

OPERATING INSTRUCTION MANUAL

TUF-Lugger™ with Tuf-Lugger lite™



IMPORTANT SAFETY INSTRUCTIONS

READ ALL INSTRUCTIONS BEFORE USING THE TUF-Lugger™ or Tuf-lugger lite™

WARNING: TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY:

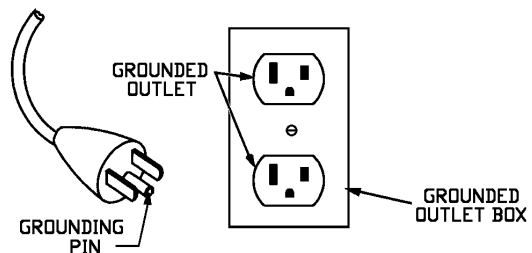
- ✎ The TUF-Lugger™ is an electrical device. Use only as described in this manual.
- ✎ Connect to a properly grounded outlet only. See Grounding Instructions.
- ✎ Do not use with damaged cord or plug.
- ✎ Do not leave the TUF-Lugger™ when plugged in. Unplug from outlet when not in use and before servicing.
- ✎ Do not handle plug or Tuf-lugger lite with wet hands.
- ✎ Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- ✎ Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run over cord. Keep cord away from heated surfaces.
- ✎ Do not remove or modify the 115/230 VAC plug.
- ✎ Do not use in wet or damp locations. Do not expose to rain. Store indoors.
- ✎ Do not use in the presence of flammable liquids or gases.
- ✎ Follow the recommended work cycle of 15min/hr (to prevent overheating)

GROUNDING INSTRUCTIONS

This appliance must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be inserted into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING - Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

This appliance is for use on a nominal 120-volt circuit and has a grounding attachment plug that looks like the plug illustrated in the adjacent sketch. Make sure that the appliance is connected to an outlet having the same configuration as the plug. No adaptor should be used with this appliance.



SAVE THESE INSTRUCTIONS

SPECIFICATIONS

1

OPERATION

5

TRANSPORT

9

ACCESSORIES

10

Duct Guides

11

Extension Arms

12

Floor Mount Adapter

13

Manhole Adapter

14

Universal Adapter

15

Load Monitor

18



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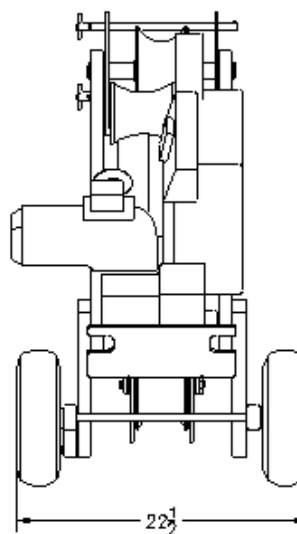
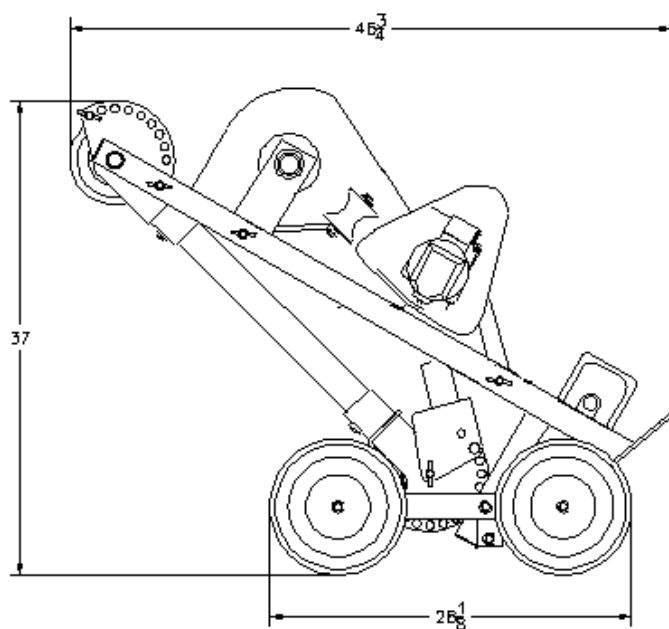
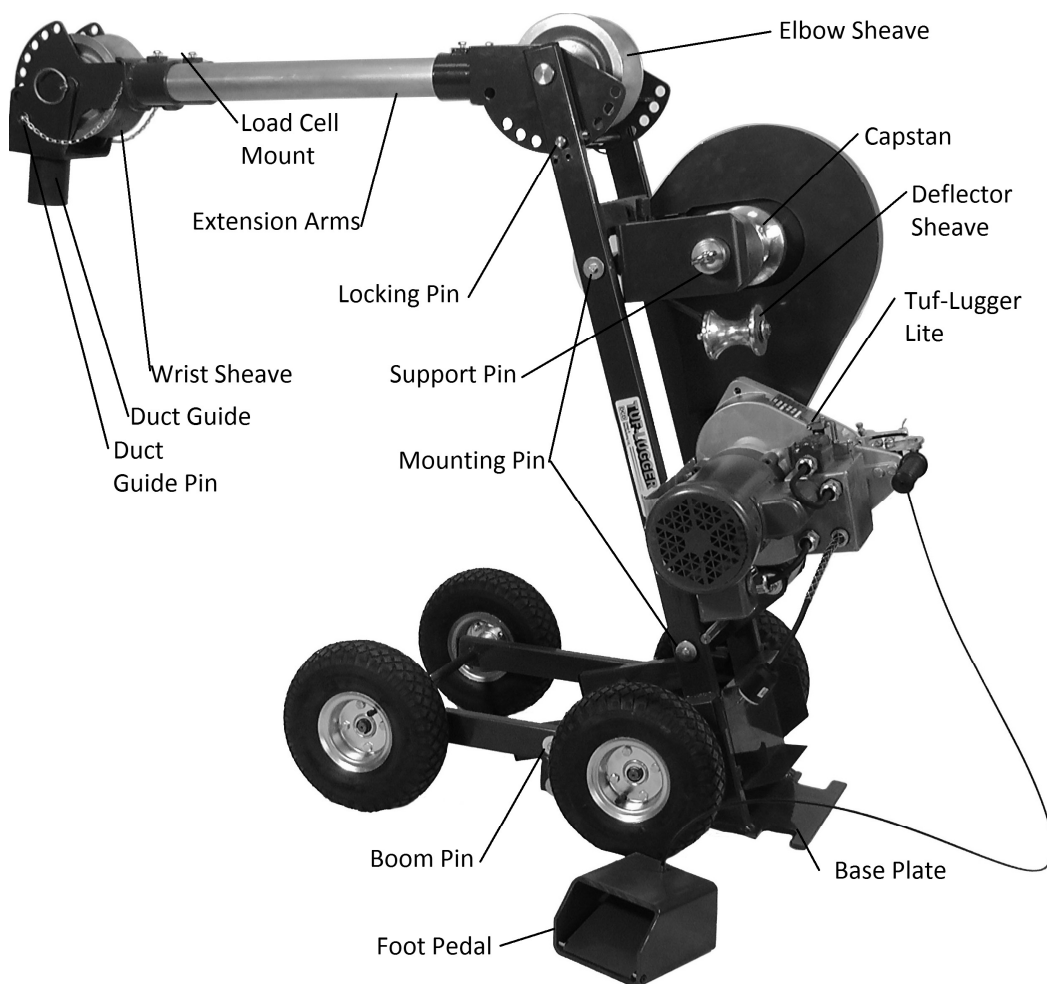
**TUF-Lugger™
42600-000**

Web Site: www.dcdesign.com
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Tel: 604-232-4445
Toll Free : 1-888-794-8357

The TUF-Lugger™ is a capstan winch intended for pulling rope or polyester pull tape. The Tuf-Lugger lite power source is mounted in a wheeled, pulling frame and can be unbolted and operated as a stand alone Tuf-lugger Lite winch, part #41000-500.

- **Footswitch:** Cable actuated
- **Conduit Guides:** Standard 2", 3", 3-1/2", 4"
Optional 2-1/2", 5", 6"
- **Maximum Height:** 6'-6" (can be extended, see accessories)
- **Pulling Forces:** 5,500 lbs continuous, 15min/hr work cycle
- **Pulling Speeds:** 9.3 feet/min.





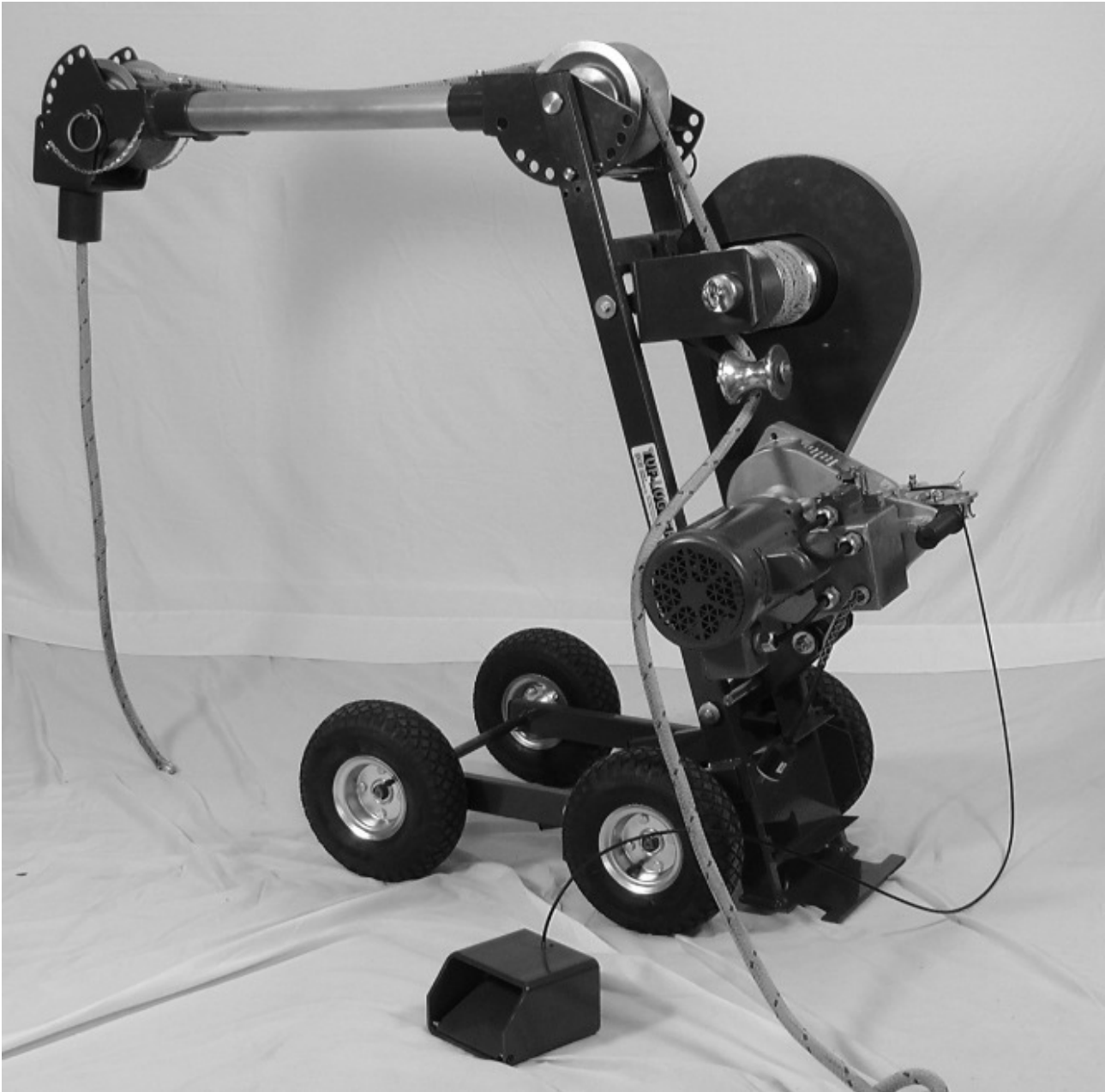
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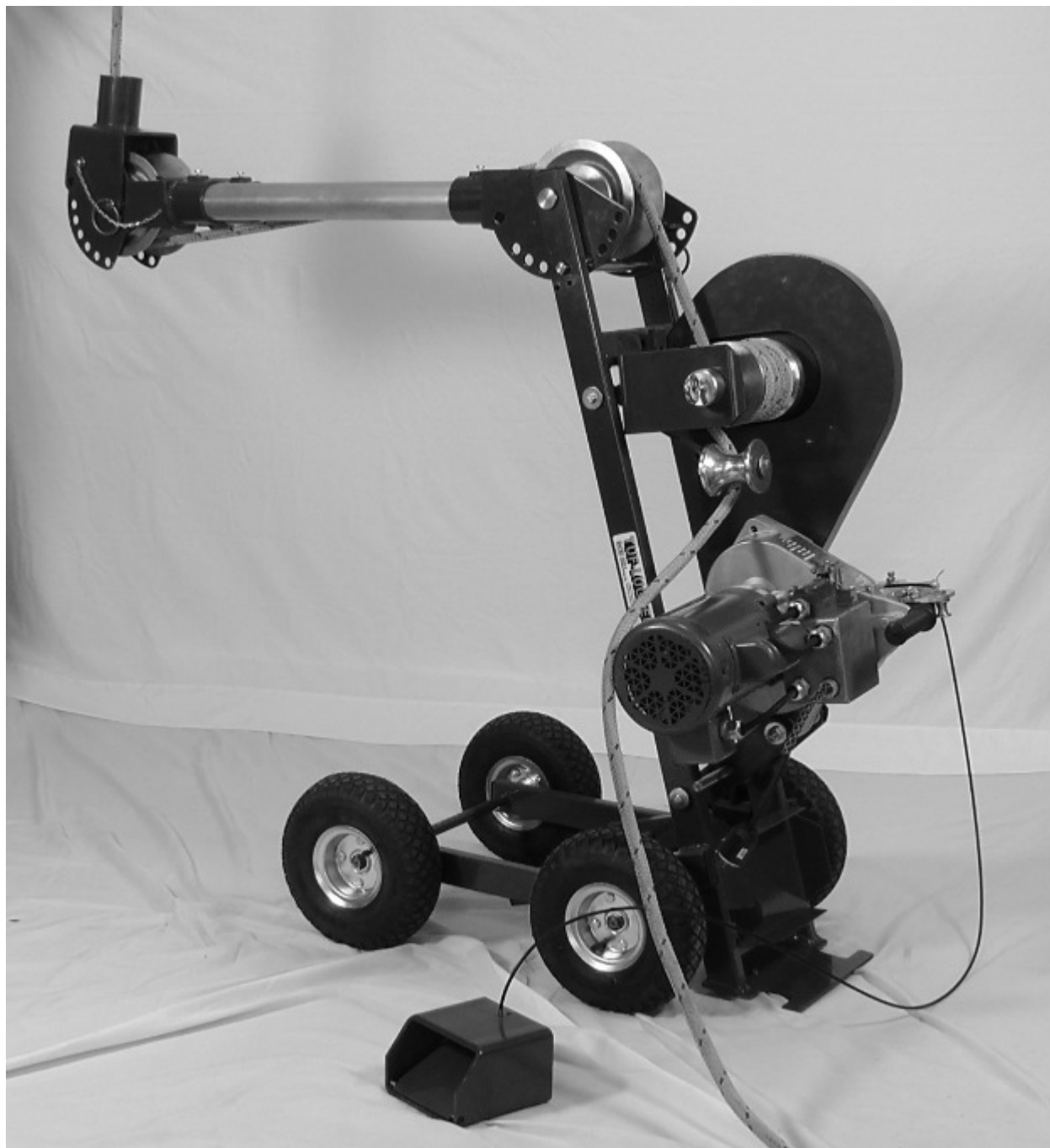
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The TUF-Lugger™ can be configured to suit a variety of premise and outside plant applications. The following sketches detail some of the more common pulling configurations.

In Overhand Configurations (Type A), the rope passes over both sheaves.



In the Underhand Configurations (Type B), the rope passes under the Wrist Sheave, between the Extension Arms, and over the Elbow Sheave.



1

Review the jobsite safety requirements.

Follow Standard procedures when accessing vaults and manholes, including gas detection, ventilation, and work area protection. Failure to do so may result in death or serious injury.



Use extreme caution when working around live electrical circuits. Failure to do so may result in death or serious injury.



Wear recognized safety equipment including hardhat, safety glasses, safety shoes, and leather work gloves. Failure to do so may result in personal injury.

2

Inspect the condition of the TUF-Lugger™, checking for worn or damaged parts.

Have damaged parts replaced by an authorized service center. Any attempt to modify the TUF-Lugger™ or use other than dcd replacement parts will void the warranty and may result in death or serious injury.



Periodically lubricate the drive chains with light machine oil.

3

Examine the condition of the pulling rope. Check for contamination with mud, sand, or dirt. Check for rust discoloration. Check for broken or worn strands.

Use a pulling rope with a maximum rated capacity that meets or exceeds the TUF-Lugger™ maximum pulling force of 5,500 lb. Failure to do so may result in death or serious injury.



Downgrade or discard pulling rope that has been subject to overload, or physical degradation. Failure to do so may result in death or serious injury.



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4

Roll the TUF-Lugger™ into the desired operating location.

5

Uncoil and unload the footswitch cord and power cord.

6

Grasp the spare Locking Pin and tilt the TUF-Lugger™ rearwards until it rests on the base plate.



7

Remove the Locking Pin and rotate the Extension Arm assembly to the desired position. Continue to rotate past the desired position until the next set of pin holes aligns. Replace the Locking Pin.



8

Remove the existing Duct Guide by removing the Guide Pins and Wrist Pin.

9

Select a Duct Guide suitable for the size of conduit being used.



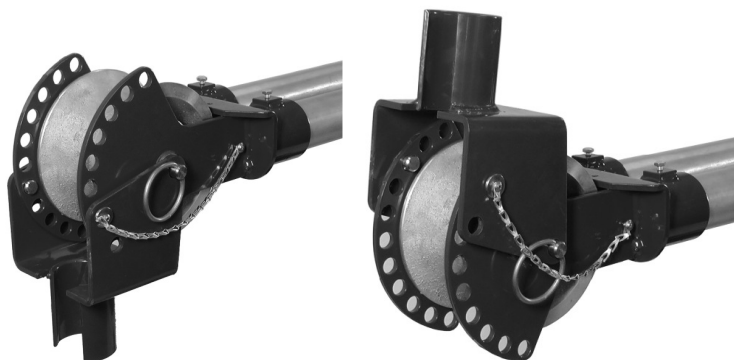
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10

Orient the new Duct Guide depending on the pulling configuration and secure with the Wrist Pin. Rotate the Duct Guide and secure in position using Duct Guide Pins in whichever of the two holes in the Duct Guide that provides the best angular alignment.

**11**

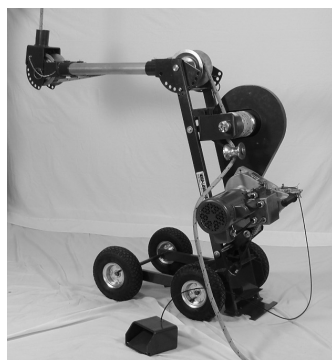
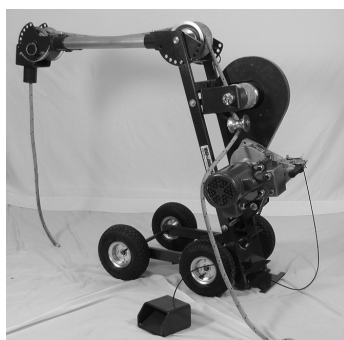
Install the Duct Guide into the conduit.

For overhand configurations (Type A), pivot the TUF-Lugger™ forward to insert the Duct Guide into the conduit. The pulling forces will maintain the frame in this position.

For underhand configurations (Type B), pivot the TUF-Lugger™ forward to position the Duct Guide at the mouth of the conduit. Pivot the frame rearward to allow the Duct Guide to enter the conduit.

12

Install the pulling rope over the sheaves. For overhand configurations (Type A), the rope goes over both sheaves. For underhand configurations (Type B), the rope goes under the Wrist Sheave, between the Extension Arms, and over the Elbow Sheave. Continue the rope clockwise around the capstan and around the deflector sheave.



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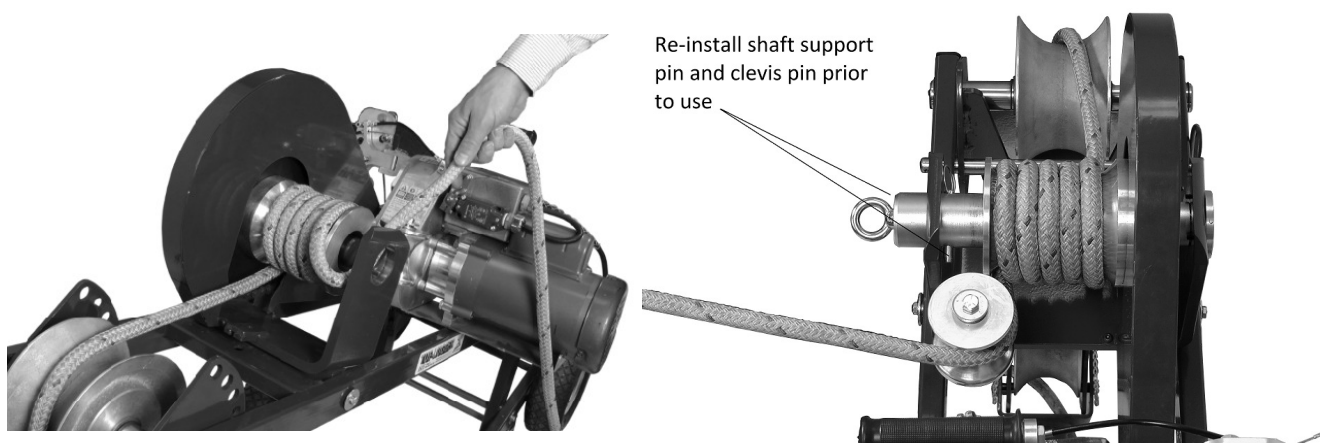
13

Wrap rope around capstan and ensure shaft support pin is in place

Remove the support pin and wrap the rope around the capstan in a counter clockwise direction as shown and around the rope guide.



Important: Replace the shaft support pin and quick release pin prior to use. Failure to do so will cause damage to the machine



14

Plug the TUF-Lugger™ into a 120 V, 15 A grounded outlet or extension cord.

Read all electrical safety instructions located on the first page of this manual before using the TUF-Lugger™. Failure to do so may result in serious injury or death.



Use only a three prong grounded extension cord with the proper wire size for the length of cord. For lengths less than 50ft, use a 14Ga cord as a minimum. Lengths from 50–100ft, use a 12 Ga cord as a minimum. Failure to do so may result in overheating and damage to the electric motor.

15

Manually apply tension to the tail end of the rope and depress the footswitch to begin pulling.

Unload the footswitch and ensure footswitch cable is as straight as possible and untangled to prevent the cable from binding inside. Stand at least 30° to either side of the pulling rope while under load. The pulling rope may fail under tension and release stored energy. Failure to do so may result in death or serious injury.



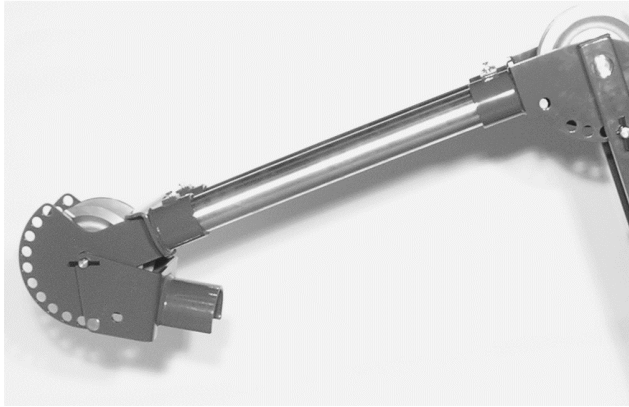
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1

Rotate the Duct Guide into the position shown.

**2**

Rotate the TUF-Lugger™ Extension Arms into the position shown.

**3**

Place the spare locking pin in the elbow plate. Place your foot on the front axle. Grasp the locking pin and pull forwards to pivot the TUF-Lugger™ into the transport position. Wrap the foot switch cord around the winch. Steer the Tuf-lugger by pushing down on the spare locking pin, raising the rear wheel and rotating about the front wheels.

**TRANSPORT**

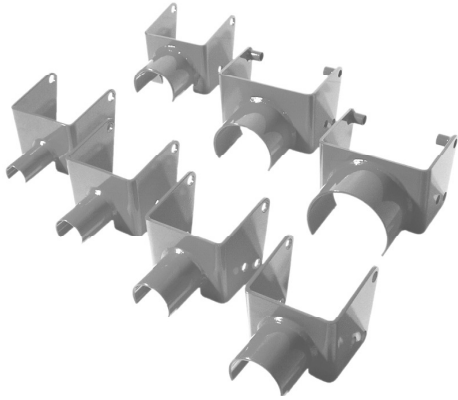
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There are several accessories available for the TUF-Lugger™ to enhance its capabilities.

Duct Guides



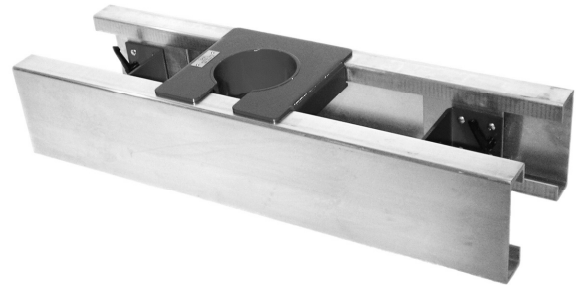
Extension Arms



Floor Mount Adapter



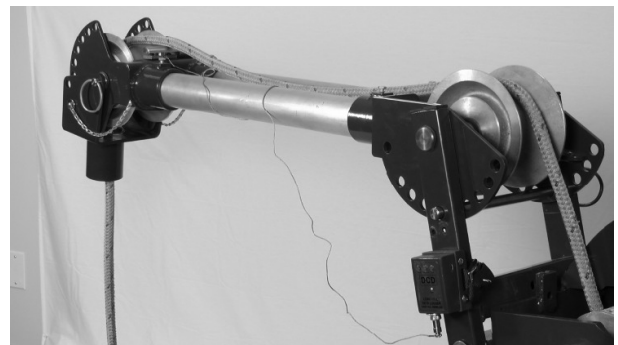
Manhole Adapter



Universal Adapter



Load Monitor



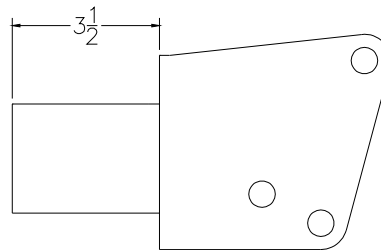
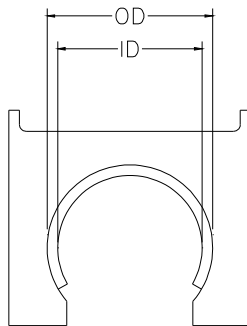
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The TUF-Lugger™ comes standard with Duct Guides to suit 2", 3", 3-1/2", and 4" conduit. Guides are also available as optional accessories to suit 2-1/2", 5", and 6" conduit.

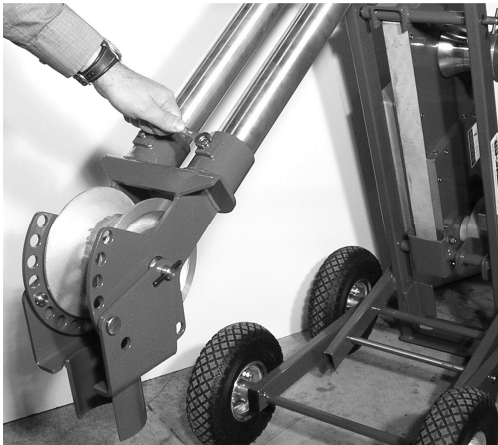
Part Number	Conduit Size	OD	ID	Std	Opt
40010-200	2"	1.91"	1.67"	X	
40010-250	2-1/2"	2.38"	2.07"		X
40010-300	3"	2.88"	2.50"	X	
40010-350	3-1/2"	3.54"	3.11"	X	
40010-400	4"	3.93"	3.43"	X	
40010-500	5"	5.00"	4.50"		X
40010-600	6"	6.00"	5.50"		X



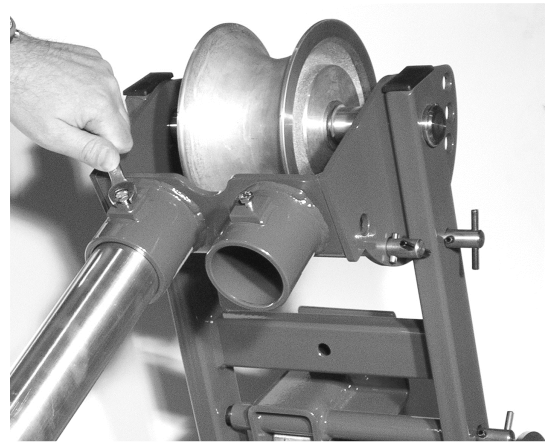
Extension Arms

The range of the TUF-Lugger™ may be extended by replacing the standard Extension Arms with longer sections of 2" steel rigid conduit or 2" Sch40 steel pipe. This will allow higher box pulls and deeper vault pulls.

B1 Loosen the two bolts in the Outboard Arm Fitting and remove the Fitting.



B2 Loosen the two bolts in the Inboard Arm Fitting and remove the Extension Arms.



B3 Cut two identical lengths of 2" steel rigid conduit or 2" Sch40 steel pipe.



Use only 2" steel rigid conduit or 2" Sch40 steel pipe. Failure to do so may result in death or serious injury.



Do not exceed a maximum length of 14 feet. Failure to do so may result in death or serious injury.

B4 Re-assemble the new Extension Arms to the Inboard and Outboard Arm Fittings.



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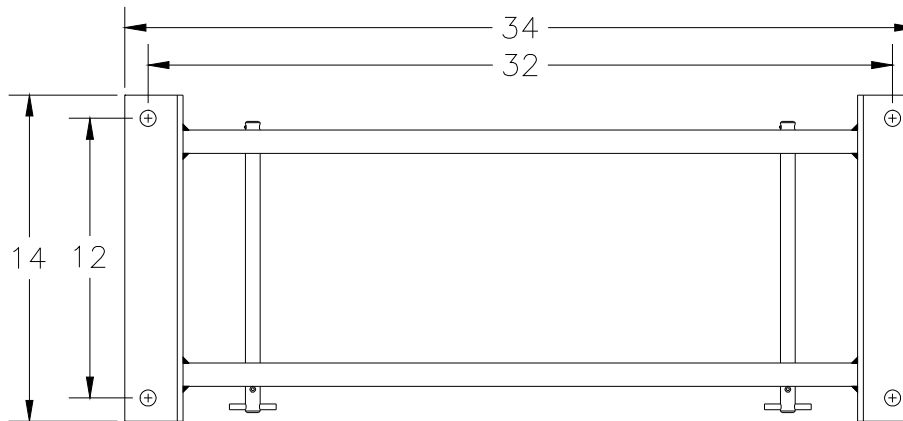
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Floor Mount Adapter

DCD # 40000-400

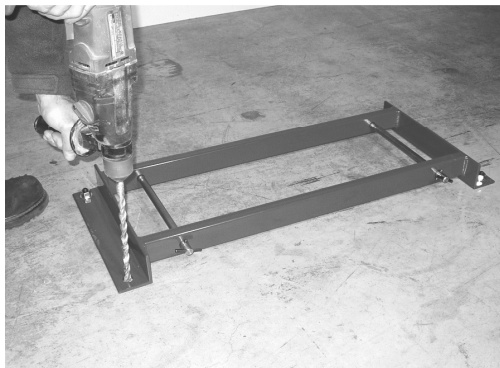
13

TUF-Lugger™ Power Pack may be removed from the frame and secured to a concrete floor using the Floor Mount Adapter.



C1

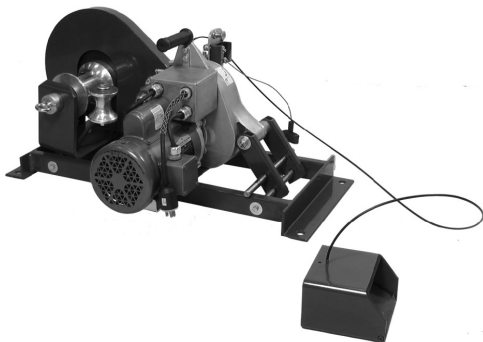
Align the Floor Mount Adapter with the direction of pull and secure to the floor with 4 x 5/8" concrete inserts.



Use only concrete inserts with an ultimate pullout force of 8,000 lb. ensure that they are installed in accordance with the instructions provided by the insert manufacturer. Failure to do so may result in death or serious injury.

C2

Place the TUF-Lugger Lite™ and capstan assembly into the Floor Mount Adapter and secure using the pins provided with the adapter.



For ease of movement, disconnect the TUF-Lugger Lite™ from the Capstan assembly when moving. Use proper lifting technique when moving the power pack. Failure to do so may result in personal injury.



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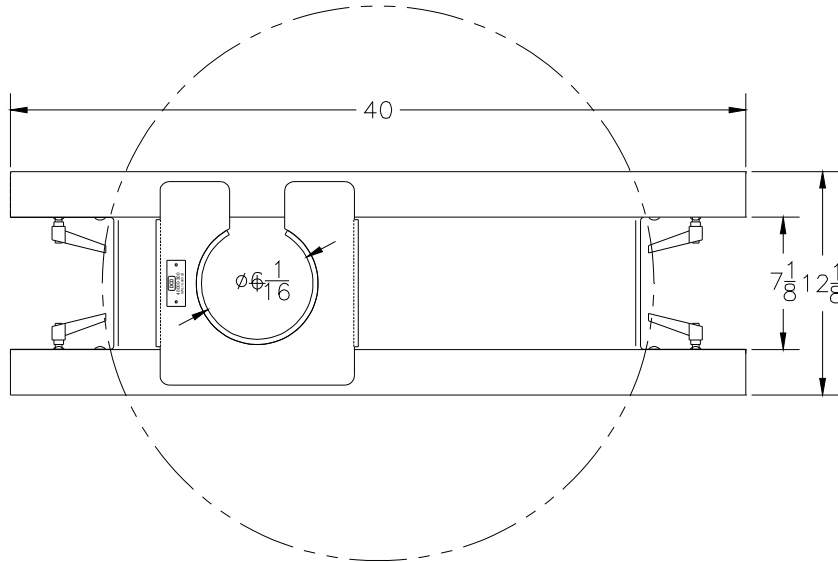
Manhole Adapter

DCD #40000-300

14

The Manhole Adapter allows the TUF-Lugger™ to pull cable into a manhole using guides and sheaves located in the manhole. It features two independent stop plates and an independent guide plate which allow the rope to be pulled from any position in the manhole.

- Manhole Range: 18" – 36" Diameter
- The adapter requires the use of a 6" Duct Guide.



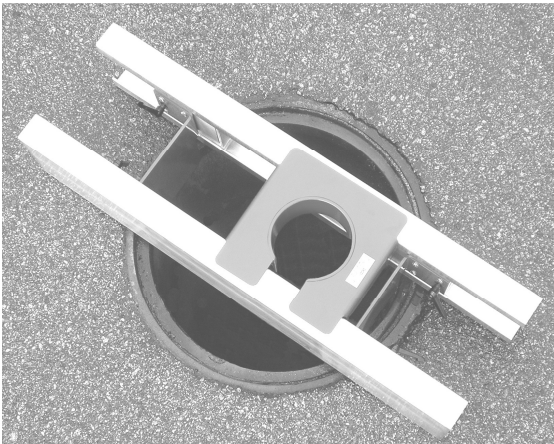
ACCESSORIES

D1

Place the manhole adapter over the manhole and slide the guide plate to the desired rope position.

D2

Loosen the locking handles on the stop plates and adjust the plates against the inside edges of the manhole.



D3

Install the TUF-Lugger™ into the Manhole Adapter.



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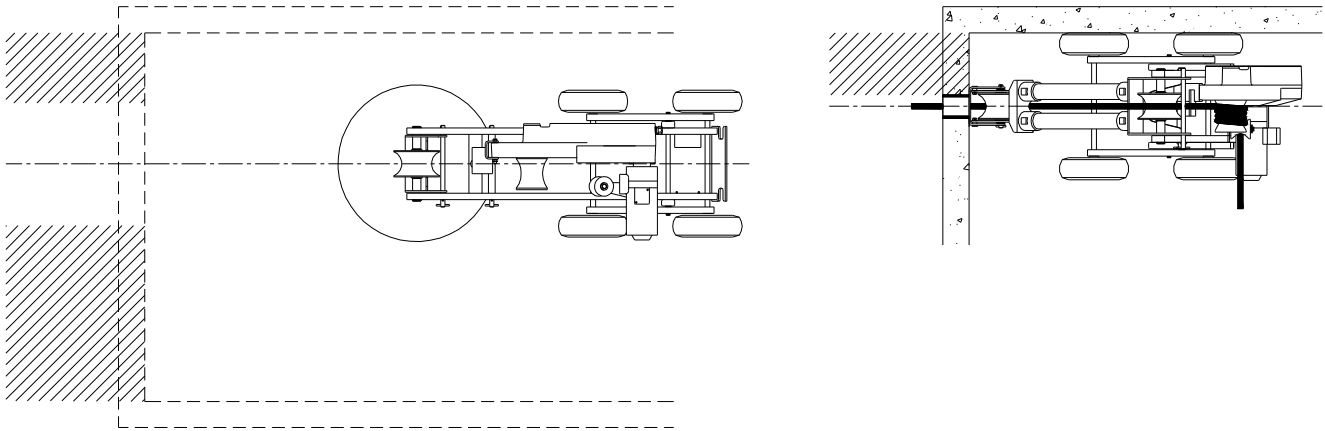
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Universal Adapter

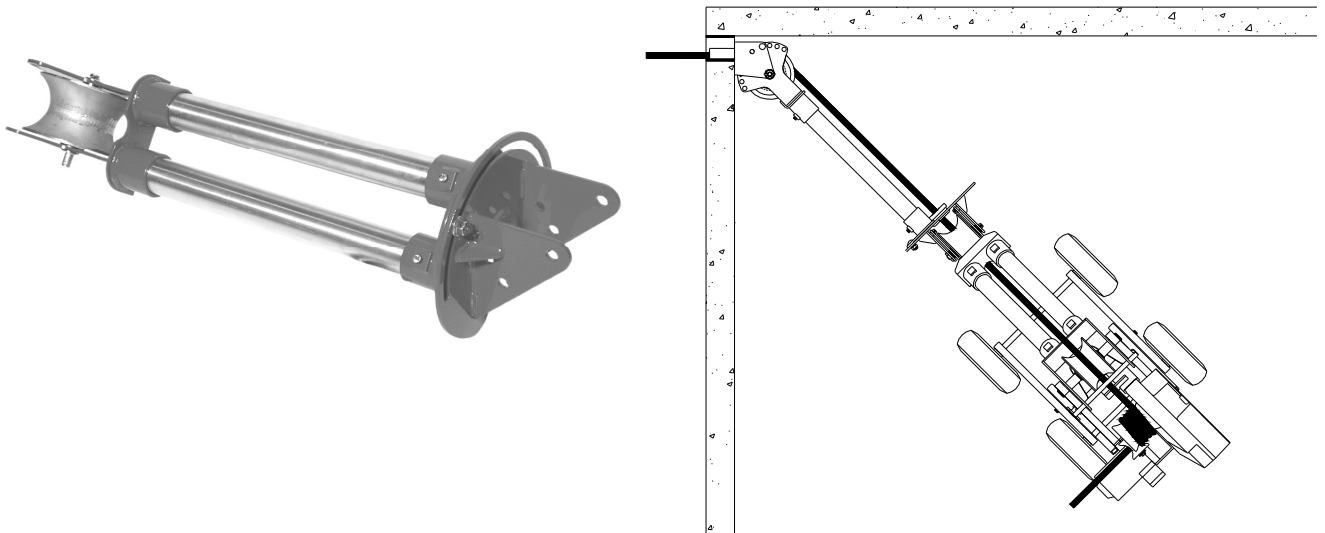
DCD #40000-500

15

For horizontal pulls, the TUF-Lugger™ must be positioned directly in line with the conduit. For some applications, this is not possible as the TUF-Lugger™ is physically restricted by a manhole, or sidewall.



This problem can be overcome with the Universal Adapter. It is a second set of extension arms with a joint that can bend and rotate. It is installed between the standard Extension Arms and the Duct Guide. The Universal Adapter allows the TUF-Lugger™ frame to be set at an angle to the line of pull.



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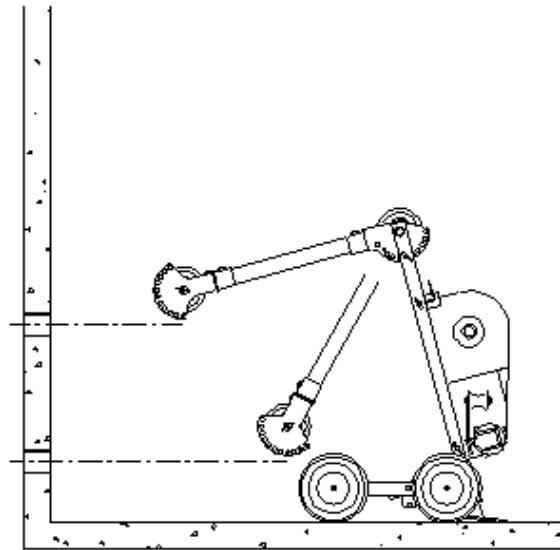
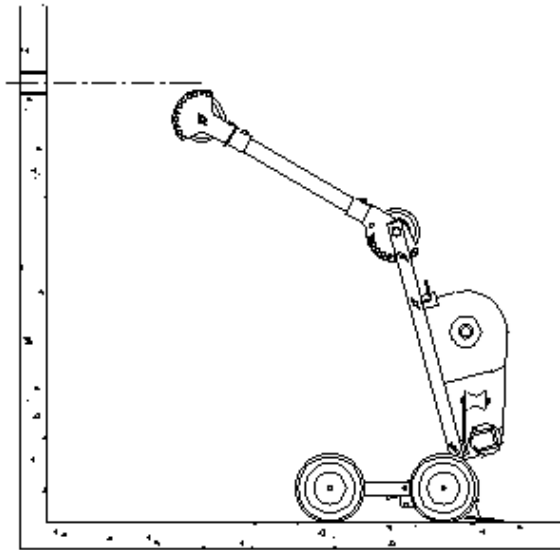
Universal Adapter

DCD # 40000-500

16

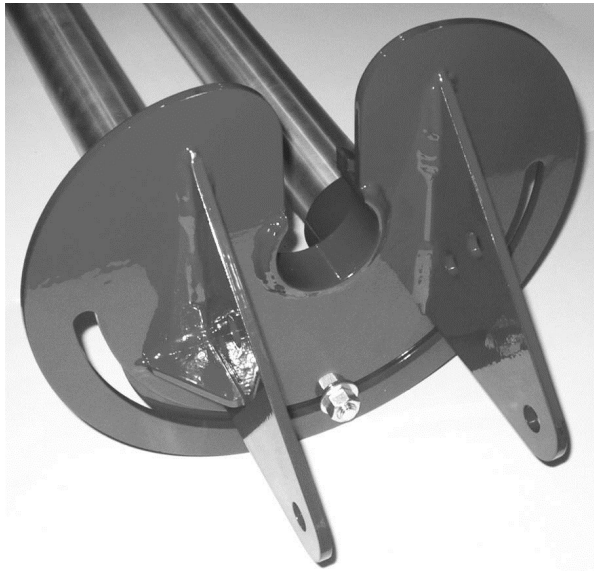
E1

Adjust the angle of the extension arms on the TUF-Lugger™. For Overhand Pulls (Type A), the outboard end of the arms should be below the height of the conduit. For Underhand Pulls (Type B), the outboard end should be above the height of the conduit.



E2

Install the Duct Guide onto the sheave end of the Universal Adapter. For Overhand Pulls (Type A), the slot in the plate should be up. For Underhand Pulls (Type B), the slot in the plate should be down.



Overhand Pulls (Type A)



Underhand Pulls (Type B)

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Universal Adapter

DCD #40000-500

17

E3

Insert the Duct Guide into the end of the conduit. Loosen the nut on the adjustment plate and rotate the Universal Adapter so that it will align with the Extension Arms.

E4

Install the Universal Adapter onto the TUF-Lugger™ Extension Arms and secure in place using the Wrist Pin and Duct Guide Pins. Tighten the nut on the adjustment plate.



The added weight of the Universal Adapter will make the assembly unstable until all of the pins are installed. Exercise caution. Failure to do so may result in personal injury.

E5

Install the pull rope. It may pass between the TUF-Lugger™ Extension Arms but must not pass between the Universal Adapter Arms. When correctly installed, the rope will run parallel to the Universal Adapter Arms.



Ensure that the rope does not pass between the arms of the universal adapter. Failure to do so may result in death or serious injury.

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The Load Monitor system uses a load cell to measure the tension in the rope. It consists of a load cell, digital box, and software for android and windows applications. It receives its power from AA batteries (included).

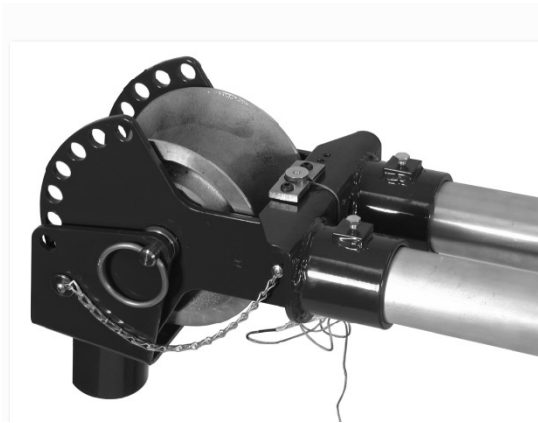
The Load Monitor can also be used with the DCD TUF-Lugger Lite™ Support Plate (42200-010) and Vertical pull support (42200-050) or as a stand-alone compression load cell up to 1000lbs in direct compression.

- Line Tension Range with Tuf-lugger frame: 0 – 6500 lb
- Line Tension Range with Tuf-lugger Lite anchor options: 0 – 2500 lbs
- Data Collection Rate: User defined, between 1-10 data points per second
- Visual and Email Alarms: User defined through Application
- Alarm override capability
- Metric or Imperial charting
- User controlled calibration setting
- Ability to export data file in csv (comma separated value) format

Installation of the Load Monitor requires a screwdriver and two 3/4" wrenches. Once installed, the Load Monitor can be left in place permanently.

F1 Install the load cell locator plate and load cell into the frame with two 1/4"-20 button head screws as shown.

F2 Install the Load Cell Compression plate overtop of the load cell with the 1/4"-20 socket head cap screws provided as shown. The rope should ride on top of the compression plate.



F3 For detailed bracket installation, operation, App installation, and usage guidelines, follow the 40000-270 operating instructions and Load Monitor Quick Start Guide provided with your unit.



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Tuf-Lugger Lite removal from Frame

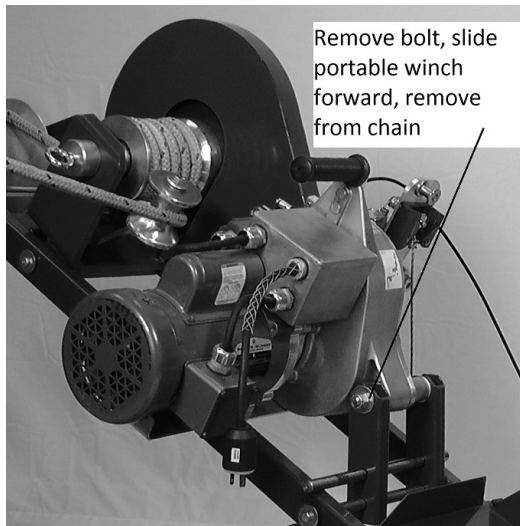
The Tuf Lugger is powered by our Tuf-lugger Lite 41000-500 winch, which can be removed from the frame and used independently as a 41000-500 Tuf-Lugger Lite lifting – electric winch. For additional information on the Tuf-lugger lite assembly, reference the 42000-500 Tuf-Lugger Lite manual provided.



Ensure the winch is unplugged from power before proceeding to avoid any physical harm or injury.

F1

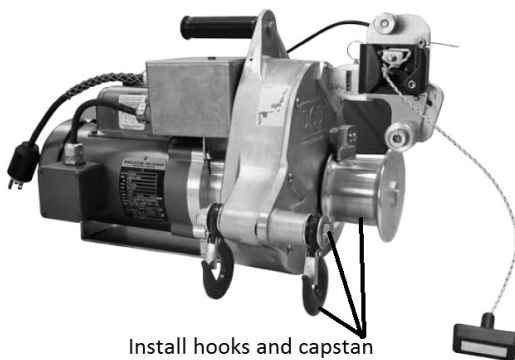
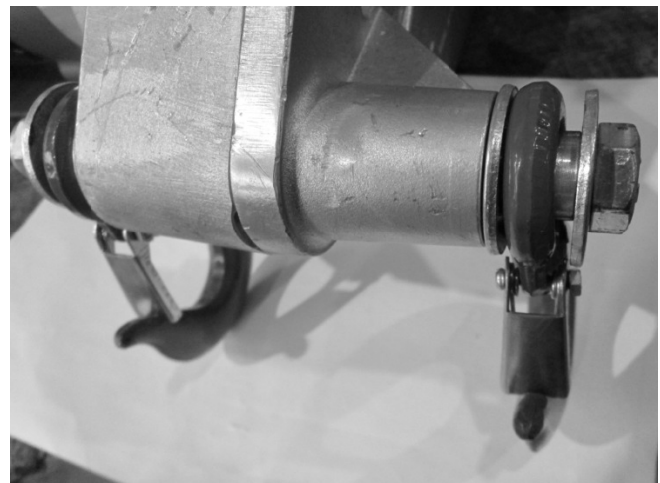
Remove the bolt, nut and washers from the back of the winch in the location shown. Once removed, the winch can be moved forward (towards the capstan) to allow the chain to be lifted off the winch.


F2

Remove the gear from the winch and, using the same hardware, replace the gear with the capstan provided.

Re-install the washers, nut and shorter bolt, this time with the red hooks provided.

The reverse process can be followed to re-install the winch to the frame.



Install hooks and capstan provided with winch



Re-install rope guide and roller provided