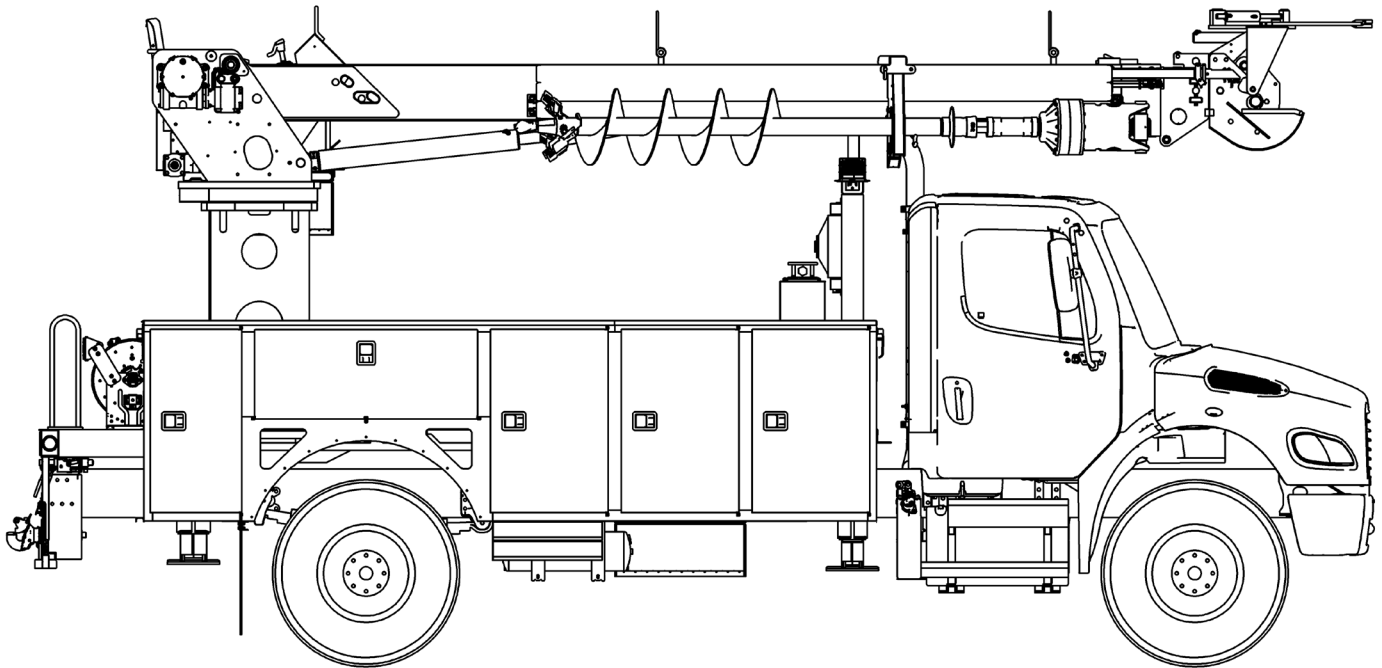




# TECH TIPS

SELECTING CAPACITY AND LENGTH OF LOAD LINE

NO. 155



**SERVICE CALL:**  
SELECTING CAPACITY AND  
LENGTH OF LOAD LINE



**MODEL(S):**  
ALL TEREX UTILITIES DIGGER  
DERRICKS



**TOOLS NEEDED:**  
NONE

TEREX UTILITIES TECHNICAL SUPPORT TEAM

PHONE: 1-844-TEREX4U (1-844-837-3948) | EMAIL: [UTILITIES.SERVICE@TEREX.COM](mailto:UTILITIES.SERVICE@TEREX.COM)



## **DANGER**

Failure to obey the instructions and safety rules in the appropriate Operator's Manual and Service Manual for your machine will result in death or serious injury.

Many of the hazards identified in the Operator's Manual are also safety hazards when maintenance and repair procedures are performed.

## **DO NOT PERFORM MAINTENANCE UNLESS:**

- ✓ You are trained and qualified to perform maintenance on this machine.
- ✓ You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- ✓ You have the appropriate tools, lifting equipment and a suitable workshop.

The information contained in this Tech Tip is a supplement to the Service Manual. Consult the appropriate Service Manual of your machine for safety rules and hazards.



TECH TIP 155 | RELEASED 12.18.2023 | VERSION 1.0  
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# STEP 1

There are two main points to consider when replacing the load line on a digger derrick. First, it must have at least the same breaking strength as indicated on the unit's load chart. Second, when the boom is fully elevated and extended, the load line needs to be long enough to touch the ground.

# STEP 2

In Figure 1, the load chart shows a minimum breaking strength of 37,200 lbs.

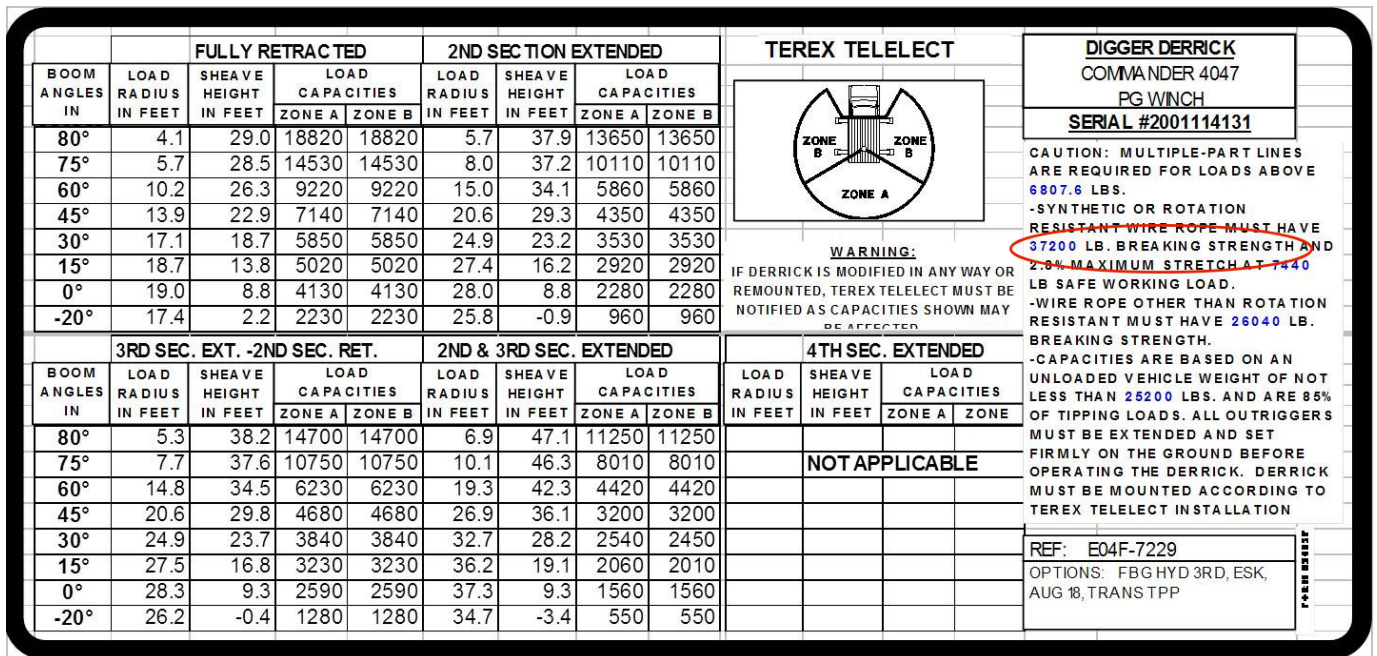


FIGURE 1

### STEP 3

We have several charts to assist in picking a load line length. Having a Commander 4047 with a PG winch as in the first example and using the load chart above, boom at maximum elevation, 2nd and 3rd section fully extended, we have a sheave height of 47.1 feet.

Using the chart on the next page, the unit requires a 1-inch load line that is 64 feet long.

Sheave Height including Jibs	Single Part			
	Turntable Winch		Boom Tip Winch	
	Worm	Planetary	3-4000	5-6-7000
40'	1 1/8 X 80'	1 1/8 X 80'	1 X 56'	1 1/8 X 56'
45'	1 1/8 X 90'	1 1/8 X 90'	1 X 61'	1 1/8 X 61'
47'	1 1/8 X 94'	1 1/8 X 94'	1 X 64'	1 X 64'
50'	1 1/8 X 100'	1 1/8 X 100'	7/8 X 68'	1 X 68'
55'	1 1/8 X 110'	1 1/8 X 110'	7/8 X 78'	1 X 73'
60'	1 1/8 X 120'	1 1/8 X 120'	7/8 X 88'	1 X 80'
65'	1 X 130'	1 1/8 X 130'	3/4 X 98'	7/8 X 90'
70'	1 X 140'	1 1/8 X 140'	3/4 X 108'	7/8 X 96'
75'	1 X 150'	1 1/8 X 150'	NA	3/4 X 106'
80'		1 1/8 X 160'	NA	3/4 X 116'
85'		1 1/8 X 170'	NA	3/4 X 126'
90'		1 1/8 X 180'	NA	3/4 X 136'
95'		1 1/8 X 190'	NA	NA
100'		1 1/8 X 200'	NA	NA
105'		1 X 210'	NA	NA
110'		1 X 220'	NA	NA
115'		1 X 230'	NA	NA
120'		1 X 240'	NA	NA
125'		1 X 250'	NA	NA
130'		7/8 X 260'	NA	NA

**NOTE:**

Standard rope diameter and length will be determined by boom length, see chart.

Rope length must allow hooks to touch the ground with booms & jib at full extension at maximum angle.

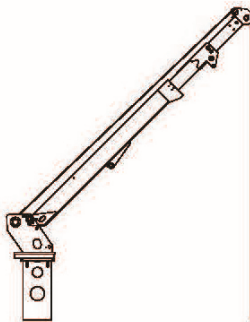
Stable braid has a single part line capacity of 7,840 lbs for 1" diameter rope and 9,640 lbs for 1 1/8" diameter.

Additional rope styles are available. Variation from stable braid rope will effect pricing and length.

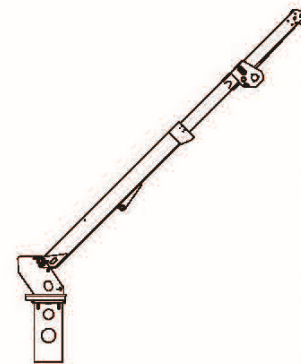
Maximum rope length on C4000 units with PG winch is 1" dia of 64'.



**NOTE:** The rope diameter is the maximum diameter to fit the minimum length on the drum.  
The rope length is the minimum length required.



Turntable Winch



Boom Tip Winch

# STEP 4

Using the chart below, the part number for a 1-inch rope that is 65 feet long is: 100312-65.

Stable Braid - Uncoated from Print # 99029							
Length	Diameter (Inches)						
	1/2	9/16	5/8	3/4	7/8	1	1 1/8
	Part Number						
	100307	100308	100309	100310	100311	100312	100313
55	100307-055	100308-055	100309-055	100310-055	100311-055	100312-055	100313-055
60	100307-060	100308-060	100309-060	100310-060	100311-060	100312-060	100313-060
65	100307-065	100308-065	100309-065	100310-065	100311-065	100312-065	100313-065
70	100307-070	100308-070	100309-070	100310-070	100311-070	100312-070	100313-070
80	100307-080	100308-080	100309-080	100310-080	100311-080	100312-080	100313-080
90	100307-090	100308-090	100309-090	100310-090	100311-090	100312-090	100313-090
100	100307-100	100308-100	100309-100	100310-100	100311-100	100312-100	100313-100
110	100307-110	100308-110	100309-110	100310-110	100311-110	100312-110	100313-110
120	100307-120	100308-120	100309-120	100310-120	100311-120	100312-120	100313-120
130	100307-130	100308-130	100309-130	100310-130	100311-130	100312-130	100313-130
140	100307-140	100308-140	100309-140	100310-140	100311-140	100312-140	100313-140
150	100307-150	100308-150	100309-150	100310-150	100311-150	100312-150	100313-150
160	100307-160	100308-160	100309-160	100310-160	100311-160	100312-160	100313-160
170	100307-170	100308-170	100309-170	100310-170	100311-170	100312-170	100313-170
180	100307-180	100308-180	100309-180	100310-180	100311-180	100312-180	100313-180
190	100307-190	100308-190	100309-190	100310-190	100311-190	100312-190	100313-190
200	100307-200	100308-200	100309-200	100310-200	100311-200	100312-200	100313-200
220	100307-220	100308-220	100309-220	100310-220	100311-220	100312-220	100313-220
240	100307-240	100308-240	100309-240	100310-240	100311-240	100312-240	100313-240
260	100307-260	-	100309-260	100310-260	100311-260	100312-260	-
280	100307-280	-	100309-280	100310-280	100311-280	-	-
300	100307-300	-	100309-300	100310-300	100311-300	-	-
320	100307-320	-	100309-320	100320-320	100311-320	-	-
340	-	-	100309-340	100310-340	-	-	-
360	-	-	100309-360	100310-360	-	-	-
380	-	-	100309-380	100310-380	-	-	-
390	-	-	100309-390	100310-390	-	-	-
400	-	-	100309-400	100310-400	-	-	-
420	-	100308-420	100309-420	100310-420	-	-	-
440	-	100308-440	100309-440	100310-440	-	-	-
460	-	100308-460	100309-460	-	-	-	-
480	-	100308-480	100309-480	-	-	-	-
500	100307-500	100308-500	100309-500	-	-	-	-
520	100307-520	100308-520	100309-520	-	-	-	-

# STEP 5

Chart if two parting the line is needed.

Sheave Height including Jibs	Two Part			
	Turntable Winch		Boom Tip Winch	
	Worm	Planetary	3-4000	5-6-7000
40'	1 1/8 X 120'	1 1/8 X 120'	3/4 X 96'	7/8 X 96'
45'	1 X 135'	1 1/8 X 135'	3/4 X 106'	3/4 X 106'
47'	1 X 141'	1 1/8 X 141'	3/4 X 111'	3/4 X 111'
50'	1 X 150'	1 1/8 X 150'	5/8 X 118'	3/4 X 118'
55'	7/8 X 165'	1 1/8 X 165'	5/8 X 133'	3/4 X 128'
60'	7/8 X 180'	1 1/8 X 180'	5/8 X 148'	3/4 X 140'
65'	7/8 X 195'	1 1/8 X 195'	5/8 X 163	5/8 X 155'
70'	3/4 X 210'	1 X 210'	9/16 X 178'	5/8 X 166'
75'	3/4 X 225'	1 X 225'	NA	5/8 X 181'
80'		1 X 240'	NA	5/8 X 196'
85'		1 X 255'	NA	9/16 X 211'
90'		7/8 X 270'	NA	9/16 X 226'
95'		7/8 X 285'	NA	NA
100'		7/8 X 300'	NA	NA
105'		7/8 X 315'	NA	NA
110'		7/8 X 330'	NA	NA
115'		3/4 X 345'	NA	NA
120'		3/4 X 360'	NA	NA
125'		3/4 X 375'	NA	NA
130'		3/4 X 390'	NA	NA

**NOTE:**

Standard rope diameter and length will be determined by boom length, see chart.

Rope length must allow hooks to touch the ground with booms & jib at full extension at maximum angle.

Stable braid has a single part line capacity of 7,840 lbs for 1" diameter rope and 9,640 lbs for 1 1/8" diameter.

Additional rope styles are available. Variation from stable braid rope will effect pricing and length.

Maximum rope length on C4000 units with PG winch is 1" dia of 64'.



**NOTE:** The rope diameter is the maximum diameter to fit the minimum length on the drum.  
The rope length is the minimum length required.



Turntable Winch



Boom Tip Winch

# STEP 6

Chart if three parting the line is needed.

Sheave Height including	Three Part			
	Turntable Winch		Boom Tip Winch	
	Worm	Planetary	3-4000	5-6-7000
40'	7/8 X 160'	1 1/8 X 160'	5/8 X 136'	3/4 X 136'
45'	7/8 X 180'	1 1/8 X 180'	5/8 X 151'	5/8 X 151'
47'	7/8 X 188'	1 1/8 X 188'	5/8 X 158'	5/8 X 158'
50'	7/8 X 200'	1 1/8 X 200'	9/16 X 168'	5/8 X 168'
55'	3/4 X 220'	1 X 220'	9/16 X 188'	5/8 X 183'
60'	3/4 X 240'	1 X 240'	1/2 X 208'	5/8 X 200'
65'	3/4 X 260'	7/8 X 260'	1/2 X 228'	9/16 X 220'
70'	3/4 X 280'	7/8 X 280'	1/2 X 248'	9/16 X 236'
75'	5/8 X 300'	7/8 X 300'	NA	1/2 X 255'
80'		7/8 X 320'	NA	1/2 X 276'
85'		3/4 X 340'	NA	1/2 X 296'
90'		3/4 X 360'	NA	1/2 X 316'
95'		3/4 X 380'	NA	NA
100'		3/4 X 400'	NA	NA
105'		3/4 X 420'	NA	NA
110'		3/4 X 440'	NA	NA
115'		5/8 X 460'	NA	NA
120'		5/8 X 480'	NA	NA
125'		5/8 X 500'	NA	NA
130'		5/8 X 520'	NA	NA

NOTE:

Standard rope diameter and length will be determined by boom length, see chart.

Rope length must allow hooks to touch the ground with booms & jib at full extension at maximum angle.

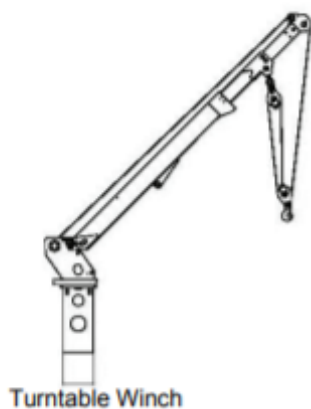
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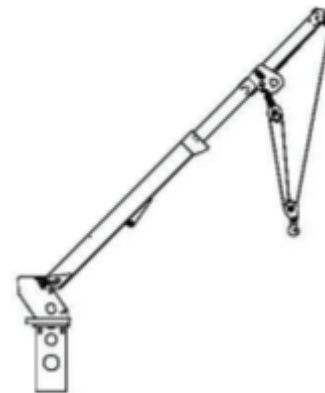
Maximum rope length on C4000 units with PG winch is 1" dia of 64'.



**NOTE:** The rope diameter is the maximum diameter to fit the minimum length on the drum.  
The rope length is the minimum length required.



Turntable Winch



Boom Tip Winch



## STEP 7

The ANSI A10.31 standard requires a minimum of 4 wraps of rope on the winch drum. There are some specific types that require more wraps as per the manufacturer of the load line.

## STEP 8

The chart in step 4 refers to the basic load line we supply, known as Stable Braid. There are numerous other brands and types of load lines. Please contact our Parts department at (844) 837-3948 for assistance in ordering other types.



FOR FURTHER ASSISTANCE,  
CONTACT THE TEREX UTILITIES TECHNICAL SUPPORT TEAM  
PHONE: **1-844-TEREX4U (1-844-837-3948)** | EMAIL: **[UTILITIES.SERVICE@TEREX.COM](mailto:UTILITIES.SERVICE@TEREX.COM)**

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