.0	23.0	9.500	6.717	4.817	8.233	4.750	2.743	2		1		1	1	972
10.0	65.0	37.0	21.0	10.000	7.070	5.070	8.666	5.000	2.887	2	1	1		1	1	1059
10.5	60.0	35.0	20.0	10.500	7.424	5.324	9.099	5.250	3.031	2			1	1	1	1021
11.0	57.0	33.0	19.0	11.000	7.777	5.577	9.533	5.500	3.176	2	1		1	1	1	1108
11.5	53.0	30.0	17.0	11.500	8.131	5.831	9.966	5.750	3.320	2			1	1	1	1133
12.0	50.0	29.0	16.0	12.000	8.484	6.084	10.399	6.000	3.464	2	1	1	1	1	1	1220



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Modulift (150Nm):



Modulift 34 - User Instructions

TABLE B2: Load v Span.

Span / m	SWL / t	Min Sling Length/m	Recommended Configuration. EU - End Unit (0.5m)							Variation on config.
1	34	0.7	EU	EU						
1.5	34	1.1	EU	0.5	EU					
2	34	1.5	EU	1	EU					
2.5	34	1.8	EU	1	0.5	EU				
3	34	2.2	EU	2	EU					
3.5	32	2.5	EU	2	0.5	EU				
4	29	2.9	EU	2	1	EU				
4.5	25	3.2	EU	0.5	2	1	EU			
5	21	3.6	EU	2	2	EU				
5.5	18	3.9	EU	2	2	0.5	EU			
6	15	4.3	EU	2	2	1	EU			
6.5	13	4.6	EU	0.5	2	2	1	EU		
7	11	5.0	EU	2	2	2	EU			
7.5	9	5.3	EU	0.5	2	2	2	EU		
8	8	5.7	EU	2	2	2	1	EU		

Maximum number of sections per spreader: 7

VARIATION ALLOWED

Assembly Procedure.

1. Check the data plates on each Modulift component to ensure the correct size Modulift will be used for the planned lift.
2. Lay out the struts and end units in the correct configuration (see table B2) on the floor. Make sure all components are on flats to prevent rolling.
3. Check that all pairs of flanges are clear from debris, sand etc. before connection.
4. Bolt the components together using bolts, nuts & washers provided (4 per connection). Tighten the bolts to a torque of 150Nm.
5. Place a drop link inside the jaw of an end unit, so that the larger hole of the drop link is lined up with the hole in the end unit.
6. Place a top sling onto the body of a top shackle, and put jaw of top shackle over the end unit jaw.
7. Put top shackle pin through shackle, end unit jaw and drop link.
8. Repeat for other spreader beam end.
9. Attach free ends of top slings to crane hook.
10. Attach lower slings and shackles to lower holes of drop links.
11. The assembled spreader beam and lifting rig must be thoroughly checked by a competent person prior to lifting.