
WIND CONDITIONS

Model 555

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GENERAL



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.

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.

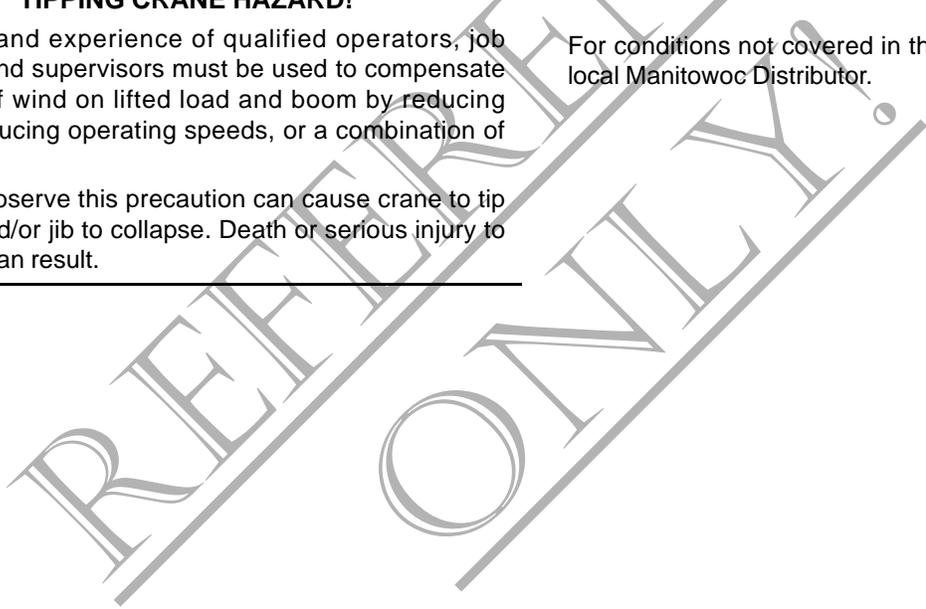
Wind speed (to include wind gusts) must be monitored by job planners and supervisors.

Beware that wind speed at boom 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.

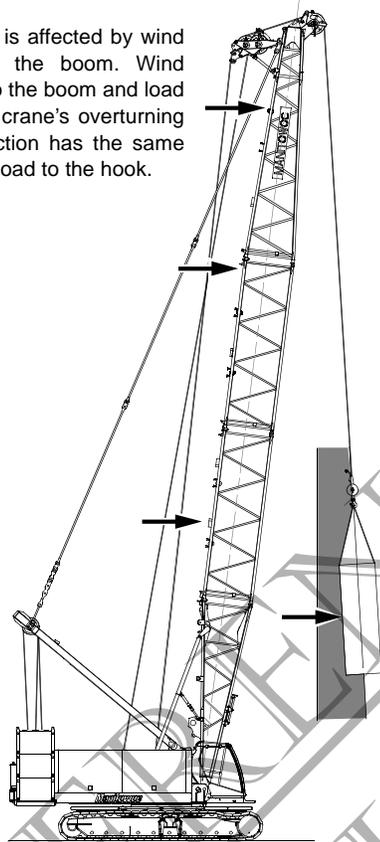
As a general rule, ratings and operating speeds must be reduced when:

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

For conditions not covered in this publication, contact your local Manitowoc Distributor.



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.



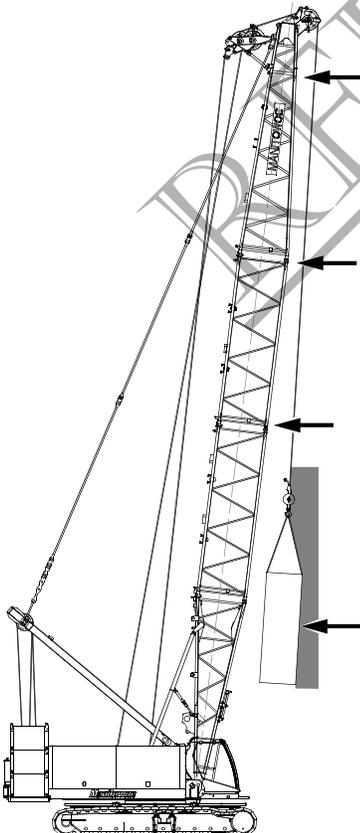
The wind's affect on the rear of the load increases load radius. This condition can result in an overload hazard, possibly causing the crane to tip or the boom to collapse.

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

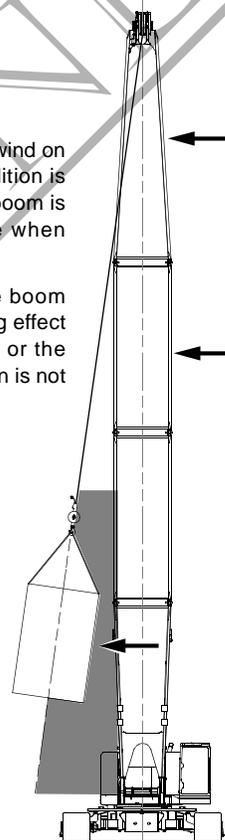


FIGURE 1

RATING REDUCTIONS/OPERATION NOT PERMITTED

#84 Boom Only

OPERATION PERMITTED

Operation is permitted in steady winds or wind gusts up to the maximum speed given in Table 1, provided ratings are reduced the specified amount.

Table 1

Rating Reductions for Various Wind Speeds and Wind Gusts

Boom Length ft (m)		50-150 (15,3-45,7)	160-220 (48,8-67,1)	230-250 (70,1-76,2)
Maximum Wind Speed		Percent		
mph	m/s	Rating Reduction		
15	7	0	0	0
20	9	0	0	20
25	11	0	10	30
30	13	0	20	40
35	16	0	30	60
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED		

For operation in steady winds or wind gusts above 25 mph (11 m/s) *at front of boom*, do not operate boom higher than 75° with loads less than 4,000 lb (1 810 kg). **Boom could be blown over backwards if this precaution is not observed. Refer to capacity chart for specific backward stability problems (b on capacity chart).**

OPERATION NOT PERMITTED

Operation is not permitted when wind speed is above the following limits or when wind gusts above these limits are expected:

- Up to 50 mph (22 m/s) –
Park crane (upper in line with crawlers) with load blocks and weight balls on ground or secured and position boom at 68°.
- 50 mph (22 m/s) and Above –
Lower boom onto blocking at ground level.

#84 Boom with #134 Fixed Jib**OPERATION PERMITTED**

Operation is permitted in steady winds or wind gusts up to the maximum speed given in Table 2, provided ratings are reduced the specified amount.

Table 2

Rating Reductions for Various Wind Speeds and Wind Gusts

Jib Length ft (m)		30-60 (9,1-18,3)			70-80 (21,3-24,4)		
Boom Length ft (m)		90-130 (27,4-39,6)	140-180 (42,7-54,9)	190-220 (57,9-67,1)	90-130 (27,4-39,6)	140-180 (42,7-54,9)	190-220 (57,9-67,1)
Maximum Wind Speed		Percent Rating Reduction					
mph	m/s						
15	7	0	0	0	0	0	0
20	9	0	0	10	0	0	10
25	11	0	10	10	0	10	10
30	13	0	10	20	0	10	20
35	16	0	10	40	0	20	40
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED					

For operation in steady winds or wind gusts above 20 mph (9 m/s) *at front of boom*, do not operate boom higher than 65° with loads less than 1,500 lb (680 kg). **Boom and fixed jib could be blown over backwards if this precaution is not observed.**

OPERATION NOT PERMITTED

Operation is not permitted when wind speed is above the following limits or when wind gusts above these limits are expected:

90-190 ft (27,4-57,9 m) #84 Boom with #134 Fixed Jib

- Up to 50 mph (22 m/s) –
Park crane (upper in line with crawlers) with load blocks and weight balls on ground or secured and position boom at 68°.
- 50 mph (22 m/s) and Above –
Lower boom and jib onto blocking at ground level.

200-220 ft (42,1-67,1 m) #84 Boom with #134 Fixed Jib

- Up to 40 mph (18 m/s) –
Park crane (upper in line with crawlers) with load blocks and weight balls on ground or secured and position boom at 68°.
- 40 mph (18 m/s) and Above –
Lower boom and jib onto blocking at ground level.

#84 Boom with #155 Luffing Jib**OPERATION PERMITTED**

Operation is permitted in steady winds or wind gusts up to the maximum speed given in Table 3, provided ratings are reduced the specified amount.

Table 3

Rating Reductions for Various Wind Speeds and Wind Gusts

Luffing Jib Length ft (m)		60-90 (18,3-27,4)			100-130 (30,5-39,6)			140-160 (42,7-48,8)		
Boom Length ft (m)		60-90 (18,3-27,4)	100-130 (30,5-39,6)	140-170 (42,7-51,8)	60-90 (18,3-27,4)	100-130 (30,5-39,6)	140-170 (42,7-51,8)	60-90 (18,3-27,4)	100-130 (30,5-39,6)	140-170 (42,7-51,8)
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	10	0	0	60
25	11	0	0	10	0	10	60	10		
30	13	0	0	20	30	60				
35	16	0	20							
Above 35 mph (16 m/s)		OPERATION NOT PERMITTED								

For operation in steady winds or wind gusts above 15 mph (7 m/s) *at front of boom*, do not operate luffing jib higher than 55° with loads less than 4,000 lb (1 810 kg). For operation in steady winds or wind gusts above 25 mph (11 m/s) *at front of boom*, do not operate luffing jib higher than 55° with loads less than 7,500 lb (3 400 kg). **Boom and luffing jib could be blown over backwards if this precaution is not observed. Refer to luffing jib capacity chart for specific backward stability problems (b on capacity chart).**

OPERATION NOT PERMITTED

Operation is not permitted when wind speed is above the following limits or when wind gusts above these limits are expected:

- Up to 50 mph (22 m/s) –
Park crane (upper in line with crawlers) with load block and weight balls on ground or secured and position boom at 80° and luffing jib at 55°.
- 50 mph (22 m/s) and Above –
Lower boom and luffing jib onto blocking at ground level.

#84 Boom with #155 Luffing Jib and #138A Fixed Jib

OPERATION PERMITTED

Operation is permitted in steady winds or wind gusts up to the maximum speed given in Table 4, provided ratings are reduced the specified amount.

Table 4
Rating Reductions for Various Wind Speeds and Wind Gusts

Boom Length ft (m)		120-140 (36,6-42,7)		120-140 (36,6-42,7)		160-170 (48,8-51,8)		160-170 (48,8-51,8)	
Fixed Jib Length ft (m)		30-40 (9,1-12,2)	30-40 (9,1-12,2)	50-60 (15,2-18,3)	50-60 (15,2-18,3)	30-40 (9,1-12,2)	30-40 (9,1-12,2)	50-60 (15,2-18,3)	50-60 (15,2-18,3)
Luffing Jib Length ft (m)		140 (42,7)	150-160 (45,7-48,8)	140 (42,7)	150-160 (45,7-48,8)	140 (42,7)	150-160 (45,7-48,8)	140 (42,7)	150-160 (45,7-48,8)
Maximum Wind Speed		Percent Rating Reduction							
mph	m/s								
10	5	0	0	0	0	0	0	0	0
15	7	0	10	10	30	10	30	30	50
20	9	40				60			
Above 20mph (9m/s)		OPERATION NOT PERMITTED							

For operation in steady winds or wind gusts at front of boom when 30 ft (9,1m) fixed jib is attached to luffing jib, do not operate luffing jib higher than 65 degrees with loads less than 1,300 lb. (590 kg) suspended beneath fixed jib point.
Fixed jib could be blown over backwards if this precaution is not observed.

OPERATION NOT PERMITTED

Operation is not permitted when wind speed is above the following limits or when wind gusts above these limits are expected:

- Up to 30 mph (13 m/s) –
Park crane (upper in line with crawlers) with load block and weight balls on ground or secured and position boom at 80° and luffing jib at 60°.
- 30 mph (13 m/s) and Above –
Lower boom and luffing jib onto blocking at ground level.