PV275 5"-8" Movable Bracket

BREAKOUT WRENCH MANUAL

VERSION: MT1
## Index

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Our range of Mammoth Breakout Wrench’s are in a stage of PCT, Patent pending or completed and patented globally.
Mammoth Technologies
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Mpumalanga
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Private Bag 7260,
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Alsacia 57 Depto.25 Las Condes, Santiago, Chile.
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Email: miparada@mammothdrills.cl

Repairs/Services/Refurbishment
repairs@mammothtech.co.za
For all general repairs, services, and refurbishments on Mammoth products, including existing products, regardless of manufacturer or origin.

info@mammothtech.co.za
enquiries@mammothtech.co.za
technical@mammothtech.co.za
marketing@mammothtech.co.za
Product Description:

- The Mammoth Wrench is an effective tool for the breaking of drill pipe joints.
- The Mammoth Wrench is a tool designed to break drill stem and stabilizer joints within a specified size range.
- The Mammoth Wrench adjusts automatically to the diameter of the drill pipe to compensate for wear.
- A torque ratio between the power head and operation torque of the Mammoth Wrench is set at 4-6:1.
- The strong-arm arrangement of the Mammoth Wrench can be adapted to suit the needs of the user.

Legislation requires the employer to assess and respond to risk

‘1. The objects of the Act are –
   (b) To require employers and employees to identify hazards and eliminate, control and minimize the risks relating to health and safety at mines;’

‘2. The owner of every mine that is being worked must –
   (a) Ensure, the mine is equipped –
       (l) to provide conditions for safe operation and a healthy working environment; and
       (ii) ... with electrical, mechanical and other equipment as necessary to achieve those conditions;
   (b) ensure, as far as reasonably practicable, that the mine is commissioned, operated, maintained and decommissioned in such a way that employees can perform their work without endangering the health and safety of themselves or of any other person;’

‘11. (1) every manager must –
   (a) identify the hazards to health or safety to which employees may be exposed while they are at work;
   (b) assess the risks to health or safety to which employees may be exposed while they are at work;
   (c) record the significant hazards identified and risks assessed; and
   (d) make those records available for inspection by employees.

‘(2) Every manager, must determine all measures, including changing the organization of work and the design of safe systems of work, necessary to –
   (a) eliminate any recorded risk;
   (b) control the risk at source;
   (c) Minimize the risk;

Legislation also dictates that the manufacturer and supplier have a duty towards Health and safety.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

Start

It is the Agent’s responsibility to check that all the parts received correspond with the checklist provided on the last page of this manual.

Contact Mammoth Technologies Head Office. (Contact details p iii)

YES

Parts Missing?

NO

The end user (Product Owner) must complete and sign both “Receipt of Manuals Acknowledgement” (FORM MTM001A) for the Agent’s records and fax / Email FORM MTM001B to Mammoth Technologies for record keeping. Neglecting to complete and submit form MTM001A and MTM001B will potentially void warranty claims. (Both forms are on page 8 & 9 in this manual)

YES

Installation of any Mammoth product must be conducted or supervised by a certified trained Technician. A certificate (FORM MTM002A found on page 10) acknowledging that the installation is satisfactory will either be emailed or faxed to Mammoth Technologies. (Contact details on p iii)

NO

Technician Certified?

YES

It is required that the Product be tested by the certified Technician / Operator after installation. The test certificate (FORM MTM002B) found on page 11, must be completed as proof that the product functions as specified. A copy of the test certificate must be sent to Mammoth Technologies for record keeping. (Contact details p iii)

NO

Test Failed?

YES

Refer to the Trouble Shooting guide on page 17 in this manual

NO

Legislation dictates that the manufacturer and supplier have duty towards health and safety. Therefore, it is a requirement that the Operator and/or Technician be trained on the safety aspects as listed on page 17 in this manual.

Complete
Introduction
Mammoth Technologies (Mammoth) is a Design and Manufacturing Corporation within the Mining and Drilling Industry, creating a dynamic presence in the International Market.

The Mammoth Breakout Wrench drew attention to our Innovative Simplicity within the global market when first introduced in 1999. Development and improvement is still ongoing.

With the success of the Mammoth Breakout Wrench, the designing and manufacturing of a complete product range specifically focused on the Blast whole Industry was developed.

Our products came about as we addressed the necessity in the Market for durable, cost effective products. We designed them to: Improve safety; be easily operated; be simply maintained; and well-priced.

A number of our R&D Innovations came about due to the co-operation of clients with specific problems to overcome.

Vision Statement
Our vision is to be a well-established brand in the Mining and Drilling Industry, leading the way through Quality, Service, and Price, driven by Ethical standards and People with time tested values.

Mission Statement
Exceeding our customer’s expectations through Innovation, Integrity, Intelligence and Energy.

Expertise
Mammoth Technologies takes responsibility for all the phases of the process including conceptualization, market research, design, manufacturing and testing, through to distribution and service. All patented parts are manufactured (including process manufacturing) is done in-house. We guarantee that we provide a professional and consistent Quality service.

Services
Mammoth Technologies offers a wide range of versatility in our field of expertise.

General Services
• R&D
• Auto CAD drawings, 3D/solids, simulations and more
• Innovative solutions to relative problems
• Conceptualization
• Hydraulic Design
• Electrical Design
• Hardware Design - Specific to our Applications
• Software Design (programming) - Specific to our Applications
• Manufacturing
• Process Manufacturing

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
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**Innovative and Consumable Services**

**Servicing and repairs of Mammoth Innovative products**

Breakout benches for breaking of tight joints, due to tension build up during drilling

- Straightening and repairs of Drill Rods

Repairs/Services/Refurbishment [repairs@mammothtech.co.za](mailto:repairs@mammothtech.co.za)

For all general repairs, services, and refurbishments on Mammoth products, including existing products, regardless of manufacturer or origin.

Mammoth Technologies commits itself to supplying quality manufactured products and insists on the following:

- It is recommended that only genuine parts and consumables are used on the Mammoth product range, to ensure full performance, and stability in its operations.
- We have a 100% availability of parts and product consumables.

**The aim of this manual**

The **aim of the Safety and Maintenance Manual is:**

1. To ensure that safety is the key factor in all operations concerning the Mammoth Product.
2. To ensure that every person involved in operating or maintenance on the Mammoth Product, is competently trained and tested fully in the operating and maintenance of the Breakout Wrench.
3. To have information concerning the operation, maintenance and troubleshooting readily available on site.
4. To provide the end-user and/or service provider with contact details of the original manufacturer, when/where assistance might be required.
5. To ensure that the installation of this Mammoth Product is being done and supervised by a competent person, trained for this purpose prior to installation.
6. To assist the authorized person in training the Operators and Technicians that will be utilizing and maintaining the product.
7. When all instructions in this manual are followed, to provide the end-user or agent with the Mammoth Warranty, which is conditional to all instructions and procedures set out in this manual.

**Procedures and Requirements**

The following procedures and instructions need to be followed precisely, in order for this product to receive the Mammoth Warranty. All documentation and confirmations are to be in writing and faxed or e-mailed to Mammoth Technologies South Africa, for registration of the warranty, failure to do so before the product is used will render the warranty null and void.

Please note: the Mammoth Warranty is subject to all conditions being adhered to in this manual. Mammoth Technologies will investigate all warranty claims, and if found that the fault is due to negligence or incorrect
maintenance/conditions, the warranty will become null and void, and the end-user or service provider / agent will be liable for all costs incurred in the investigation of the claim, as well as any repairs that may be necessary.

1. Manuals

1. Three (3) manuals are shipped with every Mammoth product. Every manual contains information on the installation, operation and maintenance of the Mammoth product.

2. One (1) manual is for the distributor. (________________)

3. Two (2) manuals are to be provided to the end-user and/or service provider. It is the responsibility of ______________________ (distributor), to ensure that these manuals are provided with the product to the end-user/service provider.

4. The distributor is to acknowledge receipt of 3 manuals on form MTM001A (included in this manual and to be faxed/e-mailed to Mammoth Technologies SA)

5. The end-user/service provider is to acknowledge receipt of 2 manuals on form MTM001B (included in this manual and to be faxed to Mammoth Technologies SA).

2. Installation

1. Installation is to be conducted and supervised only by an authorized person, previously trained and accredited by Mammoth Technologies.

2. Once installation is completed, by the distributor/end user, form MTM002A (included in this manual must be faxed/e-mailed to Mammoth Technologies SA) serving as reference of correct installation procedures.

3. After installation, the operation of the product is to be tested by the end-user / distributor, preferably on-site. Form MTM002B (included in this manual) must be fully completed and faxed/e-mailed to Mammoth Technologies SA as confirmation that the product has been tested and the end-user is satisfied with the operation of the product.

3. Training

1. Operators are to be trained in the operating procedures and basic maintenance procedures.

2. Technicians are to be trained in operating and maintenance procedures, as well as trouble-shooting – hydraulic, electrical components and schematics of the Mammoth product.

3. This manual contains training certificates, which are to be completed correctly and by the authorized person conducting the training and are to be faxed/e-mailed to Mammoth Technologies SA) for registration purposes prior to the product going into production.

4. It is important that where there is any change in the operator/s or technician/s that is to perform work on the Mammoth product, adequate training is given.

4. Assistance

Mammoth Technologies pledges to support this product at all times, with assistance and service as and when required. Any warranty claims however, are subject to all conditions and procedures being adhered to, as set out in this manual. All warranty claims are subject to investigation, as previously stated and if it is the finding of Mammoth
Technologies that all conditions and procedures were not followed the agent / end-user will become liable for all costs incurred and repairs required.

It is a condition of warranty that all documents as stated are completed and faxed/e-mailed to Mammoth Technologies at the following number:
Name: Pierre Gouws
E-mail address: info@mammothtech.co.za / pcgouws@mammothtech.co.za
Fax: +27(0) 13 690 1587
Cell phone number: 082 259 1347
If Mammoth Technologies is not in possession of these documents, the warranty expires. It is the responsibility of the agent / end-user, to ensure and confirm that Mammoth has indeed received the documentation. If no proof (being written confirmation from Mammoth) can be supplied that all documentation has been received by Mammoth Technologies SA, and Mammoth Technologies SA, does not have these documents on record, it is assumed that the documents have not been completed and faxed/e-mailed as stated.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

FORM MTM001B

TO: MAMMOTH TECHNOLOGIES SA

It is herewith acknowledged that two (2) manuals have been received with Mammoth product, Serial No: ________________________________, by ________________________________ (name)

The manuals will be distributed according to the procedures laid out in the manual.

By signing this document, the person agrees on behalf of the distributor / end-user that all procedures concerning the Manuals will be followed correctly. It is agreed that 2 manuals are being provided to the end-user / service provider.

_________________________  ____________________________  ____________________________
Signature                  Name in Print                  (end-user /distributor)

__________________________
Date
FORM MTM002A

TO: MAMMOTH TECHNOLOGIES SA

Notice is hereby given that installation of the Mammoth product, Serial No: ____________________________ has been conducted and supervised by the following person:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
</tr>
</thead>
</table>

Date

All installation procedures have been followed, and this person is satisfied that installation has been conducted successfully.

Notes on installation:

An additional report containing detailed information can be faxed / e-mailed to Mammoth Technologies.
Name: Pierre Gouws
E-mail address: info@mammothtech.co.za / pcgouws@mammothtech.co.za
Fax: +27(0) 13 690 1587
Cell phone number: 082 259 1347

Signature: ____________________________ Date: ____________________________
FORM MTM002B

TO: MAMMOTH TECHNOLOGIES SA

The Mammoth product, Serial No:____________________________ has been tested by the following person:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Date

The person acknowledges that the Mammoth product has been tested in operating procedures, and is satisfied that it is functional and to standard. Any operational defects are to be reported immediately:

Notes on test:

An additional report containing detailed information can be faxed / e-mailed to Mammoth Technologies.

Name: Pierre Gouws
E-mail address: info@mammothtech.co.za / pcgouws@mammothtech.co.za
Fax: +27(0) 13 690 1587
Cell phone number: 082 259 1347

Signature: ________________________ Date: ________________________

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
Dear Sir / Madam,

IN RE: ORIGINAL ENGINEERING MANUFACTURER’S WARRANTY LETTER

Kindly accept the letter of warranty for the Mammoth product which you have purchased from our company. Please note that the warranties offered on our product range vary. Please be attentive to the warranty which applies to your purchase:

1) DRILLING CONSUMABLES:
Drilling Consumables includes but is not limited to: Shock Subs, Deck Bushes, Drill Rods, Top Subs, Bottom Subs, Lifting Bails, Bit Pots and Mammoth Breakout Wrench Jaws.

WARRANTY COVERAGE: Mammoth Technologies hereby warrants that the product is free of any defect in material and workmanship. The period of warranty is 3 months from the date of transfer of ownership of the product as per the agreed incoterms. If you notice any defect in the parts that is covered by this warranty, within the above said period, please direct your claim to our Warranty Service details below. In the case of a claim, we will investigate the claim, and make a decision based on that investigation. In the event that the investigation results confirm that you have a valid claim, we will repair or replace the product.

EXCLUSIONS: Mammoth Technologies will not have any liability or obligation under this limited warranty (i.e. the warranty will be null and void) in case of:
1. Any defect caused by misuse or abuse of the product.
2. Damage caused by natural disasters.
3. Damage caused by unauthorized modification.
4. Defects caused by improper storage of the product.
5. Defects caused by the product being incorrectly maintained, operated, disassembled, welded upon, or in any way materially altered without prior approval by the original manufacturer.

LIMITATIONS: The Customer acknowledges that the products are wear and consumable parts that have a limited useful life. We do not warrant wear or consumable products except that a failure to meet specifications or a defect in material or workmanship cause elevated failure rates of such products. The only recourse to you, in case of any defect in the product, is repair or replacement of the parts, as specified above. We will not be liable for any consequential damages or inability to use the product. We will not be liable or responsible for any damage caused to drill stems while using the products directly or indirectly during operation the cost of the repair or replacement shall not be higher than the purchase price of the product excluding tax, shipping, and installation charges. By installing and using the product, the user accepts the terms and conditions described herein.

WARRANTY CLAIM PROCESS: Authorization for return must be obtained and such return must be shipped, freight prepaid, and include complete explanation of the defect and details of the incident. Defective parts must be returned to the plant of origin within 30 calendar days of authorization date, should the product be found non-defective; re-testing and reviewing charges will be applied prior to return of the product to the customer. Valid claims will receive freight reimbursements to and from the point of origin.

WARRANTY SERVICE: In the event of a warranty claim, you may contact the following representative:
Name: Pierre Gouws
E-mail address: info@mammothtech.co.za / pcgouws@mammothtech.co.za

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

2) CAPITAL EQUIPMENT

Capital Equipment includes but is not limited to: The Mammoth Breakout Wrench, Sweeper, Sampler and Stem Lock.

WARRANTY COVERAGE: Mammoth Technologies hereby warrants that the product is free of any defect in material and workmanship. The period of warranty is 1 year from the date of transfer of ownership of the product as per the agreed incoterms. If you notice any defect in the parts that is covered by this warranty, within the above said period, please direct your claim to our Warranty Service details below. In the case of a claim, we will investigate the claim, and make a decision based on that investigation. In the event that the investigation results confirm that you have a valid claim, we will repair or replace the product.

It is important to note that different Warranty periods apply to the following components and that certain components of certain products is excluded from the Warranty:

Electrical System
The Electrical System on the Mammoth Wrench is guaranteed against defective materials and/or workmanship for a period of 6 months from the date of transfer of ownership of the product as per the agreed incoterms. This warranty becomes null and void in accordance with the Exclusions below.

Hydraulic Component Warranty
All hydraulic Cylinders are guaranteed against defective materials and/ or workmanship for 1 year from the date of transfer of ownership of the product as per the agreed incoterms. The manufacturer will repair or replace, at their option, free of charge, any warranted product or part proven to be defective in material and/or workmanship. Normal in-service wear of internal components is not covered by this warranty.

Mammoth Breakout Wrench Jaws
The Mammoth Breakout Wrench Jaws are a drilling consumable product and the warranty and conditions relating to Drilling Consumables above apply.

Mammoth Sweeper Flaps
The Mammoth Sweeper is covered by the capital equipment warranty, however, the Mammoth Sweeper Flaps are not covered by any warranty and this component will be replaced at the Customer’s own cost.

EXCLUSIONS: Mammoth Technologies will not have any liability or obligation under this limited warranty (i.e. the warranty will be null and void) in case of:
1. Any defect caused by misuse or abuse of the product.
2. Damage caused by natural disasters.
3. Damage caused by unauthorized modification.
4. Defects caused by improper storage of the product.
5. Defects caused by the product being incorrectly maintained, operated, disassembled, welded upon, or in any way materially altered without prior approval by the original manufacturer.

LIMITATIONS: The only recourse to you, in case of any defect in the product, is repair or replacement of the parts, as specified above. We will not be liable for any consequential damages or inability to use the product. We will not be liable or responsible for any damage caused to drill stems while using the product directly or indirectly during operation. The cost of the repair or replacement shall not be higher than the purchase price of the product, excluding tax, shipping, and installation charges.

By installing and using the product, the user accepts the terms and conditions described herein.

WARRANTY CLAIM PROCESS: Authorization for return must be obtained and such return must be shipped, freight prepaid, and include complete explanation of the defect and details of the incident. Defective parts must be returned to the plant of origin within 30 calendar days of authorization date, should the product be found non-
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

**WARRANTY SERVICE:** In the event of a warranty claim, you may contact the following representative:
Name: Pierre Gouws
E-mail address: info@mammothtech.co.za / pcgouws@mammothtech.co.za
Fax: +27(0) 13 690 1587
Cellphone number: 082 259 1347

We thank you for your support.

Yours truly,
Mammoth Technologies

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10

SAFETY FACTORS AND ADVANTAGES

- The Mammoth Wrench, being a “Hands Free” hydraulic wrench is controlled remotely from within the cab.
- Hazardous and potentially dangerous practices to loosen drill pipes are reduced dramatically with the operator being in the cab during these breakout procedures.
- Breaking joints safely and with ease during normal mining activity has numerous benefits that will improve productivity.
- By using the Mammoth Wrench instead of the hammering action of the rotary head to loosen tight joints:
  1. Eliminates strain on the shock sub, rotary head pinion gears, hydraulic motor output shaft etc. extending the working life of these components.
  2. Production (penetration rate) will increase due to time saving on the breaking of irregular joints.
- Reduction in standing time and artisan call outs.
- The risk of cutting or damaging equipment (pipes, stabilizer and bits) is greatly reduced.
• The Mammoth Wrench is currently being designed to suit any rod size ranging from 3” up to 15”
• It can be mounted as a fixed or moveable mounting bracket. With the moveable bracket, the wrench can be set at different height levels.

1. Fixed and Moveable Mounting Bracket

a) Determine the position of the mounting bracket by checking the limits of the power head, and guide positions as a top indicator, and the top of the rod flats as a bottom indicator. Keep the movement of the mast in mind and ensure that the bracket will not hook onto or foul the adjacent cab, hoses or any other equipment.
b) Bolt the mounting bracket onto the mast, (left or right) OR Fit the freestanding bracket as indicted in (FIG. 1).
c) Weld and tighten all plates and bolts to secure the mounting bracket (Refer to FIG.1)
d) The moveable bracket’s lifting cylinder can be fitted on top or below the bracket, dependant on the deck layout (Refer FIG. 1).
e) Please note that the fixed bracket does not have a lifting cylinder.
2. The Wrench (Refer to FIG. 1)
   a) Fit move cylinder. (Fit lift cylinder only for adjustable mounting bracket)
   b) At this point: Ensure that:
      • The wrench is perpendicular to the rod
      • All circlips are fitted
      • All pins are greased, and
      • All cylinders are secure

3. Installation of the electrical system

3.1 The Control Box (FIG. 2)
   a) Mount the control box in the cab where it is most convenient for the operator to operate the Wrench.
   b) Remove the 5 Amp Fuse
   c) Connect a 24 V dc supply from the machine to the control box.

3.2 The Junction box (FIG 2)
   a) The junction box is situated in the sequence box (the hydraulic box).
   b) Root the multi-core cable from the Junction box to the control box and ensure that the cable is routed in such a way that no mechanical or other damage can occur
   c) Make sure to connect the wires correctly as numbered to the control box.
   d) Check that all the solenoid plugs are connected to the solenoids on the sequence block (Refer FIG. 4) S1 to S7.

3.3 Testing the Electrical System and Troubleshooting

1. Reinstall 5 AMP Fuse
2. Test the multi-core cable from the control box
   a) Test with Multi-meter, (OHMS setting) between No’s 1 to 7 (positive) and No. 8. (Negative). The reading should be ± 3.15 Kilohms. If not, check that the solenoid plugs on the sequence block are connected to the solenoids or check the multi-core cable for loose connections.)
3. Test the Control Box (FIG 2):
   a) De-isolate the power supply and switch the Machine on.
   b) Test between No. 1 to 7 (positive) and No. 8. (Negative) for 24 V dc Readings.
   c) Procedure:-
      i. Connect a Multi-meter: between the positive on No. 1. And the negative on No. 8, Go through each function of the machine and check for 24Vdc. Only one function will have 24Vdc at any single time. If a reading of 24Vdc is not obtained, check the following:-
      ii. Check the machine supply for 24 Vdc.
      iii. Check the 5 amp fuse
      iv. Check for any loose connections in the control box.
4. Switch the power supply off
5. Connect the multi-core cable to the control box.

3.4 Operation of the electrical to hydraulic system (Refer to FIG 2 and 3)

1. Activation of Functions
   a. (1) UP and DOWN – Lifting cylinder. Adjusting the height of the wrench.
   b. (2) IN and OUT – Move Cylinder. Moving the wrench assembly back and forth.
   c. (3) OPEN and CLOSE (BREAKOUT ACTION) – Main cylinder and lock cylinder. For Break Out procedures to loosen the rod.
2. Example of Operation (Refer to FIG 2)
   a. In FIG 2 the Main solenoid is always connected to the negative.
b. When activating the Main switch, 24 Vdc is supplied to the control box.
c. This in turn provides power to the switches.
d. When any of the functions are activated, for example ‘UP’, then the electrical circuit to solenoids S1 and S3 are activated. The solenoids open the selected valves allowing hydraulic oil to flow to the lifting cylinder and thereby lifting the wrench up.

Each of the functions work on the same principle

4. Hydraulic Installation

a) The hydraulic valve box must be installed in a convenient position for adjustment and maintenance purposes.
b) The schematic drawings (FIG 3 and 4) show the hydraulic connections.

4.1 Setting up the Hydraulic System on the Mammoth Wrench

NB: Operating pressure ~ 2300 PSI – 3000 PSI
Preferred operating pressure ~ 2800 PSI

a) Check that all the hoses are fitted correctly onto the wrench and sequence block (FIG 3).
b) (FIG. 4) The flow control (FC1) is pre-set. These Settings will determine the speed of the pan movement (IN and OUT) of the wrench. These settings may need some fine tuning for optimum performance as per the customer’s requirements.
c) The breakout function, sequence setting, will be pre-set.
d) To test sequence setting: Activate the OPEN function. The Main Cylinder and Lock Cylinder must retract.
e) Activate the BREAKOUT ACTION: The lock cylinder extends and locks the rod in the mouth of the wrench, when the grip is secure (at a sequence set pressure) the sequence valve relieves to the main cylinder, extends and turns the rod.
f) If the main cylinder does not extend, adjust the sequence. Turn PS1 anticlockwise in small increments until it the main cylinder starts to move. Make sure that the main cylinder and lock cylinder does not move at the same time. If this should occur, turn PS1 clockwise until the sequence is established.

4.2 Trouble shooting – Hydraulic System

Problem: None of the functions are working.
Solution: a. Check for hydraulic oil pressure supplying the sequence block (fig 4. oil pressure line.)
b. If there is oil pressure at the pressure line, check that the main switch is turned on. Check that there is power at the main solenoid (S1), check for loose connections. (Fig.2)

Problem: The sequence between the main cylinder and the lock cylinder is non-existent.
Solution: Check that the hoses are fitted correctly
Make sure that the sequence is set according to the installation instructions.

Problem: The pan movement “IN”, “OUT” does not work.
Solution: Set (FC1) to get flow through to the move cylinder.
Check solenoids for power.

IF PROBLEM PERSISTS CONTACT THE AGENT.
5. Breakout procedure

a) Ensure that the deck is clear of all personnel or any other person/s during operation of the wrench or stem lock/c-spanner.
b) Activate the stem lock / c-spanner into the flats of the rod or stabilizer. (figure a, b)
c) Turn the rod with the rotary head to the stem lock locked position. (figure c)
d) Switch the control box on.
e) Adjust the height of the wrench; lift up the wrench,” UP/DOWN” (if applicable)
f) Make sure that the wrench does not grip the rod around the flats or the hard facing.
g) Activate the “OPEN” function. The main and lock cylinder must retract. Drive the wrench onto the rod so that the rod is in the mouth of the wrench.

REMEMBER – do not move the rod or the wrench up or down when the wrench is locked around the rod.

a) Activate the “BREAKOUT ACTION / CLOSE’. (The lock cylinder extends and locks the rod in the mouth of the wrench. When the grip is secure the main cylinder extends and turns the rod.
b) After breakout is complete reverse the wrench “OPEN “function.
c) Drive the wrench back into the rest position.
d) Lower the wrench to the bottom rest position.

---

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
Maintenance will start with the operator’s daily visual inspection. If the operator notices any problem or breakage, it must be reported to the relevant supervisor who must take the appropriate action to ensure the safety of personnel and that no damage occurs to the product.

The Engineering department should do an inspection at least once a week, as per a planned maintenance schedule on every rig. Maintenance of the product consists of:

a. Cleaning the wrench.
b. Checking all pins and circlips.
c. Securing all bolts, nuts and circlips if necessary.
d. Checking bits and bit plates.
e. Greasing all the pins.
f. Checking all hydraulic hose and fittings

Safety

This product is developed and manufactured with absolute SAFETY, maximum effect and minimum effort in mind.

The object being to ensure that the SAFETY of the operator and all other person/s are considered as the Mammoth product is being used.

To ensure the operator’s SAFETY, training is needed to familiarize the operator with all the relevant features and functions of the product.

Remember: AWARENESS is a SAFETY tool always at hand. I.e. by constantly observing your environment you can identify a hazard before it becomes an accident.

Operating Procedure When Working with the Mammoth Product

1. Always wear PPE. As required by local conditions and safety legislation.
2. The deck must be clear of obstacles and person/s when the wrench is in use.
3. Make sure that the pre-use inspection is carried out before being used.
4. Make sure that the wrench is in the locking mode when not being used.

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
Training

To ensure that all the operators on the drill rigs are trained, a Mammoth Technical agent, or appointed agent, will train an appointed instructor on the maintenance and SAFE operation of the product.

The instructor will sign a Certificate of proficiency when the MAMMOTH or appointed technical agent is satisfied that he will be able to train all relevant operators and maintenance personnel in the maintenance and SAFE operation of the product.

Mammoth Technologies will, through the visiting agent, supply a Certificate of Proficiency that must be issued to Operators and maintenance personnel by the Mammoth Instructor.

PRE-USE INSPECTION

Check:
1. Condition of bits
2. Condition of hoses and connections
3. Overall condition of the wrench i.e. brackets, handles and cylinders

Training Procedure

1. A Training Officer must be trained and certified by Mammoth Technologies technician
2. A certified Training Officer will be responsible for training Operators and/or Technicians on the mine
3. A list (page 22) of the trained Operators and/or Technicians must be e-mailed and/or faxed to Mammoth Technologies (Contact details on page iii of manual)
4. Mammoth Technologies will issue certificates to the Operators and/or Technicians trained by the Training Officer.
Training Certificate

This Certificate serves to confirm that

__________________________________________
Name

__________________________________________
Identity Number

has been appointed by ____________________________ (mine’s name) to be trained in the full operating and maintenance of the Mammoth Wrench, and also to conduct further training to all operators involved in the handling of the Mammoth Wrench.

This training has been completed, and the Distributor Representative is satisfied that this trainee will be able to conduct future training

__________________________________________  ______________________
Distributor Representative (Print Name)  Signature

__________________________________________  ______________________
Mine’s Representative (Print Name)  Signature

__________________________________________
Date

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

<table>
<thead>
<tr>
<th>Name</th>
<th>I.D. Number</th>
<th>Operator</th>
<th>Technician</th>
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Training Officer Signature: ___________________________ Date: ___________________________

Note:
This list of trained operators/Technicians must be faxed or e-mailed to Mammoth Technologies in order to issue certificates.
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>OK</th>
<th>OK with remarks</th>
<th>NOT OK see last page for remarks and action</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Documentation</td>
<td></td>
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<tr>
<td>A</td>
<td>Is a Manual included with each Mammoth Product from the Agent to the End user?</td>
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<tr>
<td>B</td>
<td>Is the ‘Receipt of Manuals Acknowledgement’ FORM MTM001A completed and on record for each Mammoth Product supplied? <em>(Page 8 of the Manual)</em></td>
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<tr>
<td>C</td>
<td>Is an Installation certificate FORM MTM002A completed for each Mammoth Product Installed?</td>
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<tr>
<td>D</td>
<td>Is a Test certificate FORM MTM002B completed for each Mammoth Product Installed?</td>
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<tr>
<td>E</td>
<td>Is Training certificates issued to Operators/Technicians and Training Officers on the Mammoth Products?</td>
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<tr>
<td>F</td>
<td>Did the training Agent send a list <em>(page 22)</em> indicating all the trained Operators and Technicians to Mammoth Head Office for certificates?</td>
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<td>2.</td>
<td>Training</td>
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<tr>
<td>A</td>
<td>Are Operators trained on the basic operating procedures and maintenance procedures of the Mammoth Product?</td>
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<tr>
<td>B</td>
<td>Are Technicians trained on the basic operating procedures and maintenance procedures, as well as trouble shooting – Hydraulics, electrical components and schematics of the Mammoth Wrench?</td>
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<tr>
<td>C</td>
<td>Has a Mammoth Technical Agent or Appointed Agent trained an Appointed Instructor on the maintenance and safe operation of the Mammoth Product?</td>
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</tbody>
</table>
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.

<table>
<thead>
<tr>
<th>3. Procedures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong> Was the ‘Receipt of Manuals Acknowledgement’ FORM MTM001B for each Product sent to Mammoth Technologies? <em>(Page 9 of the Manual)</em></td>
<td></td>
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<tr>
<td><strong>B</strong> Was two manuals handed to the end user per Product?</td>
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<tr>
<td><strong>C</strong> Was the installation conducted and supervised by an authorized person (previously trained and registered with Mammoth Tech)?</td>
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<tr>
<td><strong>D</strong> Was the operation of the Product tested?</td>
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<tr>
<td><strong>E</strong> Was Mammoth Tech contacted for assistance (if applicable)?</td>
<td></td>
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<tr>
<td><strong>F</strong> Is the Product being serviced at regular intervals as indicated in the Product Manual page 19?</td>
<td></td>
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<tr>
<td><strong>G</strong> Does the operator follow the breakout procedure as on page 18 of the Wrench Manual?</td>
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<table>
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<tr>
<th>4. Installation</th>
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<tbody>
<tr>
<td><strong>A</strong> Was the position of the power bracket determined with regards to the limits of the power head and guide positions used as a top indicator and rod flats used as a bottom indicator?</td>
<td></td>
</tr>
<tr>
<td><strong>B</strong> Was the mast kept in mind to prevent the bracket from hooking onto the adjacent cab, hoses or any other equipment?</td>
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<tr>
<td><strong>C</strong> Was the mounting bracket bolted to the mast or fitted to the freestanding bracket as per manual instructions?</td>
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<tr>
<td><strong>D</strong> Are all plates and bolts welded and tightened to secure the mounting bracket?</td>
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<tr>
<td><strong>E</strong> Is the control box mounted in the cab where it is most convenient to operate?</td>
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<td><strong>F</strong> Is the multi core cable routed to the junction box in such a way that no mechanical or other damage can occur?</td>
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<tr>
<td><strong>G</strong> Are the wires connected correctly as numbered to the control box?</td>
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<tr>
<td><strong>H</strong> Is all the solenoid plugs connected to the solenoids on the sequence block?</td>
<td></td>
</tr>
<tr>
<td><strong>I</strong> Does the electrical system function as per page 16 of the Wrench Manual?</td>
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<tr>
<td><strong>J</strong> Is the hydraulic valve box installed in a convenient position for adjustments and maintenance purposes?</td>
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<tr>
<td><strong>K</strong> Are all the hoses fitted correctly onto the sequence block?</td>
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<tr>
<td><strong>L</strong> Does the hydraulics function as per page 17 of the Wrench Manual?</td>
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</tbody>
</table>
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<td>5.</td>
<td>Safety</td>
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<tr>
<td>A</td>
<td>Do operators wear PPE?</td>
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<tr>
<td>B</td>
<td>Is the deck clear of all obstacles and persons when Product is in use?</td>
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<tr>
<td>C</td>
<td>Is the pre-use inspection (page 20) carried out before Product is being used?</td>
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<td>D</td>
<td>Is the Wrench in locking mode when not being used</td>
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<td>E</td>
<td>Is the condition of the bits checked before use?</td>
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<td>F</td>
<td>Is the condition of the hoses and connections checked before use?</td>
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<td>G</td>
<td>Is overall condition of the Product checked (Brackets, handles and cylinders) before use?</td>
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Signature/Initial_______________________________
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<table>
<thead>
<tr>
<th>Item#</th>
<th>Observation / Remarks</th>
<th>Action and Completion Date</th>
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Signature/Initial________________________________________
It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
1. YOUR ACCEPTANCE OF THIS AGREEMENT

This is an Agreement between you and all persons you represent (and for purposes of this Agreement, “person” includes natural persons and any type of incorporated or unincorporated entity) and Mammoth Technologies (“Mammoth Tech”), and governs your use of the Mammoth Tech’s products and the content, information and services provided in and from the Mammoth Tech catalogue. Each time you purchase or use products from the catalogue you signify your acceptance and agreement, and the acceptance and agreement of all persons you represent, without limitation or qualification, to be bound by this Agreement, and you represent and warrant that you have the legal authority to agree to and accept this Agreement on behalf of yourself and all persons you represent. If you do not agree with each provision of this Agreement, or you are not authorized to agree to and accept this Agreement, you may not purchase or use the products as per the catalogue.

2. SCOPE OF THIS AGREEMENT

This Agreement is in addition to and supplements any written agreements that you or any persons you represent have with Mammoth Tech or Affiliates and Providers (now or in the future) concerning your dealings with Mammoth Tech or Affiliates and Providers generally. This Agreement and all other agreements that you or any persons you represent have with Mammoth Tech or Affiliates and Providers (now or in the future) together constitute the entire agreement regarding your purchase and use of the products, and supersede all previous agreements (written, oral or otherwise) regarding your purchase and use of the products. In the event of any inconsistency or conflict between the provisions of this Agreement and the provisions of any other agreement that you or any persons you represent have with Mammoth Tech or Affiliates and Providers (now or in the future), the provisions of this Agreement shall govern regarding your purchase and use of the products.

3. CHANGES TO THIS AGREEMENT

Mammoth Tech may, in its discretion, change, supplement or amend this Agreement as it relates to your future purchase and use of the products from time to time, for any reason, and without any prior notice or liability to you or any other person. You may not change, supplement, or amend this Agreement in any manner.

4. ERRORS

Mammoth Tech endeavors to provide accurate information through their product catalogue. Nevertheless, errors may occur. Accordingly, Mammoth Tech reserves the right to change other information available through their product catalogue at any time and from time to time without any notice or liability to you or any other person.

5. ASSESSMENT AND USAGE TERMS

IF YOU DO NOT AGREE TO, OR ARE NOT COMFORTABLE WITH THESE TERMS OR ANY PART THEREOF, PLEASE DO NOT PURCHASE ANY PRODUCTS MANUFACTURED BY US. USING OUR PRODUCTS OR ANY PART THEREOF IN ANY WAY, SIGNIFIES YOUR CONSENT TO BE BOUND BY THESE TERMS AND ANY PART THEREOF.

5.1 Your Non-exclusive Right

We hereby grant you a non-exclusive right under the Mammoth Tech property rights, to use the product/s purchased from the product catalogue subject to the Terms. Only you may use the product, and you may not rent, lease, lend, sub-license or transfer the right to the product or any part thereof nor any of your rights under the Terms to anyone else. You may not develop, re-sell or replicate or manufacture the product or any component thereof.

5.2 Your Use of the product/s

Except as otherwise provided herein, you may not alter, modify, copy, distribute, transmit, display, perform, reproduce, publish, license, create derivative works from, publicly display, transfer, sell, manufacture or use in any other way, the product, without the prior express written permission of Mammoth Tech.

5.2.1 Your User Responsibilities

You may only use the product and any part thereof for lawful purposes.

5.2.2 Changes to the Service

We reserve the right, at any time and for whatever reason, to limit, deny, create different priorities to different users, modify, or cancel some or all of the product supply or any part thereof, without prior notice. We may, at any time, suspend or cancel an order for a product/s or any part thereof for any reason without prior notice.

5.3 Proprietary Rights

Pierre Gouws, the managing director of Mammoth Tech is the owner of all intellectual property rights in the products in the product catalogue and any part thereof. Nothing in these Terms shall be construed as granting to you a license under any copyright, trademark, patent or other intellectual property right of Pierre Gouws or any third party, except as expressly set forth herein.

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
6. DISCLAIMER, LIABILITY EXCLUSION, LIABILITY LIMITATION, RELEASE AND INDEMNITY

Mammoth Tech and Affiliates and Providers do not accept any liability for your use of their product/s. For that reason, the following provisions apply to your use of the product/s.

DISCLAIMER:

Your use of the product is at your own risk. The product is provided on an “as is” and “as available” basis, and without any representations, warranties or conditions of any kind, whether express or implied, and including without limitation representations, warranties or conditions of title, non-infringement, merchantability, fitness for a particular purpose, performance, durability, availability, timeliness, accuracy or completeness, all of which are hereby disclaimed by mammoth tech and the affiliates and providers to the fullest extent permitted by law.

There will not be any representations, warranties or conditions created by a course of dealing, course of performance or trade usage.

You are solely responsible for following the user manual and only using the product for its’ intended purpose.

Mammoth Tech and the affiliates and providers will not be liable to you or any other person for any loss or damages suffered by you or any other person as a result of the operational failure, malfunction, interruption, change, amendment or withdrawal of a product.

Without limiting the generality of the foregoing, Mammoth Tech and the affiliates and providers make no representation, warranty or condition that:

a. The product will be compatible with your machinery and related equipment;

b. The product will be available or will function without interruption or will be free of errors or that any errors will be corrected;

c. The product will meet your requirements;

d. Certain or any results may be obtained through the use of the product;

Mammoth Tech and the affiliates and providers disclaim any and all liability regarding such matters to the fullest extent permitted by law.

LIABILITY EXCLUSION:

Mammoth Tech and the affiliates and providers will not under any circumstances be liable to you or any other person for any loss of use, loss of production, loss of income or profits (anticipated or otherwise), loss of markets, economic loss, special, incidental, indirect or consequential loss or damage or exemplary or punitive damages, whether in contract, tort, negligence, strict liability, or under any other theory of law, arising from, connected with, or relating to the use of the product/s by you or any other person, and regardless of any negligence or other fault or wrongdoing by Mammoth Tech or any affiliate or provider or any person for whom Mammoth Tech or an affiliate or provider may be responsible, and notwithstanding that Mammoth Tech or any affiliate or provider may have been advised of the possibility of such loss or damages being incurred by you or any other person.

RELEASE:

You hereby release, remise and forever discharge as permitted by law each of Mammoth Tech and the affiliates and providers and all of their respective franchisees, partners, agents, directors, officers, employees, information providers, service providers, suppliers, subcontractors, licensors and licensees, and all other related, associated, or connected persons from any and all manner of rights, claims, complaints, demands, causes of action, proceedings, liabilities, obligations, legal fees, costs, and disbursements of any nature and kind whatsoever and howsoever arising, whether known or unknown, which now or hereafter exist, which arise from, relate to, or are connected with your use of the product/s.

INDEMNITY:

You agree to indemnify, defend and hold harmless each of mammoth tech’s and the affiliates and providers and all of their respective franchisees, partners, agents, directors, officers, employees, information providers, service providers, suppliers, subcontractors, licensors and licensees, and all other related, associated, or connected persons (collectively, the “indemnified parties”) from and against any and all liabilities, expenses and costs, including without limitation reasonable legal fees and expenses, incurred by the indemnified parties in connection with any claim or demand arising out of, related to, or connected with your use of the product/s or your breach of this agreement. You will assist and cooperate as fully as reasonably required by the indemnified parties in the defense of any claim or demand. Advice and information provided by
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7. OWNERSHIP AND PERMITTED USES OF THE PRODUCT/S
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8. GOVERNING LAW
This Agreement will be governed by and construed in accordance with the law of the Republic of South Africa and all disputes, actions and other matters relating thereto will be determined in accordance with such law.

9. OTHER MATTERS
9.1 This Agreement constitutes the whole of the Agreement between the parties relating to the matters dealt with herein and, save to the extent otherwise provided herein, no undertaking, representation, term or condition relating to the subject matter of this Agreement not incorporated in this Agreement shall be binding on any of the parties.

9.2 No variation, addition, deletion, or agreed cancellation will be of any force or effect unless in writing and signed by or on behalf of the parties (subject to special provisions referred to in paragraph 6). Failure or delay on the part of any party in exercising any right, power or privilege hereunder will not constitute or be deemed to be a waiver thereof, nor will any single or partial exercise of any right, power or privilege preclude any other or further exercise thereof or the exercise of any other right, power or privilege.

9.3 Neither this Agreement nor any part, share or interest therein nor any rights or obligations hereunder may be ceded, assigned, or otherwise transferred without the prior written consent of the other parties.

9.4 Any consent or approval required to be given by any party in terms of this Agreement will, unless specifically otherwise stated, not be unreasonably withheld.

It is recommended that only genuine OEM spare parts and consumables are used on the Mammoth Product range, to ensure full performance and operational stability. Utilising unauthorised spare parts and consumables can result in injury and potentially void warranty claims.
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<tr>
<th>Item No</th>
<th>Description</th>
<th>Part No 8&quot;</th>
<th>Part No 7.5&quot;</th>
<th>Part No 7&quot;</th>
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**Recommended Spares (Qty):**

- MOUNTING BRACKET: 1
- BACK PIN: 1
- MAIN CYLINDER: 1
- MOVE CYLINDER: 1
- FRONT PIN: 1
- SLIDE BUSHES: 4
- SHP PLATE: 1
- BOLT: 2
- STRONG ARM: 1
- DRUM PIN: 1
- STRONG PIN: 1
- SLIDE PIN: 1
- COVER PLATE: 1
- LOCK CYLINDER: 1
- OUTER FRAME: 1
- SLIDE ARM: 1
- MOVE PIN: 1
- BRACKET BOLT PLATE: 1
- BRACKET MOUNTING PLATES: 1
- BRACKET BOLT PLATE: 1
- LIFT CYLINDER: 1
- LIFT CYLINDER PIN: 2
MOUNTING INSTRUCTIONS
STEP 1

POSITION EXTENTION PLATE

POSITION AND WELD THE EXTENSION PLATE ON TO THE SIDE OF THE DECK
STEP 2
CENTRE WRENCH/ SIZE AB

TAKE SIZE FROM A TO B

CENTER BUSHES INSIDE THE SLOTS BEFORE TAKING MEASUREMENT AB

MAKE SURE THAT THE CYLINDERS ARE NOT EXTENDED
STEP 3

POSITION BRACKET

USE SIZE AB TO
POSITION THE
MOUNTING BRACKET.
MAKE SURE TO USE
A NEW DRILL ROD.
STEP 4
CHECK POSITION

TACK/WELD THE BRACKET INTO POSITION AND CHECK THE ALIGNMENT OF THE WRENCH TOWARDS THE ROD.

WELD THE BRACKET IF THE ALIGNMENT IS RIGHT
OPTIONAL BITS

B21L/B21R

B23L/B23R

B28L/B28R

TI18 9.5

TI25 9.5

TI40 9.5

STEEL ALLOY BITS

TUNGSTEN INSERTED BITS
PARTS LIST

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