

#1

Docket S030  
Ex. 39-9



Part No. 420295

# Operator & Maintenance Manual

## 650 Auger Drill



ReedRill

11111 Denison, TX 75020 P.O. Box 998 Sherman, TX 75091-0998  
Telephone: 1-800-854-9040 Telex: 1-800-482-6570 World Wide Web: [www.reedrill.com](http://www.reedrill.com)

# Controls - Functions and Limitations

## Service Winch



### WARNING

**NEVER attempt to move the machine with a load suspended from the winch line. Always keep the mast vertical and the auger on the ground when lifting a load. DO NOT swing with a suspended load. Failure to heed this warning may cause serious personal injuries and/or machine damage.**

The hydraulically driven winch has a safe load rating of 8,000 lbs. (3632 kg.), but the capacity is hydraulically limited to 5,000 lbs (2270 kg.).

- Push Service Winch lever (9) away from operator, to reel out (lower) cable.
- Pull Service Winch lever (9) toward operator, to reel in (raise) cable.

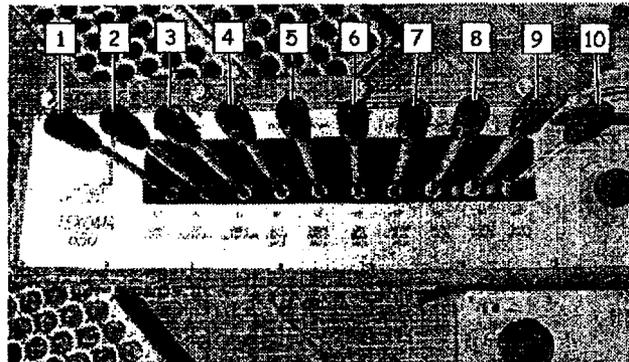


Fig. 3-9 Main Valve Bank

- |                       |                |
|-----------------------|----------------|
| 1. Mast Leveling -    | LEFT/RIGHT     |
| 2. Left Outrigger -   | IN/OUT         |
| 3. Right Outrigger -  | IN/OUT         |
| 4. Left Front Jack -  | UP/DOWN        |
| 5. Right Front Jack - | UP/DOWN        |
| 6. Left Rear Jack -   | UP/DOWN        |
| 7. Right Rear Jack -  | UP/DOWN        |
| 8. Mast Raise -       | UP/DOWN        |
| 9. Service Winch -    | UP/DOWN        |
| 10. Frame Travel -    | RETRACT/EXTEND |

## Auger Sizes



### WARNING

The use of large augers under certain terrain conditions can cause a loss of stability and control. Operate with extreme caution.

The use of an auger larger than listed could void warranty.

**Maximum Auger Size = 60 inches (152.4 cm)**

### NOTE

The maximum size auger to be used on the Model 650 digger, under ideal digging conditions (i.e. soft dirt, **NOT ROCK**) is 60 inches (152.4 cm).

When using the larger augers, spin off the dirt at the lowest speed possible. All augers have some amount of imbalance and a spin off speed which is too high will cause discomfort to the operator and cause premature wear on the digger.

# TABLE OF CONTENTS

## (Replacement Text)

### VOLUME I

- 1.0 INTRODUCTION
  - 1.1 Customer I.D. and Rig I.D. Information (Not Applicable)
  - 1.2 Replacement Cable and Filter Details (Not Applicable)
- 2.0 "WARNINGS" and "CAUTIONS"
- 3.0 GENERAL DO'S and DON'TS FOR OPTIMUM PERFORMANCE and DRILL UNIT LIFE
- 4.0 GENERAL START-UP DISCUSSION/REVIEW
  - 4.1 Pre-starting Checks
  - 4.2 Controls and Instrumentation
  - 4.3 Initial Break-In Maintenance Schedule
    - 4.3.1 Chain Drive Adjustment
    - 4.3.2 Mast Cable Rigging
    - 4.3.3 Filter Servicing
    - 4.3.4 Fastener Torque Specifications
- 5.0 WARRANTY
- 6.0 PARTS IDENTIFICATION AND ORDERING
- 7.0 OPERATION AND MAINTENANCE
  - 7.1 Power Train Operation
  - 7.2 Power Train Maintenance
    - 7.2.1 Battery
    - 7.2.2 Engine
    - 7.2.3 Pump Drive
    - 7.2.4 Transmission
    - 7.2.5 Propeller Shaft
    - 7.2.6 Pivot/Right Angle Drive
    - 7.2.7 Rotary
    - 7.2.8 Kelly Drive
  - 7.3 Hydraulic and Pneumatic System Operation

## 1.0 INTRODUCTION

The purpose of this manual (MOP) is to familiarize the operator and owner with the basic components of your Watson drill unit. The MOP contains maintenance recommendations and operator **"WARNINGS"** and **"CAUTIONS"**, which should be read and understood before operating your Watson drill unit.

**"WARNINGS"** and **"CAUTIONS"** are listed in section 2.0. A **"WARNING"** indicates danger of injury or death to personnel due to unsafe or incorrect operating practices. A **"CAUTION"** indicates potential injury to personnel and/or possible damage to equipment due to unsafe or incorrect operating practices.

Watson Incorporated greatly appreciates your purchase of our equipment. It is our intent that you be satisfied with your investment for many years.

## 2.0 "WARNINGS" and "CAUTIONS"

**"Indicates danger of injury or death to personnel due to unsafe or incorrect operating practice".**

### WARNINGS

- Spool off cable as required when raising mast to prevent inner bar from "two blocking" against the outer bar. Booming up against a tight line will cause damage to drill unit and/or personnel.
- When making the connection between the kelly and the tool, be sure any personnel involved keeps hands and feet clear of the tool.
- Driving or tracking on unlevel terrain must be done with extreme caution and only after the operator is totally familiar with the drill unit.
- Insure all ground personnel are clear of drill unit before swinging and/or spinning auger to remove spoils.
- Keep all support and ground personnel off of drill unit during operation.
- Do not operate drill unit within 10 feet of residential power lines or 50 feet of high tension lines.
- When operating on slopes:
  - Do not travel on slopes greater than 20 degrees from the horizontal. When climbing or descending a grade, travel with tool end up and slide fully extended.
  - Do not drill on slopes greater than five (5) degrees.
  - Do not track on unlevel or uneven terrain with the mast in the up position. Incline mast to provide a safe profile.
  - When drilling on a slope, align the length of the tracks parallel with the slope; avoid side to side tilts (on units with tilt feature in undercarriage) and always set up with the rotary as the lowest (down hill) part of the machine.
  - Always swing to the high side.

(Rev. 11/5/98)

2.0 "WARNINGS" and "CAUTIONS" (continued)

**CAUTIONS**

**"Cautions indicate potential injury to personnel and/or possible damage to equipment due to unsafe or incorrect operating practices."**

- **Read maintenance, operation, and parts manual before attempting to operate unit. Service and lubricate unit regularly. Low speed (first) is provided for temporary, emergency, or special use under strictly controlled conditions to develop high torques for a short time at the discretion and responsibility of the driller or owner.**
- **Do not stall out the drive train and then pull the transmission shift lever to a lower gear or neutral without first reducing the RPM: The sudden unwinding of rotation will damage the drive train.**
- **Allow engine to idle 5 minutes before shut down.**
- **Insure mast is raised off the rest before attempting to slide.**
- **Houselock must be out or released before attempting to swing drill unit.**
- **On drill units equipped with a personnel hoist, engine must be at idle when operating hoist.**
- **On drill units equipped with a reaction jack, the jack foot must be clear of the ground before swinging or tracking.**
- **On drill units with air clutches and brakes, engine must be at idle when changing powershaft from the run to the stop mode and vice versa.**
- **On drill units with air clutches and brake, air is required to operate both the hoist clutches and the hoist brakes. A gauge is provided for the operator to monitor during operation. The normal pressure range is between 120 and 145 psi. If the pressure drops below 90 psi during operation, stop all operation, investigate cause, and repair. If the air pressure drops below 60 psi, the hoist drum locking brakes will automatically apply.**
- **If the swing system has undergone a rapid reverse or rotation or the locking brake has been set during fast rotation, an inspection of swing components and structural members is required. Please consult the factory for further information.**

### 3.0 GENERAL DO'S AND DON'TS FOR PERFORMANCE AND DRILL UNIT LIFE

- Avoid drilling with the drill unit in the fully extended (slide out) position.
- When using the service line:
  - "slide in"
  - always align the load with the mast before picking load
  - must be vertical to 5° maximum past vertical
- Maintain all wire rope in good working order. If there are any signs of rope damage, replace the rope immediately.
- Periodically check the drill unit for loose fasteners and/or cracks in the structure. Correct and repair as necessary or consult factory.
- Allow mast to settle gently into mast rest. Do not force mast down as this can put unnecessary and potentially damaging loads into the mast structure.
- Crawler units are typically transported in the "slide out" position for proper weight distribution.
- Truck/Carrier units are typically transported in the "slide in" position for proper weight distribution.
- Do not let a load which is free falling from any significant height (above 10 feet), hit the bottom of the hole without having been slowed.
- On drill units with air powered hoist, always keep feet on brake pedals when operating drill unit.
- Do not operate the drill unit in low gear at full throttle without exercising careful control over the possibility of sudden impacts on the tool. Resulting shock loads may cause drive train or rotary gear damage.
- Always pay off hoist cable when crowding as failure to do so can result in cable separation and possible structural damage to the drill unit.
- Although the drill unit was designed for the service hoist to pick tools, casing, cages, etc., it should not be used as a crane. The service hoist is factory set to pick maximum load in a vertical direction. Do not attempt to re-adjust air clutches or hydraulic reliefs to obtain more line pull, or do not use mast cylinders or outrigger cylinders as the lift mechanism. Always pick loads with the mast in the vertical position.

(Rev. 11/5/98)

## 2.0 "WARNINGS" and "CAUTIONS"

# W A R N I N G S

**California Proposition 65 Warning:** "Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects, and other reproductive harm."

Always engage the manual swing lock pin or the houselock (if equipped), locking the upper unit to the lower frame, before moving or driving the truck or tracks.

Do not use kelly hoist or service winch (tag line) to raise or lower personnel.

Although the drill unit is equipped with a service hoist to assist the drilling functions, it should not be used as a crane. The service hoist is factory set to pick maximum load in a vertical direction. Do not attempt to re-adjust clutches or hydraulic reliefs to obtain more line pull, or do not use mast cylinders or outrigger cylinders as the lift mechanism. Always pick loads with the mast in the vertical position.

*The following "WARNINGS" apply to the Model 3100 drill unit (equipped with air clutches and air brakes).*

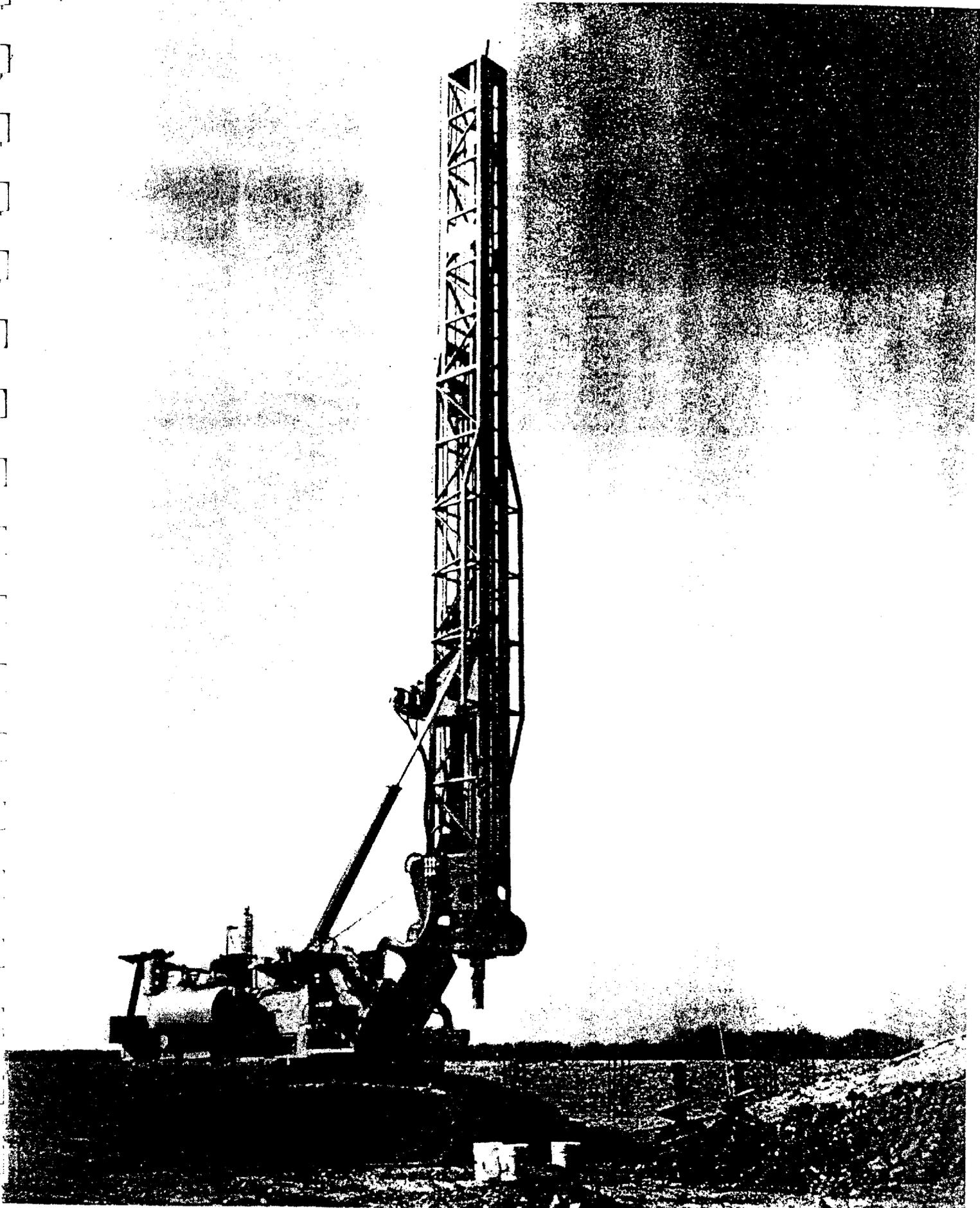
Always engage hoist-locking brake before releasing foot brake on kelly or service hoist.

Always use parking brake to suspend load.

Always have control of load with brake before releasing either auxiliary or kelly hoist drum clutch.

Auxiliary hoist brake and inner kelly hoist brake must be released before raising mast.

"Warnings indicate danger of injury or death to personnel due to unsafe or incorrect operating practices."



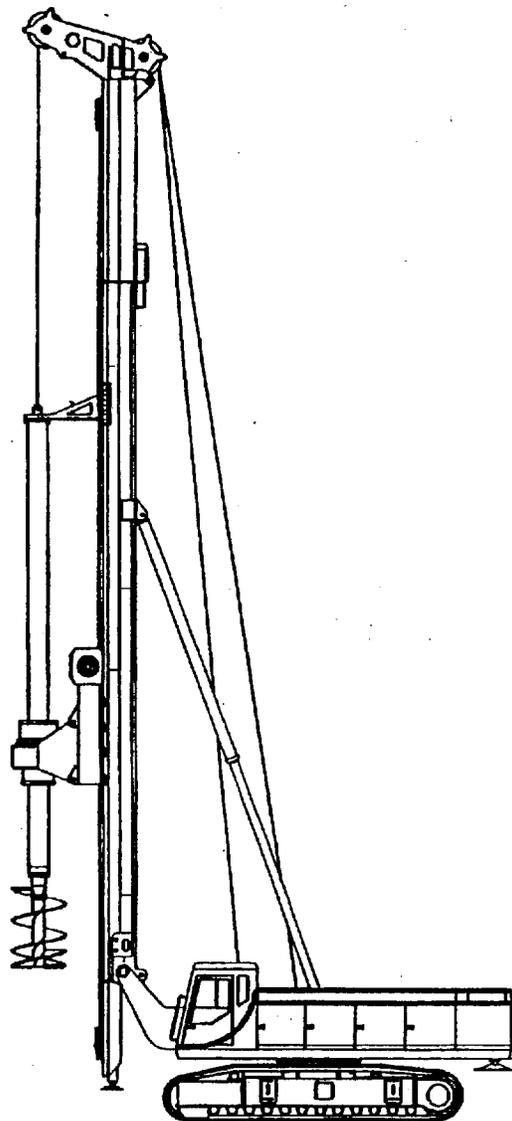
#1

# MAIT

## HR 200

**MANUALE  
DELL'OPERATORE  
E DELLA SICUREZZA**

**OPERATOR AND  
SAFETY MANUAL**



Cliente/ Client :	_____
Matricola/ Serial number:	2000061211
Macchina tipo/ Machine type:	HR-200
Data di consegna/ Delivery date:	20/04/99



MAIT S.p.A. MACCHINE INDUSTRIALI TRIVELLATI JCI  
Via Flaminia Seconda n° 149/153 - P.O.Box 39 - 60027 OSIMO (AN) ITALIA  
TEL. ++39 - 071 - 7822186 FAX ++39 - 071 - 780535  
Web: <http://www.mait.it> - E-mail: [info@mait.it](mailto:info@mait.it)

### Raggio Massimo di Tiro degli Argani

Gli apparecchi di sollevamento (argani) in dotazione della perforatrice sono stati concepiti e vanno usati esclusivamente per le funzioni di perforazione e di scavo (per esempio percussione con scalpello, sollevamento di aste di perforazione telescopiche e benne mordenti), secondo quanto disposto dalle leggi vigenti in Europa.



MAIT fa espresso divieto agli utilizzatori dei propri impianti di applicare le attrezzature fornite per scopi diversi da quelli prescritti (per esempio il sollevamento di carichi generici) e si esonera da ogni responsabilità conseguente al mancato rispetto di questa indicazione. Nei Paesi in cui non ci sono particolari restrizioni di legge sui dispositivi di sollevamento, l'argano 2° può essere utilizzato anche per il sollevamento di carichi generici, con la condizione che i sottoindicati limiti siano severamente osservati e tenendo presente che ogni disattenzione può causare danni sia alla macchina che al personale.



Controllare che nessuno sia nelle vicinanze della macchina prima di iniziare le operazioni di perforazione.

E' assolutamente proibito iniziare a lavorare prima che la zona di lavoro sia stata interamente sgomberata.

A) Il raggio di lavoro dell'argano permette di sfruttarne completamente le capacità di tiro senza mettere in crisi la stabilità o danneggiare l'integrità della macchina.

B) Non è consigliabile effettuare operazioni di tiro con angoli di inclinazione superiori a 15° rispetto al piano della carrucola, poiché lo sfregamento del cavo sul fianco della carrucola stessa potrebbe causarne l'usura.

Nelle figure che seguono sono illustrati graficamente i limiti da osservare.

### Maximum Radius Of Winch Action

The rig is equipped with lifting apparatus (winches) which have been designed and should be used exclusively for drilling and digging (for example percussive with bit, raising of a drill kelly bar and mordant grabs) according to the provisions of normative laws in force in Europe.



MAIT strictly forbids the use of its machines for purposes other than those described above (e.g. the lifting of general loads, etc.) and declines all responsibility if its regulations are not followed.

Winch 2 can be used to lift general loads in those countries which do not have particular restrictions regarding lifting devices on the condition that the following limits be strictly observed and keeping in mind that any carelessness can cause damage to the machine and to personnel.



Before the beginning of drilling operations make sure that there is no one near the machine.

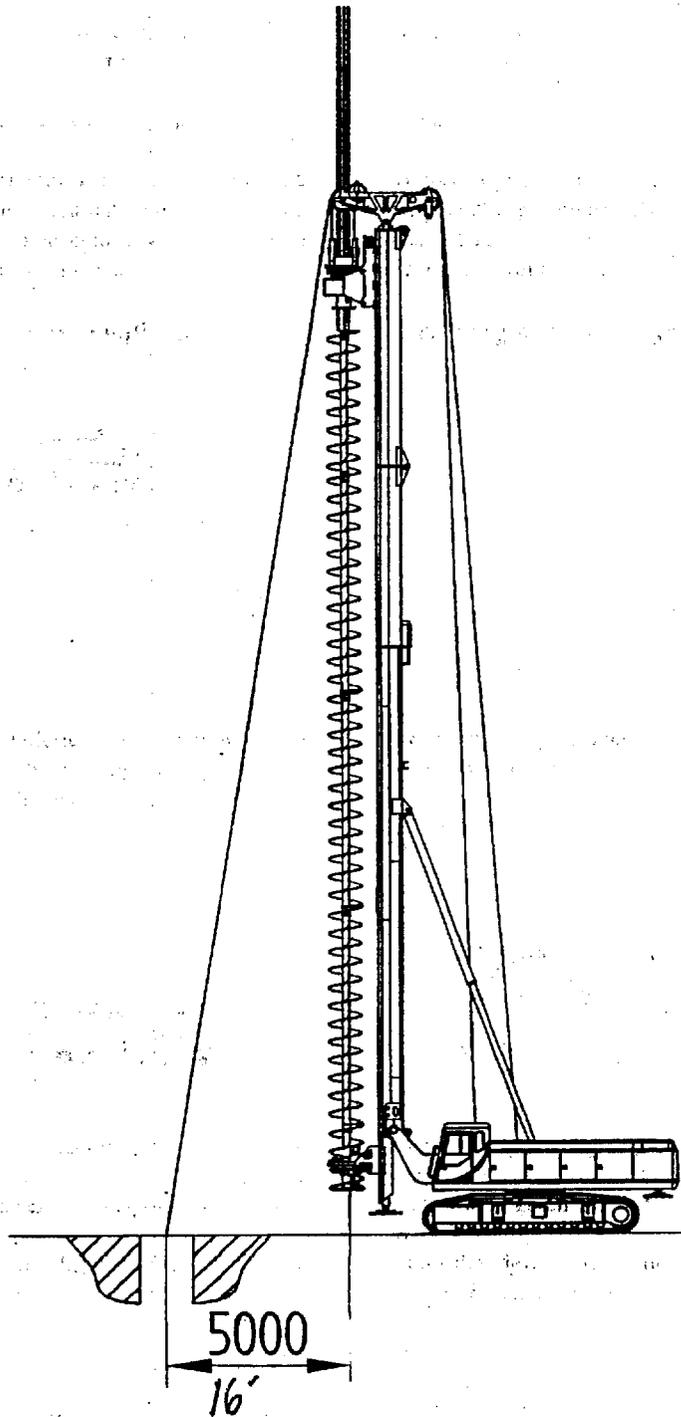
It is absolutely forbidden to begin working before the work area has been totally cleared.

A) The working radius of the winch allows the machine to exploit its pull-back capacity without destabilizing or damaging the machine.

B) It is not advisable to carry out pull-back operations with angles of inclination superior to 15° with respect to plane of the pulley, because the rubbing of the cable with the side of the pulley could cause it to wear.

The limits which must be observed are graphically illustrated below.

#3

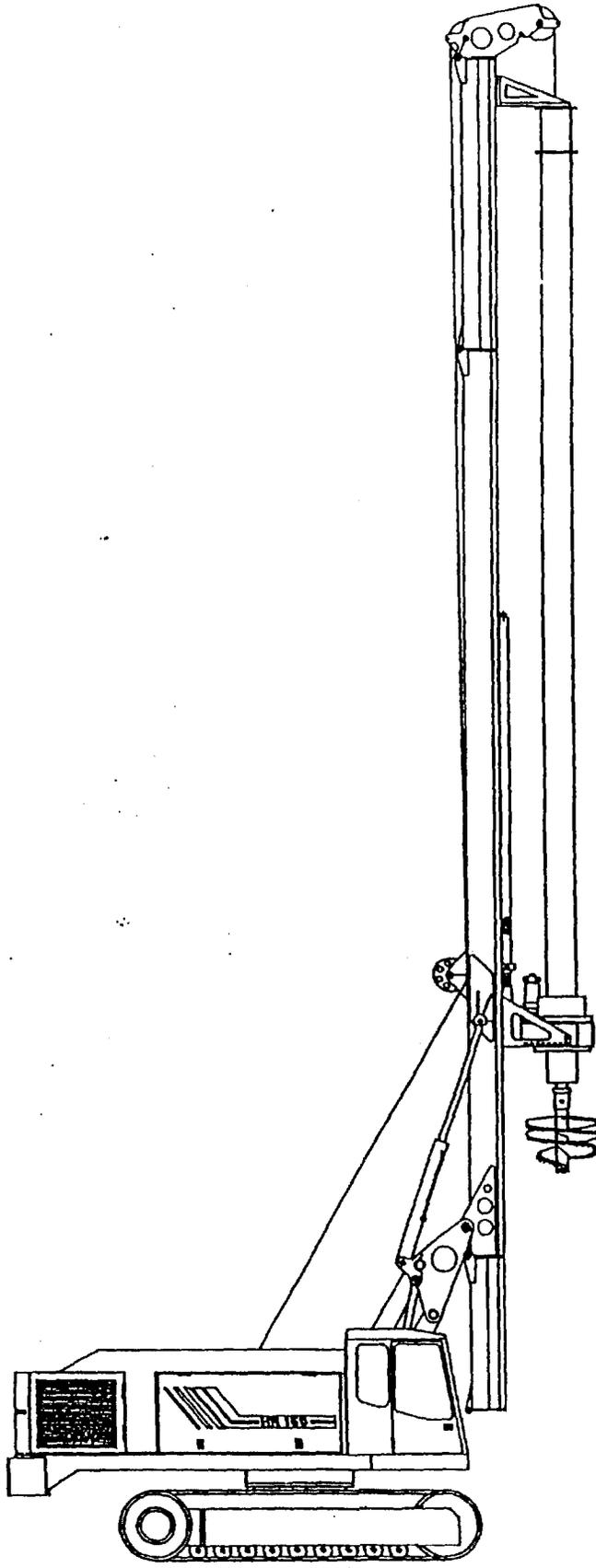


 **ATTENZIONE**

Gli argani forniti con la perforatrice devono essere usati solamente per la perforazione. E' severamente proibito usare gli argani come gru o meccanismi di sollevamento.

 **WARNING !**

The winches which are supplied with the rig must be used for drilling operations only. It is strictly forbidden to use the winches as cranes or lifting mechanisms.



# MAIT

## HR160

### OPERATOR AND SAFETY MANUAL BOOK

Customer :	_____
Serial Number :	<u>160611006</u>
Drilling rig type :	<u>HR 160 / 18T</u>
Delivery date :	<u>20.09.97</u>



### Winch action radius

The lifting devices (winches) provided in the drilling apparatus have been designed for the sole purpose of drilling and digging and should be used exclusively for these operations. (e.g. percussion with chisel and feeler technique, ascent and descent of wire-line equipment in the hole, telescopic drilling rod and grab).

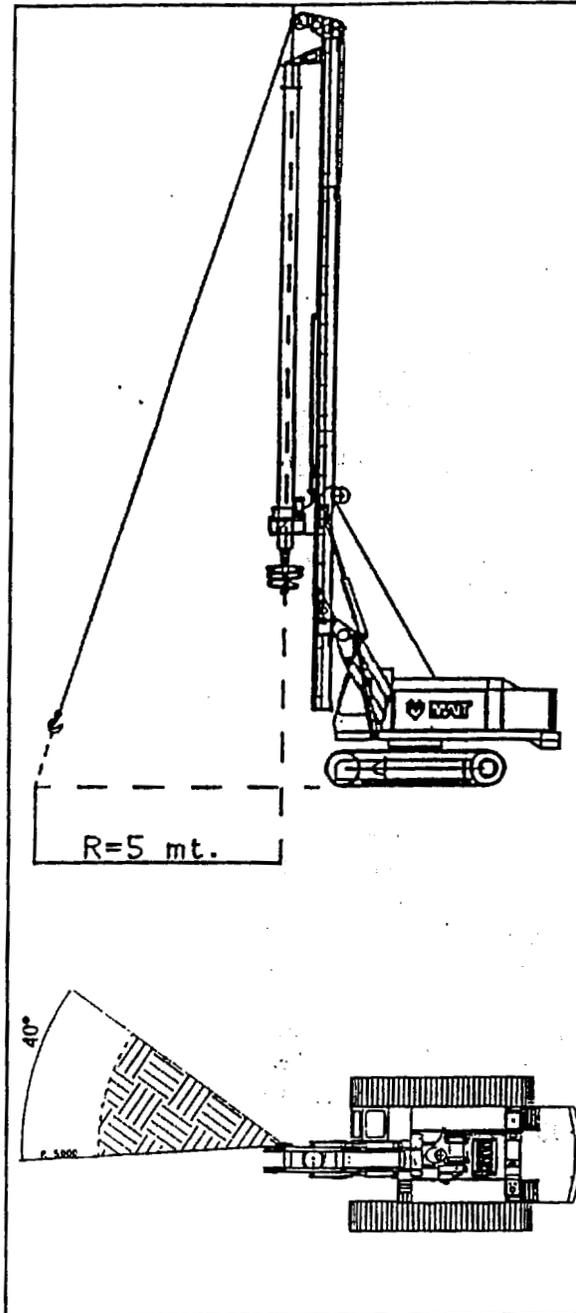
In this case, this apparatus is completely in compliance with the present laws in Europe.

**MAIT STRICTLY FORBIDS THE USE OF ITS MACHINES FOR PURPOSES OTHER THAN THOSE DESCRIBED ABOVE AND DECLINES ALL RESPONSIBILITY IF ITS REGULATIONS ARE NOT FOLLOWED (E.G. THE LIFTING OF GENERIC LOAD, ETC.).**

IN COUNTRIES WHERE THERE ARE NO PARTICULAR LEGISLATIVE RESTRICTIONS ON LIFTING MACHINERY, THE 2<sup>nd</sup> WINCH CAN ALSO BE USED TO LIFT GENERIC LOADS, ON CONDITIONS THAT THE AFTER MENTIONED LIMITS ARE STRICTLY OBSERVED AND KEEPING IN MIND THAT ANY NEGLIGENCE CAN CAUSE ACCIDENTS TO STAFF AND DAMAGE TO THE MACHINE.

A) The working radius of the winch allows its pullback capacity to be fully exploited, without affecting machine stability or structural integrity.

B) It is not advisable to carry out pullbacks with an angle of inclination of more of 15° in front and 40° laterally to the pulley platform, as the rubbing of the cables against the side of the pulley could cause their wearing.



## WARNING !

The use of winches supplied with the rig by law are to be used solely for the purpose of drilling operations. It is strictly forbidden to use the winches as cranes or loading devices for jobsite operations.

**SAFETY MEASURES****1**

#1

**1.2 CERTIFICATE OF COMPLIANCE**


---

**Certificate of compliance**

according to the Machine directives 89/392 CEE and successive amendments in the Enclosed IIA

The undersigned:

**I.M.T. S.r.l.**

**Via d'Ancona 39  
60027 Osimo (AN) Italy**

Declares on its own liability that the new machine stated here below:

**HYDRAULIC DRILLING RIG** Model **AF180**

Serial no.: **\*\*\*AF180\*\*\*** Year of Construction: **2000**  
Power **224 KW**

Is built in conformity to the legislative provisions that transpose the directive for Machines 89/392 EC and its successive amendments

---

**Harmonized Norms**


---

<b>UNI EN 292/1</b>	(Machine Safety)
<b>UNI EN 292/2</b>	(Machine Safety)
<b>UNI EN 294</b>	(Safety, spaces to reach dangerous areas)
<b>UNI EN 418</b>	(Safety, emergency stop devices)
<b>UNI EN 7349</b>	(Safety, spaces to avoid crushing)
<b>EN 791 (01/96)</b>	(Safety of the drilling machine)
<b>UNI ISO 7000</b>	(Graphic symbols and signs)
<b>UNI EN 60204/1</b>	(Safety of the electrical equipment)
<b>CNR UNI 10011</b>	(Constructions in steel: calculus, execution, etc.)

Furthermore it declares as forseen in enclosed appendix V of the Directive for Machines 89/392 EC:

The marking of the symbol "EC" is affixed onto the machine.

The technical booklet is available at the Manufacturer's main office;

EMC Technical file, in compliance to the 89/336, is available at the Manufacturer's main office.

#2

---

# SAFETY MEASURES

---

1

## 1.4 GENERAL WARNINGS PULLBACK

	The present manual relative to the drilling equipment installed by IMT S.p.a. is integrated with original Caterpillar manuals, that are delivered together with the manual, and called: "Maintenance and Operation Manual" of the excavator CAT330B (SEBU 7021-01 Feb. 98)
---	--

	The manuals are completely read and understood before attempting to operate the machine controls or carry out maintenance operations.
---	---

In the pages that follow we will indicate CAT the Caterpillar manual of the hydraulic excavator 330B and Feb. 98 code SEBU 7021-01.

In the most important points where you should proceed to immediately read the Cat manual, page references are indicated for a fast and efficient search for relative information, therefore it should never be separated from the Caterpillar manual and in the case of purchase, must go together with the machine.

The manuals must be kept in the back seat pocket of the operator's seat.

All the safety measures, operation instructions, transport and maintenance are clearly indicated in the manual regarding the IMT AF220 drilling rig.

## 1.5 PLANNED USE OF THE RIG

The IMT AF220 drilling rig has been specifically designed to bore holes in every type of terrain to produce medium and large size diameter (500-2000 mm).

The rig operates the drilling technique by rotation of a tool (auger or bucket) connected to a telescopic kelly bar. The maximum depth depends on the length of the tool and kelly bar used.

The machine is equipped with two lifting winches which carry out the drilling operation and changing of tool.

It is strictly forbidden to use these winches for other lifting operations that are not directly related to the drilling operation itself.

IMT S.p.a. reserves the right to take legal action against the illegal and unauthorised use of the machine.

## 1.6 SAFETY WARNINGS

Most accidents that occur during the use and maintenance of the drilling machine are due to negligence of the most fundamental safety measures and risks of potentially dangerous situations inherent in many operations. Whoever places themselves at the

# OPERATION INSTRUCTIONS

5

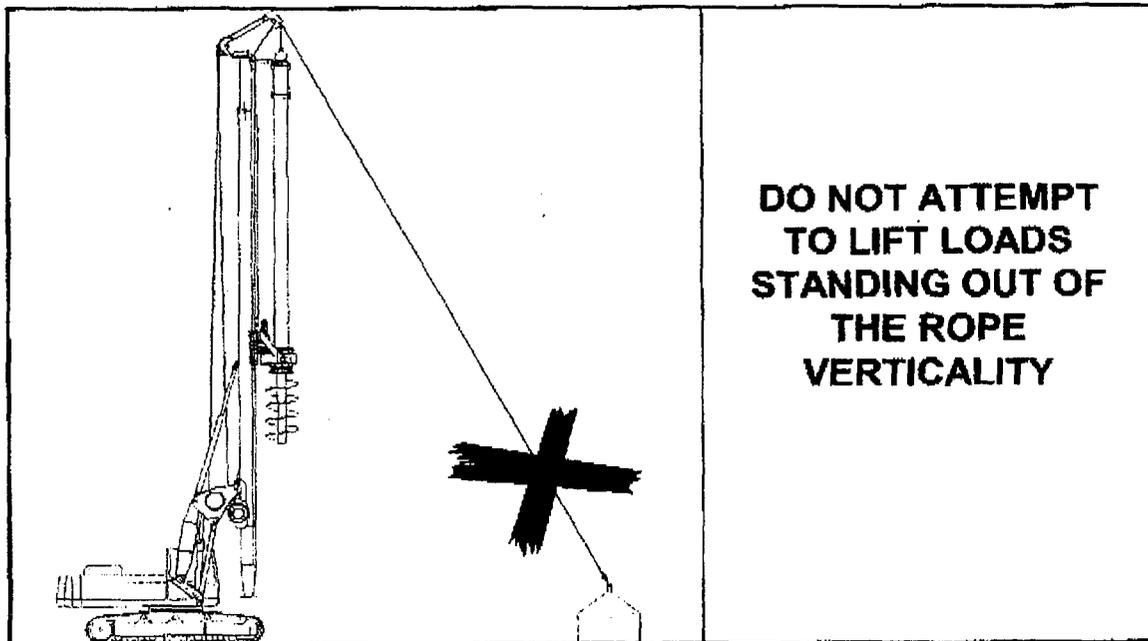


Figure 16

## 5.3 MOVING IN WORKING PHASES

- In order to avoid the presence of depressions influencing the machine stability, and leading to the possibility of overturning, it is best to partially recline the mast while moving about within the jobsite.
- Remember that the stability of the machine improves if the mast is lowered.

### 5.3.1 Moving about on soft or damp terrain

Table 2 indicates the maximum ground pressure values in various configurations and the relative lift values on the ground. Before moving the machine, check that the terrain is not excessively soft, otherwise the machine could sink into the ground or overturn.

Table 2

Machine configuration	Maximum Ground pressure	Minimum Ground capacity
	[Kpa]	[KPa]
Mast horizontal	91.5	100
Pull sideways	186	200
Maximum during work with platform rotated at 30°	392	400

## 5.4 WARNING! AVOID THE FOLLOWING MANOEUVRES

- Do not move about with the mast in vertical position and the platform rotating when covering ground that is not perfectly flat and solid (stability).
- Do not give too much slack with the main winch and check the regular winding up of the rope.
- Do not drill with the pin and split pin which serve to block the tool in risky situations.
- Do not work with damaged cable ropes.
- Do not carry out any intervention or maintenance on the hydraulic installation with the engine running or without having already released the pressure from the oil tank, following the procedure indicated in the CAT manual.

---

# MAINTENANCE

---

9

#4

- Avoid the accumulation of dirt on the air grills and do not allow the accumulation of foreign bodies (leaves, paper, bags, etc.) on the machine (risk of fire);
- In case of need, use only auxiliary supply sources of electrical current that is earthed;
- If you have to lift or transport heavy parts, use hoists or similar devices of suitable capacity.
- Check that the harness is suitable for the load to be lifted and fitted correctly;
- During lifting, take care that of workers in the vicinity;
- When using compressed air for cleaning, use protective eye goggles with lateral guards. Keep the pressure under 2 Bar (100 KPa);
- Do not carry out any modification unless authorized in writing by IMT to the tools or components of the drilling rig;
- In the event of repairs outside the warehouse, position the drilling rig on flat ground and block its movements. If the repairs have to be carried out on a slope, block all movements of the machine and its tools. Move it to flat ground as soon as possible;
- The place where the maintenance and repairs are carried out must be kept clean and dry. Do not accumulate dirty or greasy oil rags in the vicinity as they constitute a fire risk. Throw them into a closed metal container;
- Before beginning maintenance, bring the tool to rest on the ground and leave it securely positioned;
- The machine is activated by a high pressure hydraulic installation; oil leakages that come into contact with skin could penetrate skin layers and cause serious lesions (in the event of an accident, immediately request the aid of a doctor);
- Liquids are present on the machine (hydraulic fluid and cooling water) and main components (engine, exhaust, hydraulic pump, etc.) that can reach high temperature levels during operation; take great care while carrying out maintenance operations avoiding any direct contact (risk of burning);
- Take care of moving parts on the machine;
- Before checking the hydraulic installation release the pressure in the system and tank that are normally under pressure.

(Rotary Oil level)



Figure 35

(Reduction gear oil)



Figure 36



**ATLANTIC  
EQUIPMENT  
COMPANY  
— INC. —**

Phone: 540-459-5309

P. O. Box 488, Woodstock, VA 22664

Fax: 540-459-3071

October 13, 2003

To Whom It May Concern:

The drilling equipment manufactured at Atlantic Equipment Company, Inc. is not designed to be a crane. The service winch on the machine is just what it says it is. It is meant to be used to lift the tools used for drilling into position to hook up to the kelly. Any other use is not recommended.

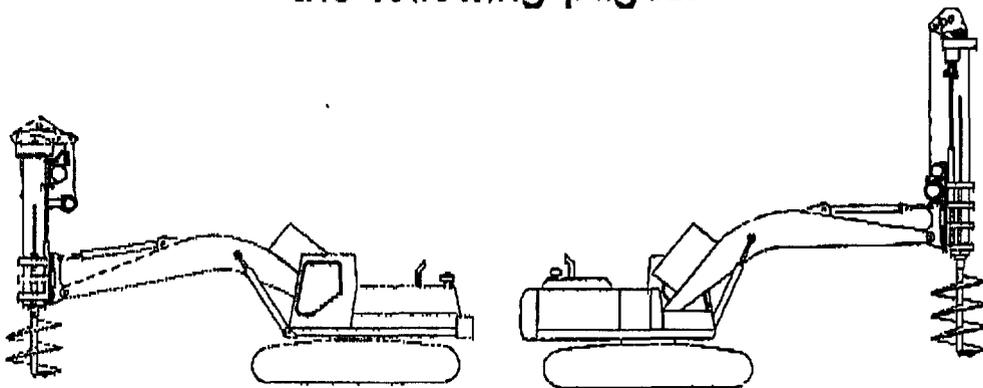
A handwritten signature in cursive script that reads "Howard C. Smith".

Howard C. Smith  
President



## Service Winch Safety

The Bayshore Systems, Inc. line of drilling products are not cranes. They are not advertised as cranes and are not to be used as such. The Bayshore Systems LoDril may be equipped with an optional service winch. This service winch is to be used to assist with moving augers, casings, and other such drilling equipment. Not being a crane, there are very specific guidelines to be followed when using the LoDril service winch. These guidelines include, but are not limited to the information found on the following pages.



## **SERVICE WINCH SAFETY**

***"The LoDril drilling machine is not a crane. It has a limited picking zone and capacity, and can tip over. Operate with extreme care."***

**There are several factors to consider when adding a service winch to your specific excavator. These factors include...**

- 1) Horsepower availability
- 2) Ground contact area of the tracks
- 3) Load capacities based on the "center of gravity"

**When preparing to perform a "pick" on an object there are several factors to consider. These factors include...**

- 1) How stable is the ground surface?  
...Soft or unstable ground may become depressed and may cause a tipping effect to the machine. This will offset the center of gravity unexpectedly.
- 2) How level is the ground surface?  
...A slope of one or two degrees can have a major effect on pick capabilities. Especially if the object is picked up on the uphill side of the machine, held suspended and then swung to the downhill side. The weight shift of the load is transferred to different areas while in motion.

**This drilling machine is not a crane.**

**When picking loads operate with extreme caution.**

### **3) Is the object within my pick zone?**

...Ensure that the mast is in a vertical position. The optimum pick area is within a five foot radius of the final service line sheave. When performing an angled pick be aware of the swing factor of the object. Minimize angle picks as much as possible. Maneuvering the machine over an object prior to picking is the preferred technique.

### **4) What condition is my equipment in?**

...All components utilized in the hoisting of an object must be in good condition. Constant and thorough inspection of these items is essential for the safety of all personnel. Frayed cables reduce line pull abilities and increase the chance of personal injury. Inspection of the hoisting hook is recommended by the manufacturer and required by OSHA. Check and document the hook throat opening when new and at monthly intervals thereafter. Safety latches must be installed and operable. Cable slings, chokers and bridles must also be inspected for damage and deformities. Proper setting and use of picking equipment must be understood by all riggers.

**Some very specific guidelines must be followed when performing a "pick" on an object. These are some of the "DO NOT's"...**

- Do not perform the pick if the ground surface is unstable
- Do not perform the pick if the ground surface is uneven or sloped
- Do not perform the pick if the object being picked is beyond a five foot radius of the final service line sheave
- Do not perform the pick if any of the components utilized in the hoisting of the object are in questionable condition





## SERVICE WINCH SAFETY

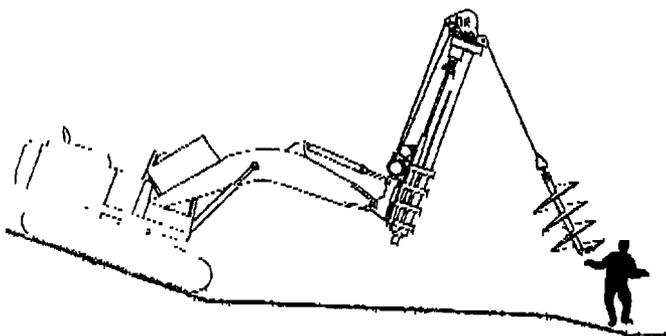
### DO NOT's cont.

- Do not perform the pick in a rapid manner as this will cause shifting of the "center of gravity" and cause instability
- Do not perform the pick if the object exceeds the load rating of your particular service winch as specified by the manufacturer (see specifications at the front of this manual)
- Do not swing the excavator rapidly when an object is suspended from the end of the service line
- Do not allow a picked object to become suspended over any personnel
- Do not retract the kelly housing or boom up to assist the service winch when hoisting

Some very specific guidelines must be followed when performing a "pick" on an object. These are some of the "DO's",...

- Do perform the pick in a slow, controlled manner
- Do check the condition of all components utilized in the hoisting of the object
- Do ensure that the mast is within five degrees (5°) of being vertical
- Do try to minimize angle picks; be aware of the swing factor of the object when an angle pick is absolutely necessary
- Do maneuver the machine over the object being moved if at all possible

### INCORRECT



### CORRECT

