



## LIFTING CHARTS - Crawler Cranes

### MANITOWOC MODEL 999 - 275 TON CAPACITY

#### WIND CONDITIONS

##### MODEL 999

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### General

Wind adversely affects lifting capacity and stability as shown in Figure 1. The result could be loss of control over the load and crane, even if the load is within the crane's capacity.

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#### WARNING



**TIPPING CRANE HAZARD!** Judgment and experience of qualified operators, job planners, and supervisors must be used to compensate for affect of wind on lifted load and boom by reducing ratings, reducing operating speeds, or a combination of both.

Failing to observe this precaution can cause crane to tip or boom and/or jib to collapse. Death or serious injury to personnel can result.

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Wind speed (to include wind gusts) must be monitored by job planners and supervisors.

*Beware that wind speed at the boom or jib point can be greater than wind speed at ground level. Also beware that the larger the sail area of the load, the greater the wind's affect on the load.*

As a general rule, ratings and operating speeds must be reduced when:

***Wind causes load to swing forward past allowable operating radius or sideways past either boom hinge pin.***

# STERLING CRANE

## WIND CONDITIONS

### Manitowoc Recommendations

#### Operation Permitted

Operation is permitted in steady winds or wind gusts up to 35 mph (56 km/hr). However, ratings must be reduced the amount given in Tables 1 through 4 when the corresponding wind speed is reached.

For boom or boom and fixed jib in steady winds or wind gusts above 25 mph (40 km/hr) *at front of boom*, do not operate boom higher than 70° with loads less than 6,000 lb (2 722 kg). ***Boom and jib could be blown over backwards if this precaution is not observed.***

For boom and luffing jib in steady winds or wind gusts above 15 mph (24 km/hr) *at front of boom*, do not operate luffing jib higher than 55° with loads less than 2,800 lb (1 270 kg). ***Boom and jib could be blown over backwards if this precaution is not observed.***

Table 1

#### Rating Reductions for Various Wind Speeds and Wind Gusts

WHEN EQUIPPED WITH #82 OR 22EL BOOM ONLY

Boom Length ft (m)		70 – 180 (21.3 – 54.9)	190 – 240 (57.9 – 73.2)	250 – 290 (76.2 – 88.4)
Maximum Wind Speed		Percent Rating Reduction		
(mph)	(m/s)			
15	7	0	0	0
20	9	0	0	10
25	11	0	0	20
30	13	0	10	40
35	16	0	20	60
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED		

Table 2

#### Rating Reductions for Various Wind Speeds and Wind Gusts

WHEN EQUIPPED WITH #82 OR 22EL BOOM AND #134 FIXED JIB

Fixed Jib Length ft (m)		30 – 60 (9.1 – 18.3)			70 – 80 (21.3 – 24.4)	
Boom Length ft (m)		90 – 200 (27.4 – 61.6)	210 – 250 (64.0 – 76.2)	260 – 270 (79.2 – 82.3)	90 – 200 (27.4 – 61.0)	210 – 250 (64.0 – 76.2)
Maximum Wind Speed		Percent Rating Reduction				
(mph)	(m/s)					
15	7	0	0	0	0	0
20	9	0	0	0	0	0
25	11	0	0	10	0	0
30	13	0	10	40	0	30
35	16	0	30		10	
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED				

Table 3

**Rating Reductions for Various Wind Speeds and Wind Gusts**  
WHEN EQUIPPED WITH #82 OR 22EL BOOM AND #135 LUFFING JIB

Luffing Jib Length ft (m)		70 – 110 (21.3 – 33.5)			120 – 150 (36.6 – 45.7)			160 – 170 (48.8 – 51.8)		
Boom Length ft (m)		70 – 120 (21.3 – 36.6)	130 – 160 (39.6 – 48.8)	170 – 200 (51.8 – 61.0)	70 – 120 (21.3 – 36.6)	130 – 160 (39.6 – 48.8)	170 – 200 (51.8 – 61.0)	70 – 120 (21.3 – 36.6)	130 – 160 (39.6 – 48.8)	170 – 200 (51.8 – 61.0)
Maximum Wind Speed		Percent Rating Reduction								
mph	m/s									
15	7	0	0	0	0	0	0	0	0	0
20	9	0	0	0	0	0	0	0	0	0
25	11	0	0	0	0	10	50	0	50	
30	13	0	0	20	30					
35	16	0	20							
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED								

Table 4

**Rating Reductions for Various Wind Speeds and Wind Gusts**  
WHEN EQUIPPED WITH #82 OR 22EL BOOM, #135 LUFFING JIB AND #138 FIXED JIB

Total combination length ft (m)		330 – 350 (100.6 – 106.7)	360 – 380 (109.7 – 115.8)	390 – 430 (118.9 – 131.0)
Maximum Wind Speed		Percent Rating Reduction		
mph	m/s			
15	7	0	0	0
20	9	0	40	
Above 20 mph (9 m/s)		OPERATION NOT PERMITTED		

### Operation Not Permitted

**NOTE:** For special conditions not covered below, contact Technical Services Department at factory.

#### Up to 50 mph (22 m/s) —

- For boom or boom and fixed jib, park crane (upper in line with crawlers) with load blocks and weight balls on ground or secured and position boom no higher than 70°.
- For boom and luffing jib (with or without fixed jib), park crane (upper in line with crawlers) with load blocks and weight balls on ground or secured and position boom at 65° and luffing jib at 55°.

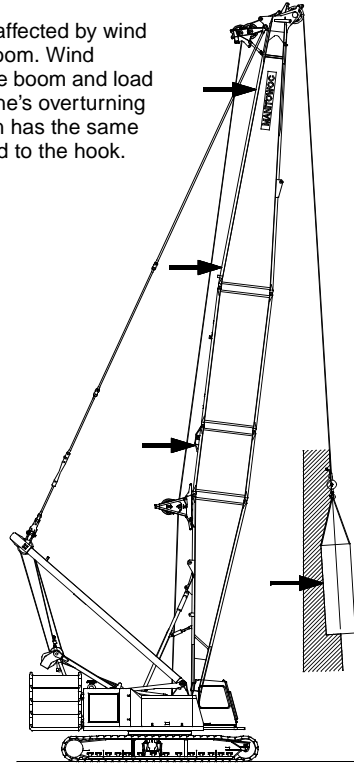
#### 50 mph (22 m/s) and Above —

- Lower boom and jibs onto blocking at ground level.

# STERLING CRANE

## WIND CONDITIONS

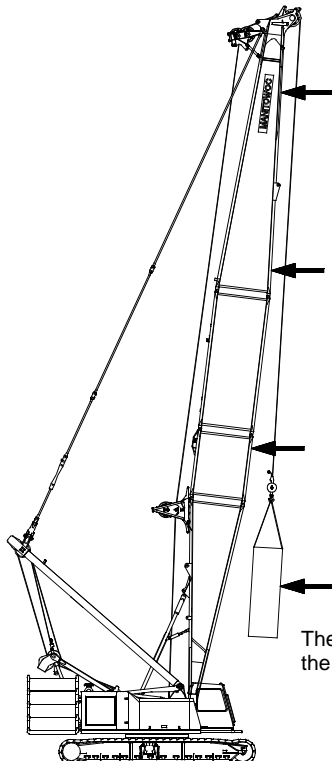
Forward stability is affected by wind on the rear of the boom. Wind applies a force to the boom and load that adds to the crane's overturning moment. This action has the same effect as adding load to the hook.



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The wind's affect on the rear of the load increases load radius. This condition can result in an overload hazard, possibly causing the crane to tip or the boom to collapse.

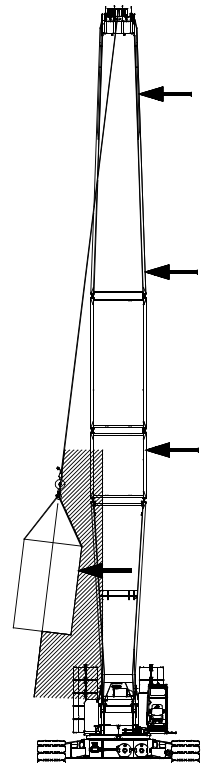
To avoid this hazard, reduce operating speeds and load (see tables for recommended capacity reductions).



Backward stability is affected by wind on the front of the boom. This condition is especially dangerous when the boom is at or near the maximum angle when operating without load.

Wind forces on the front of the boom reduce the normal forward tipping effect of the boom. The crane can tip or the boom can collapse if this condition is not avoided.

The boom can buckle and collapse if the load contacts the boom.



Boom strength is affected the most when the wind acts on the side of the boom.

The wind's affect on the side of the load can cause the load to swing out past the boom hinge pin. This condition can result in excessive side load forces on the boom, possibly causing the crane to tip or the boom to collapse.

To avoid this hazard, reduce operating speeds and load (see tables for recommended capacity reductions).

FIGURE 1