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SURE STRONG™ WORK WINCH

Instructions for Application, Operation, Maintenance & Inspection. Please read this manual. This information is vital to your safety.

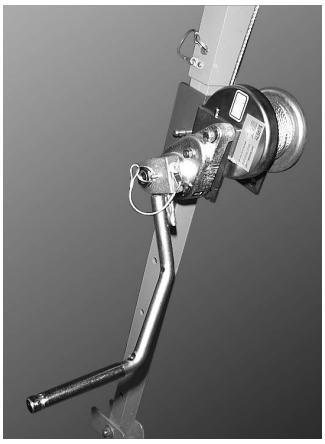
Specification, System A

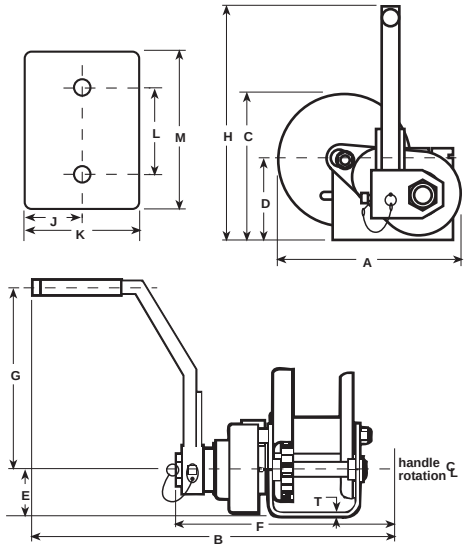
Sure-Strong™ Work Winch
P/N: SCE1074021050

- 3/16" (4.7mm) x 50 ft (15.2m), galvanized wire rope installed, c/w 2.0 lbs (1.0kg) line weight and forged locking swivel hook
- total weight 22 lbs (10kg)
- zinc chromate finish
- automatic load brake
- gear ratio 2.85:1
- tripod mounting bracket and locking pin
- 10" (25cm) removable winch handle with mounting hardware
- safe working load 300 lbs (136kg)
- rescue working load 600 lbs (272kg)

⚠ WARNING

THESE INSTRUCTIONS MUST BE PROVIDED TO THE USER. MANAGEMENT AND USER MUST READ AND UNDERSTAND THESE INSTRUCTIONS; FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.





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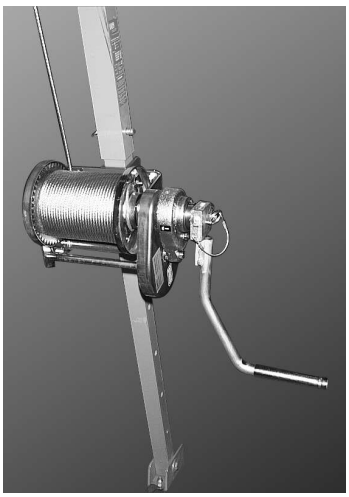
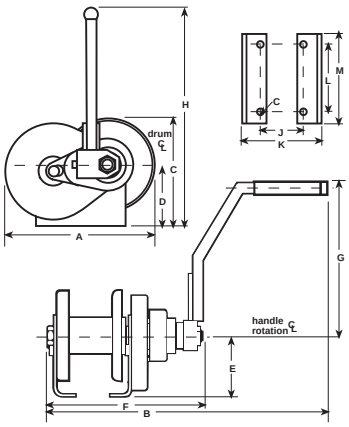
WINCH DIMENSIONS	inch	cm
Spool diameter	1.50	3.81
Flange diameter	5.25	13.34
Spool width	1.84	4.67
A	7.27	18.47
B	16.44	41.76
C	6.14	15.60
D	3.37	8.56
E	2.00	5.08
F	8.05	20.45
G	10.32	26.21
H	12.76	32.41
J	1.84	4.67
K	3.68	9.35
L	2.82	7.16
M	5.00	12.70
S	0.43	1.09
T	0.18	0.46



Sure-Strong™ Work Winch
P/N.: SCE1074411200

- 3/16" (4.7mm) x 200ft (61m) galvanized wire rope installed c/w 2.0 lbs (1.0kg) line weight and forged locking swivel hook
- total weight 48 lbs (21kg)
- zinc chromate finish
- automatic load brake
- gear ratio 3.83:1
- tripod mounting bracket and locking pin
- 10" (25cm) removable winch handle with mounting hardware
- safe working load 300 lbs (136kg)
- rescue working load 600 lbs (272kg)



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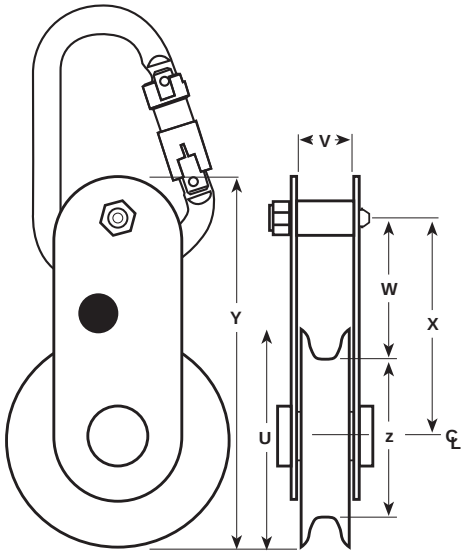
WINCH DIMENSIONS	inch	cm
Spool diameter	2.50	6.35
Flange diameter	6.25	15.88
Spool width	5.92	15.04
A	10.00	25.40
B	22.17	56.31
C	7.05	17.91
D	3.92	9.96
E	3.92	9.96
F	13.78	35.00
G	10.32	26.21
H	14.68	37.29
J	6.31	16.03
K	8.26	20.98
L	5.00	12.70
M	6.00	15.24
S	0.40	1.02
T	0.18	0.46

Pulley Specification

SHLAR001



PULLEY DIMENSIONS	inch	cm
U	3.50	8.89
V	0.84	2.13
W	2.09	5.30
X	3.38	8.58
Y	6.13	15.57
Z	2.50	6.35

HEAD PULLEY #1

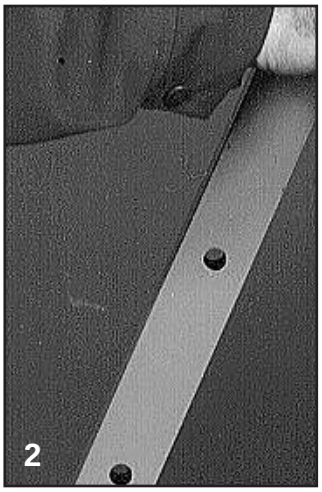
- 3.5" (8.9 cm) stainless steel split pulley
- total weight: 2 lbs (1 kg)

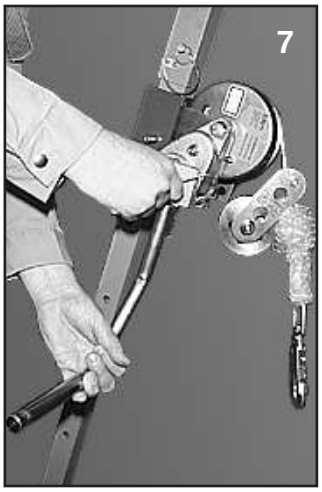
Installation

⚠ WARNING: THE WINCH SHOULD BE INSTALLED ON THE TRIPOD EVEN IF IT IS ANTICIPATED THAT THE SYSTEM WILL ONLY BE USED FOR FALL PROTECTION. ALL CABLE MUST BE REWOUND ON THE WINCH DRUM WHEN THE FALL ARREST SYSTEM IS IN USE. IF POSSIBLE, INSTALL THE WORK WINCH BEFORE EXPOSING THE OPENING.

NOTE: LUBRICATE WINCH BEFORE INSTALLATION

⚠ NOTE: FOR INSTALLATION ON 10' TRIPODS, FIRST UNWIND 15 FEET OF CABLE, INSTALL PULLEY. THEN EXTEND TRIPOD LEGS TO WORKING HEIGHT AND INSTALL WINCH.





- Remove locking pin from work winch mounting bracket.
- Install winch on the inside of one tripod leg in the highest adjustment hole (1).
- Apply tension to cable, unwind approximately five feet from winch drum (turn winch handle counter clockwise) and lay cable on working surface (2).
- Unfasten the pulley anchor bolt with two 1/2 wrenches and rotate side plates to the open position. (3)
- Install cable onto pulley and close side plates.
- Inspect the nut and bolt for wear.
- Re-install bolt and nut through pulley anchor hole. Tighten securely making sure the nylon retainer on the nut is penetrated by the bolt threads. Ensure nylon retainer on nut is not worn out by attempting to undo the nut by hand. If nut can be loosened by hand, the nut must be replaced. Tag and Remove part from service. Immediately contact MSA for replacement. (4)
- Install pulley to the central anchor eye of the tripod by coupling it with a MSA SRCC643 carabiner. (5)
- It is possible to leave the pulley attached to the work winch cable to reduce wear on the nylon retainer nut. (6)
- To install winch handle, insert winch handle in slot on hex adapter and insert 1/4'' pin (7). Winch handle must be fully inserted to ensure 1/4'' pin secures handle.
- Centre tripod over opening (8).

⚠ NOTE: FOR INSTALLATION ON 10' TRIPODS, FIRST UNWIND 15 FEET OF CABLE, INSTALL PULLEY. THEN EXTEND TRIPOD LEGS TO WORKING HEIGHT AND INSTALL WINCH.

⚠WARNINGS:

- **DO NOT OPERATE WINCH WITH LESS THAN 4 WRAPS OF WIRE ROPE ON THE DRUM.**
- **IF THE WINCH HANDLE IS NOT SECURED DURING OPERATION, IT COULD FALL THROUGH THE OPENING. SERIOUS INJURY OR FAILURE OF RETRIEVAL SYSTEM MAY RESULT.**
- **Wire cable is installed when the system is assembled by the manufacturer. MSA Surety is not responsible for the integrity of a system in which the wire cable has been replaced or modified.**

Suspended Work Positioning

⚠WARNINGS:

- **THE SURE-STRONG™ WORK WINCH IS LOAD RATED, HOWEVER WORKERS SUPPORTED BY THE WINCH MUST HAVE THE PROTECTION OF AN APPROVED FALL PROTECTION SYSTEM WHICH IS INDEPENDENT OF THE RAISING AND LOWERING SYSTEM (WINCH, CABLE AND CONNECTOR). EXCEPTIONS ARE PERMISSIBLE ONLY WHEN AN EMERGENCY REQUIRES IMMEDIATE EVACUATION FROM THE CONFINED SPACE.**
- **IN THE UNLIKELY EVENT OF A WINCH FAILURE, A SUSPENDED WORKER CANNOT BE RETRIEVED. ALTERNATE POSITIONING SYSTEMS ARE AVAILABLE TO ENSURE THE WORK WINCH IS ALWAYS AVAILABLE FOR RETRIEVAL.**

1. Work positioning seats and bosun's chairs shall be approved in writing by MSA.

2. Attach the worker to the fall protection system away from the opening or before the opening is exposed.

⚠WARNING:
IF A FALL HAZARD AT THE OPENING CANNOT BE AVOIDED, SET UP THE TRIPOD AWAY FROM THE HAZARD TO COMPLETE STEPS 3 - 5.

3. Position the winch locking swivel hook at a convenient height to allow a trial suspension in the bosun's chair above the working surface.

4. Connect the hook to the bosun's chair hardware and adjust chair for comfort as necessary.

5. Re-check attachments, and inspect all components of the system before exposing the opening.

6. Clear objects and personnel from the suspension path. Do not begin until the operation can be performed without hazard.

7. Perform the operation slowly and smoothly. Turn the handle clockwise to wind wire rope onto drum and lift load. Stabilize the worker over centre of opening before lowering.

8. To lower, apply firm pressure on handle to counteract load brake.Turn in counterclockwise direction.

⚠WARNING:
EFFECTIVE COMMUNICATION WITH THE WORKER IS CRITICAL FOR A SAFE RAISING AND LOWERING PROCEDURE. FOLLOW GUIDELINES AS OUTLINED IN YOUR COMPANY'S CONFINED SPACE ENTRY "CODE OF PRACTICE"

9. Observe wire rope as it winds on or off the drum. If it becomes loose or uneven, stop the operation and rewind the wire rope before continuing.

10. If worker becomes caught on an obstruction immediately stop the operation, reverse the drum slightly, wait for the worker to clear the obstruction and continue the operation.

Function

The Sure-Strong™ Work Winch assembly is used for several functions. It is used in conjunction with the fall protection system and Sure Strong™ Tripod or suspended work positioning (where there is no other means of vertical entry or egress) material handling or as a means of retrieval in an emergency.

The Work Winch and mounting bracket is designed to be installed on one leg of the tripod and secured with a locking pin in the tripod leg adjustment holes. This configuration positions the winch handle at a desirable height, minimizes sway when raising or lowering a load and ensures maximum clearance from the anchoring surface.

A 3/16" wire rope is installed on the winch drum and is redirected over a split pulley mounted at the central anchor point on the tripod. The wire rope is terminated with a swaged eye connected to a forged swivel locking hook and weighted with a 2 lb. lead ball to assist in lowering the hook without a load.

Raising and lowering is a simple operation that can be performed with one operator. An automatic brake mechanism secures the load during pauses in the operation.

Inspection

1. The Work Winch assembly and pulley shall be inspected by the user before each use and additionally by a competent person other than the user at intervals of not more than one year. Inspections must be recorded in the "Daily Inspection and Maintenance Checklist".

2. When inspection reveals defects, damage or inadequate maintenance of any component in the system, the component affected shall be removed from service and undergo adequate corrective maintenance before return to service. Removal from service may imply that defects or damage will result in retiring and replacing some components.

3. Test winch performance before exposing opening by moving a test load of 100 Ibs (45kg):
   - listen for unusual noises and look for signs of damage as you operate the winch;
   - make sure the wire rope winds evenly and tightly onto the drum. If it is loose or uneven, rewind it before continuing;
   - make sure the handle rotates freely in both directions;
   - make sure the brake disc ratchet pawl clicks firmly as the cranking handle is turned clockwise; check the brake by observing coast or creep after stopping load.

4. Remove a system component from service if:
   - it has been subjected to a load that exceeds the maximum working load capacity;
   - markings (labels) are illegible or absent;
   - there is evidence of defects or damage to hardware elements including cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration, inadequate lubrication, excessive aging or excessive wear;
   - there is evidence of improper function, improper fit or alteration of any mechanical component.

5. MSA or persons or entities authorized in writing by the manufacturer shall make repairs to equipment. No unauthorized repairs and/or modifications are allowed.

Maintenance and Storage

1. Maintenance and storage of the system shall be conducted by the user's organization in accordance with MSA instructions. Unique issues, which may arise due to conditions of use, shall be addressed with MSA.

2. Equipment which is in need of or scheduled for maintenance shall be tagged "do not use" and removed from service.

3. All hardware should be wiped with cloth to remove dirt and grease. Clean and lubricate with a light oil to ensure good working order and protect against rust and corrosion. Wipe off excessive amounts of oil to avoid the accumulation of dirt.

4. Store in a clean dry area free from excessive heat, steam, sunlight, harmful fumes and corrosive agents. Rotate the drum periodically to keep bearing and gear surfaces from becoming lacquered.

5. Lubricate the work winch properly to ensure protection from wear and rust. Contact MSA for specific information on lubrication of work winch and wire rope.

- The MSA Sure-Strong™ Confined Space System shall comply to and be used with consideration of all government or other applicable regulations and standards.
- MSA Sure-Strong™ Confined Space System components cannot be used for other applications or in conjunction with other fall protection systems. No additional equipment can be used in the system without written approval of MSA. If the buyer chooses to disregard this warning, the buyer assumes responsibility for the integrity of the entire system.
- Any component that has sustained the force of arresting a fall shall be removed from service. A qualified person shall inspect and recertify the system prior to returning it to active service.
- ALL potential users of this equipment and users management must read and understand the instructions; failure to do so could result in serious injury or death.
- Tripod must be used with leg security strap at all times.
- Do not install or store the winch near corrosive chemicals, flammable materials, explosives or other elements that may damage the winch or injure the operator. Adequately protect the winch and the operator from the above elements as well as excessive heat, cold, wet or dirty environments.
- Clean and lubricate winch before use.
- The winch handle must be turned clockwise to wind wire rope onto drum. If the wire rope unwinds from the drum when the handle is rotated clock-wise, the wire rope is not installed correctly. Consult manufacturer to install wire rope correctly before winch is used.
- Keep at least 4 wraps of wire rope on the drum at all times to serve as anchor wraps. Failure of the winch assembly could result.
- Keep hands away from the drum, gears, wire rope and other moving parts. Keep out of the path of a broken wire rope that could snap back and cause injury. Do not operate the winch while guards are removed or improperly installed.
- Never use the Work Winch cable as fall protection. Do not shock load or exceed the load rating of the equipment.
- Maintain tension on the wire rope while winding the winch drum in or out. Ensure that the cable winds on the drum tightly, uniformly and without overlapping. Performance of the winch will be altered and or damage of the wire rope may result.
- The force required to lift the load increases with each additional layer of wire rope wound onto the drum.
- Do not wrap the wire rope around a load. Use a lifting sling or other approved lifting device.
- Do not leave a suspended load unattended. Place all loads on a working surface and disconnect locking snap if they must be unattended.
- Do not allow the wire rope to drag through dirt or debris that could cause damage or poor operation.
- Do not continue raising a load that has caught on an obstruction. This equipment can multiply forces significantly, resulting in severe injury to a worker. Jammed equipment can result in forces that exceed the load rating of the winch. It is the responsibility of the equipment user to limit the load placed on the system.
- The Sure-Grab™ Fall Arrester is designed to be used on 5/8" (16mm) rope with a minimum breaking strength of 5,600 lbs (25 kN). Use ropes that have been tested and approved by MSA.
- Each tripod anchor eye is designed to have a single fall arrest system.
- Use the Fall Protection System only with the full body harness included. An ill-adjusted harness is not safe or effective.
- Always leave Work Winch locking swivel snap within reach of operator when using fall arrest system.

continued on next page....

- Always check for obstructions below the work area to ensure the potential fall path is clear. Work directly under the tripod. Lateral movement might result in a dangerous or fatal swing fall.
- Do not use synthetic components in the presence of excessive heat, open flame or molten metal. System should not be used in an environment with temperatures exceeding 120ºF (49ºC).
- Connection of fall protection system to user should always be visually checked by another worker. Do not rely on the feel and or sound of an engaging locking snap hook.
- Do not allow synthetic components to come in contact with sharp or abrasive edges or surfaces, especially when under tension. Contact with sharp edges or corners during a fall may result in a partial or complete loss of strength that may lead to serious injury or death to the user.
- Several factors contribute to the total possible fall distance that can be sustained by user of the fall protection system. Ensure that minimum clearances are observed.
- Vertical lifelines will elongate as a result of the force of arresting a fall and will not fully recover to original length while supporting the weight of the fallen worker. When a fall occurs, the amount of elongation will, in part, determine the minimum clearance required as well as the maximum retrieval distance. Elongation varies with load applied, length, maximum breaking strength, material and rope construction.

⚠WARNING: DO NOT USE VERTICAL LIFELINES THAT ARE NOT SPECIFIED FOR THIS SYSTEM. ELONGATION ESPECIALLY IN LONGER SYSTEMS CAN BE EXCESSIVE. FAILURE TO OBSERVE THIS WARNING MAY RESULT IN CONTACT WITH STRUCTURE OR FAILURE OF EMERGENCY RETRIEVAL.

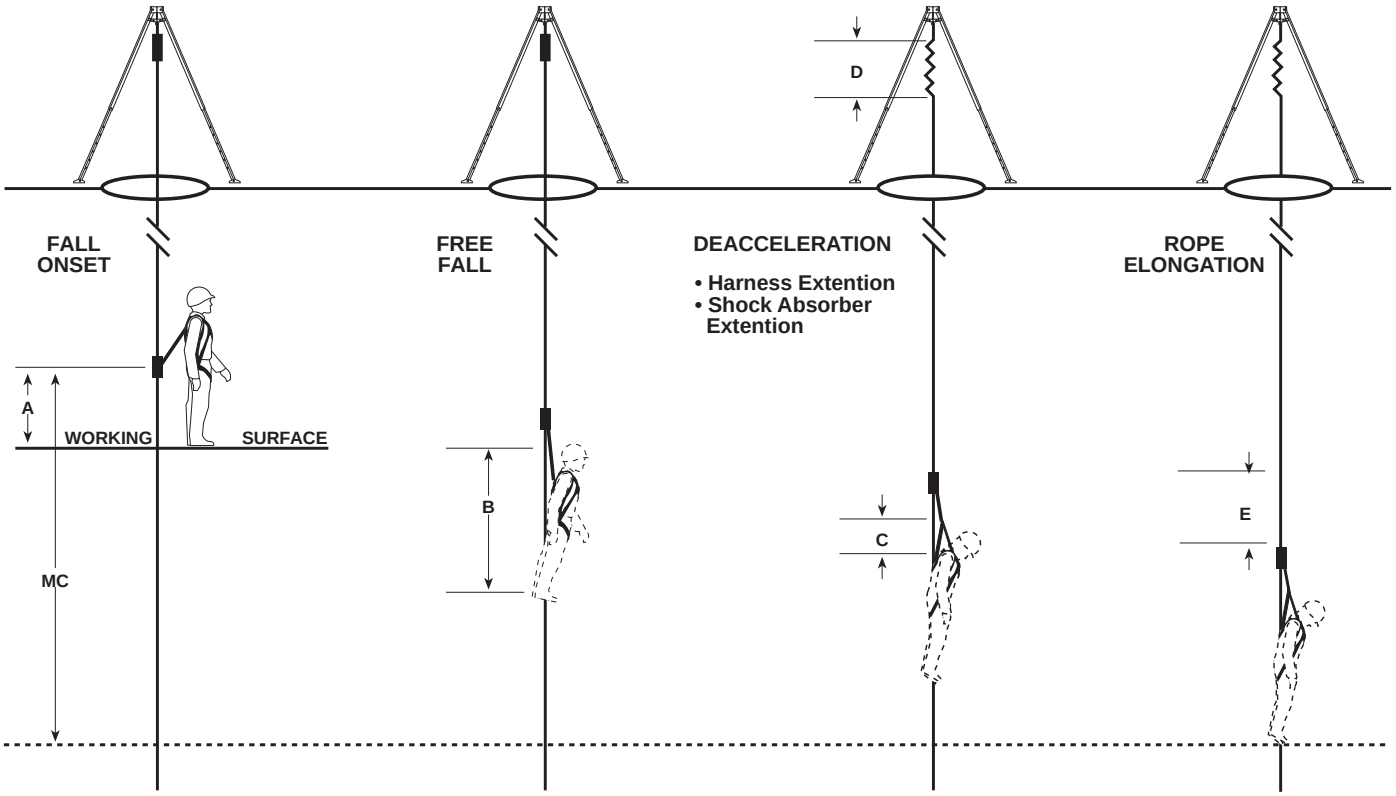
Static Elongation of 5/8” Sure-D-Braid™

ELONGATION

LIFELINE LENGTH	Maximum Arrest Force: 900 lb (4 kN)	Work Load: 300 lb (1.3 kN)
40 ft. (12.2 m)	2.4 ft. (0.73 m)	1.1 ft. (0.34 m)
185 ft. (56.4 m)	9.7 ft. (2.96 m)	3.5 ft. (1.07 m)

Static Elongation of 5/8” Sure-D-Braid™

NOTE: FALL DISTANCE CAN BE SUBSTANTIALLY REDUCED BY SETTING FALL ARRESTER AS HIGH AS POSSIBLE ON LIFELINE WHEN IN A STATIONARY WORKING POSITION.



Minimum Clearance = A + B + C + D + E

Minimum Clearance = height required between fall arrester and obstructions or ground

- **A = Initial height of fall arrester above working surface (only becomes a factor if the worker is not standing erect when fall occurs)**
- **B = Total free fall distance (fall arrester activation = 1.0 ft; lanyard free fall = 2.0 ft)**
- **C = Extension of harness on Dee-ring**
- **D = Maximum shock absorber extension**
- **E = Elongation of lifeline (see chart on page 7)**

Minimum Clearance is calculated using highest (worst case) values.

Minimum Clearance = 3.0 ft + 3.0 ft + 0.5 ft + 3.3 ft + Elongation

Sure-Strong™ System Lifelines
5/8" x 40' MC = 9.8 ft + 2.4ft = 12.2 ft
5/8" x 185' MC = 9.8 ft + 9.7ft = 19.5 ft