

MHT-H

HOT TAPPING MACHINE

OPERATION & MAINTENANCE MANUAL

COVERING MODELS

MHT824-H, MHT1236-H and MHT1242-H

Version History

All Mirage Machines Ltd. documentation is quality controlled and audited in accordance with **BS EN ISO 9001:2008**; the scope of which covers design, manufacture and repair of in-situ machine tools.

| Version No. | Implemented By | Revision Date | Approved By | Approval Date | Comments |
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| 4 | STH | 19/10/2020 | DMS | 19/10/2020 | Updated GA drawings. |
| 5 | STH | 21/10/2020 | JB/DMS | 21/10/2020 | Added warning note regarding over feeding using autofeed options |
| 6 | STH | 03/11/2020 | DMS | 03/11/2020 | Measuring cutting speed guidance added to page 19 |
| 7 | STH | 12/2020 | - | - | Rebrand |

Operation & Maintenance Manual Approval

The undersigned acknowledge they have reviewed this initial Machine Operation & Maintenance Manual and agree with the approach it presents. Changes to this Operation & Maintenance Manual will be coordinated with, and approved by, the undersigned or their designated representatives.

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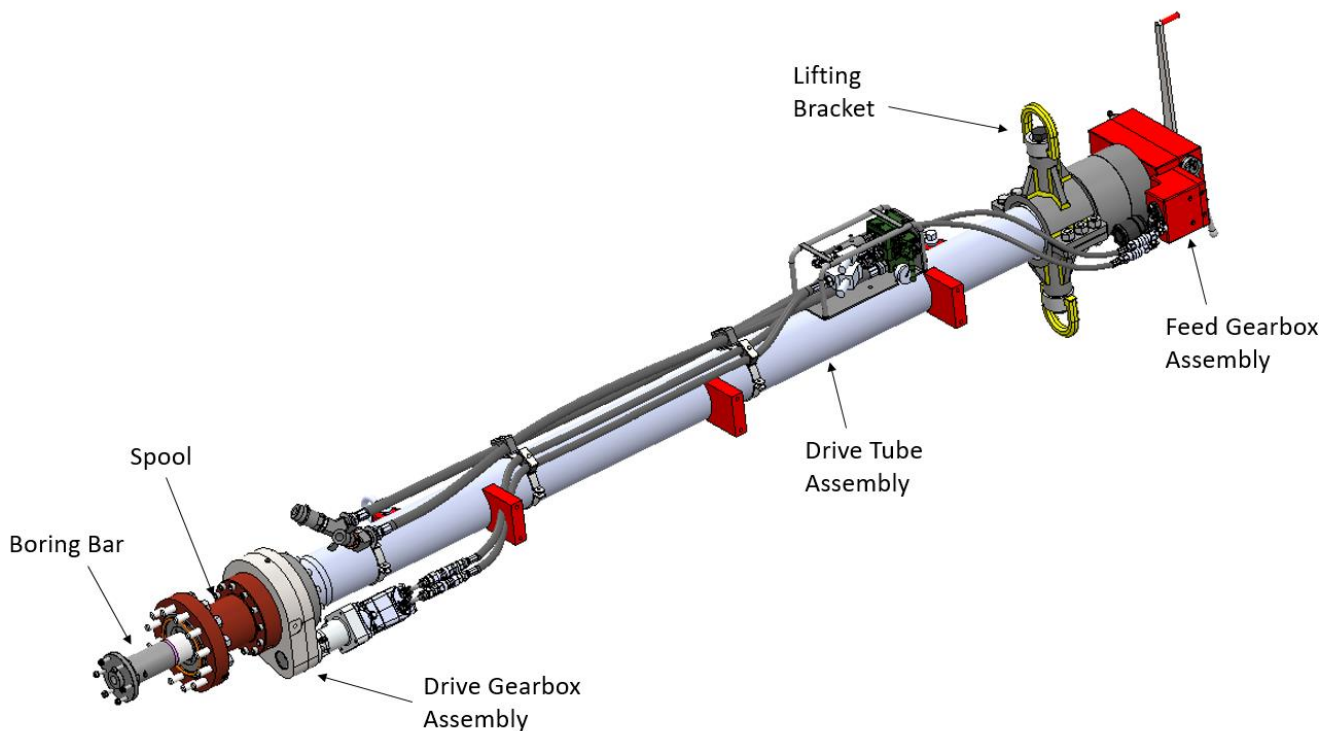
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1. Introduction

1.1. Overall Equipment Description

The MHT hot tapping machine range is used to make connections & branches into pipelines without the need for a shutdown procedure.

The machine range has been designed to cover the machining of $\varnothing 8'' - \varnothing 42''$ holes in various material pipelines & vessels. They are hydraulically operated with industry standard boring bar connection and a range of flange adapters to accept current hot tapping tooling.



2. Health and Safety





Enerpac has made every effort to ensure that the Information given in this Operation & Maintenance manual, and other publications relating to this machine is correct and understandable. However it is acknowledged that there may be errors or omissions in this publication.

The company also reserves the right not to provide updates, corrections or amendments to this publication but will endeavour to keep its customers up to date with all changes that may affect the machine operation or safety.

2.1.Mandatory Safety Signs (for the purpose of trials at Enerpac)

| ISO 7010 SYMBOL | SAFETY DESCRIPTION |
|---|----------------------------------|
|  | WEAR EYE PROTECTION |
|  | EAR PROTECTION MUST BE WORN |
|  | HARD HATS MUST BE WORN |
|  | PROTECTIVE GLOVES MUST BE WORN |
|  | PROTECTIVE FOOTWEAR MUST BE WORN |
|  | OVERALLS MUST BE WORN |
|  | MACHINE GUARDS MUST BE USED |

2.2. Machine Hazards Signs

| ISO 7010 SYMBOL | HAZARD DESCRIPTION |
|--|---------------------------------|
|  | DANGER HIGH VOLTAGE |
|  | WARNING MOVING MACHINERY |
|  | CAUTION MOVING MACHINERY |
|  | WARNING KEEP HANDS CLEAR |



The Safety Alert Symbol appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious injury.

Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION.

DANGER Indicates a hazardous situation that, if not avoided, will result in death or serious personal injury.

WARNING Indicates a hazardous situation that, if not avoided, could result in death or serious personal injury.

CAUTION Indicates a hazardous situation that, if not avoided, could result in minor or moderate personal injury.

2.3. Safety Procedures

Detailed in this chapter is a list of good Health and Safety practices that Enerpac advise users to adhere to. Due to the nature of portable machine tools, not every eventuality can be catered for and the following is not exhaustive, as such Enerpac strongly advise that the user carries out their own

risk assessments based on the machining and environment in which they intend to use the machinery.

2.3.1. Pre-Operational Safety Checks

1. Always read safety signs / labels
2. Ensure no slip / trip hazards are present in workspaces and walkways
3. Locate and ensure you are familiar with the operation of the ON / OFF starter and E-Stop (*if fitted*)
4. Do not leave equipment on top of the machine
5. Ensure each tool is in good condition and securely mounted
6. Secure / Remove loose items
7. Faulty equipment must not be used. **Immediately report any suspect machinery**

2.4. Operational Safety Checks

1. Operator is fully conversant and trained in use of equipment
2. Keep clear of moving machine parts
3. Never leave the machine running unattended
4. Follow correct clamping procedures - keep overhangs as small as possible and check work piece is secure
5. Set the correct speed to suit the tool, the depth of cut and the material
6. Before making adjustments and measurements or before cleaning swarf accumulations switch off and bring the machine to a complete standstill

2.4.1. Housekeeping

1. Switch off the machine
2. Remove milling cutters, drill attachments and tap attachments and store them safely (if applicable)
3. Leave the machine and work area in a safe, clean and tidy state

2.4.2. Potential Hazards

1. Sharp cutters
2. Moving components – hair / clothing entanglement
3. Eye injury
4. Skin irritation
5. Metal splinters and burrs
6. Flying debris

3. Handling

Customers, users and operators of the machines must be aware of the nature of the equipment supplied. Although inherently robust, the machine is a precision tool and may be damaged by poor handling, tipping and falling, inadequate transport arrangements over e.g. rough terrain, misuse by operators and use outside its design specification. Such poor handling may result in either broken or damaged parts or disturbance to fine settings resulting in an inability to meet the specified machining tolerances and capabilities.

4. Machine Specification

The Hot Tapping Machines have been modularly designed for accurate in-situ machining of work surfaces, to this end the constituent parts are easily manipulated by hand or crane.

| Description | MHT824-H | | MHT1236-H | | MHT1242-H | |
|---|-----------|------------|-------------|------------|--------------|------------|
| Cutting Stroke | 2032mm | 80" | 2794mm | 110" | 3352mm | 132" |
| Cutting Tool Diameters | 203-610mm | 8-24" | 305 – 914mm | 12 – 36" | 305 – 1067mm | 12 – 42" |
| Max Working Pressure | 102bar | 1480psi | 102 bar | 1480 psi | 102 bar | 1480 psi |
| Max Operating Temperature (Continuous) | 200°C | 390°F | 200°C | 390°F | 200°C | 390°F |
| Boring Bar Diameter | 101.6mm | 4" | 101.6mm | 4" | 101.6mm | 4" |
| Cutter RPM Range | 5-40 RPM | | 5-40 RPM | | 5-40 RPM | |
| Drive Motor Output (At 120 bar & 80L/min) | 14 kW | 19 Hp | 14 kW | 19 Hp | 14 kW | 19 Hp |
| Hydraulic Supply Required (at 120bar) | 80 L/min | 21 G/min | 80 L/min | 21 G/min | 80 L/min | 21 G/min |
| Auto Feed Rate (Single Speed) | 0.076mm | 0.003" | 0.076mm | 0.003" | 0.076mm | 0.003" |
| Manual Feed Rate | 8.5mm/rev | 0.333"/rev | 8.5mm/rev | 0.333"/rev | 8.5mm/rev | 0.333"/rev |
| Machine Weight | 915 Kg | 2017 Lbs | 1371 Kg | 3023 Lbs | 1229 Kg | 2709 Lbs |
| Designed For General Use | | | | | | |

5. Installation

5.1. Fitting Cutters & Pilot Drills

Shown below is data relating to the cutters & pilot drills that are compatible with each 'Hot Tapping Machine'. Select the required cutter & pilot drill combination from the list below for your required application.

Cutter diameters increase in 2 inch (50.8mm) steps from 8 to 42 inches. Each cutter has a unique, corresponding pilot drill, the correct pilot drill MUST be used with its corresponding cutter. All these cutters & drills are available from Enerpac.

Cutters for the MHT824-H machine

| MHT824-H Standard, Hot Tapping Cutter Data | | | | | | | | | | |
|--|------------------------|-----|-----------------------|-------|--------------------------|-----|---------|----------------------------------|-----|-----|
| Cutter Adapters/ holder | Nominal Cutter Size | | Actual Cutter Size | | Standard Hot Tap Cutters | | | Standard Hot Tap Pilot Drills | | |
| Part No | In | DN | In | MM | Lbs | Kgs | Part No | Part No | Lbs | Kgs |
| MHT824-56-001 | 8 | 200 | 7.31 | 185.8 | 14.5 | 7 | HTC8 | SHTPD8 | 2 | 0.9 |
| | 10 | 250 | 9.5 | 241.3 | 22.5 | 10 | HTC10 | SHTPD10 | 2 | 0.9 |
| | 12 | 300 | 11.5 | 292 | 35 | 16 | HTC12 | SHTPD12 | 5 | 2.2 |
| MHT1242TD- 21-001 | 12 | 300 | 11.5 | 292 | 35 | 16 | HTC12 | SHTPD12 | 5 | 2.2 |
| | 14 | 350 | 12.75 | 324 | 42 | 19 | HTC14 | SHTPD14 | 5.5 | 2.5 |
| | 16 | 400 | 14.69 | 373 | 55 | 25 | HTC16 | SHTPD16 | 6 | 2.7 |
| | 18 | 450 | 15.06 | 383 | 53 | 24 | HTC18 | SHTPD18 | 6 | 2.7 |
| | 20 | 500 | 17 | 432 | 84 | 38 | HTC20 | SHTPD20 | 6.5 | 2.9 |
| | 22 | 550 | 19 | 483 | 99 | 45 | HTC22 | SHTPD22 | 7.5 | 3.4 |
| | 24 | 600 | 21 | 533 | 126 | 57 | HTC24 | SHTPD24 | 8 | 3.6 |

The MHT824-H comes with two different cutter adapters, the MHT1242TD-21-001 which is for cutter diameters of between 12 & 24 inches & the MHT824-56-001 for cutter diameters of 8 to 12 inches. Depending on which cutter is being used, select the appropriate cutter adapter (see table above).

Cutters for the MHT1236-H machine

| MHT1236-H Standard, Hot Tapping Cutter Data | | | | | | | | | | |
|---|---------------------|-----|--------------------|-----|--------------------------|-----|---------|-------------------------------|------|-----|
| Cutter Adapters/ holder | Nominal Cutter Size | | Actual Cutter Size | | Standard Hot Tap Cutters | | | Standard Hot Tap Pilot Drills | | |
| Part No | In | DN | In | MM | Lbs | Kgs | Part No | Part No | Lbs | Kgs |
| MHT1242TD-21-001 | 12 | 300 | 11.5 | 292 | 35 | 16 | HTC12 | SHTPD12 | 5 | 2.2 |
| | 14 | 350 | 12.75 | 324 | 42 | 19 | HTC14 | SHTPD14 | 5.5 | 2.5 |
| | 16 | 400 | 14.69 | 373 | 55 | 25 | HTC16 | SHTPD16 | 6 | 2.7 |
| | 18 | 450 | 15.06 | 383 | 53 | 24 | HTC18 | SHTPD18 | 6 | 2.7 |
| | 20 | 500 | 17 | 432 | 84 | 38 | HTC20 | SHTPD20 | 6.5 | 2.9 |
| | 22 | 550 | 19 | 483 | 99 | 45 | HTC22 | SHTPD22 | 7.5 | 3.4 |
| MHT1242TD-21-002 | 24 | 600 | 21 | 533 | 126 | 57 | HTC24 | SHTPD24 | 8 | 3.6 |
| | 26 | 650 | 23 | 584 | 135 | 61 | HTC26 | SHTPD26 | 8.5 | 3.8 |
| | 28 | 700 | 25 | 635 | 157 | 71 | HTC28 | SHTPD28 | 10.5 | 4.7 |
| | 30 | 750 | 27 | 686 | 231 | 105 | HTC30 | SHTPD30 | 11 | 5 |
| | 32 | 800 | 29 | 737 | 276 | 125 | HTC32 | SHTPD32 | 15 | 6.8 |
| | 34 | 850 | 31 | 787 | 331 | 150 | HTC34 | SHTPD34 | 15 | 6.8 |
| | 36 | 900 | 33 | 838 | 395 | 179 | HTC36 | SHTPD36 | 18 | 8.1 |

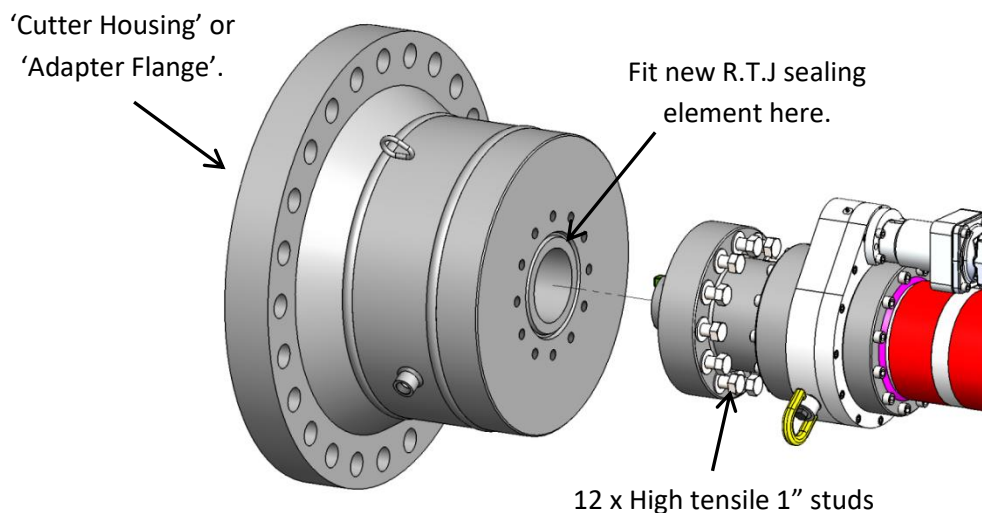
The MHT1236-H comes with two different cutter adapters, the MHT1242TD-21-001 for cutter diameters of between 24 & 36 inches or the MHT1242TD-21-002 for cutter diameters of between 12 & 22 inches. Depending on which cutter is being used, select the appropriate cutter adapter (see above).

Cutters for the MHT1242-H machine

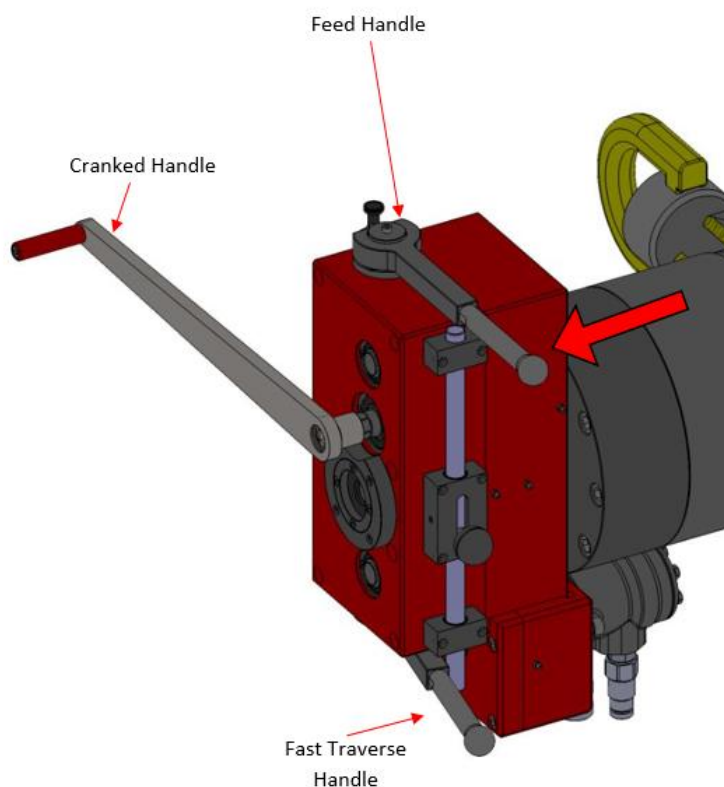
| MHT1242-H Standard, Hot Tapping Cutter Data | | | | | | | | | | |
|---|------------------------|------|-----------------------|-----|--------------------------|-----|---------|----------------------------------|------|------|
| Cutter Adapters/ holder | Nominal Cutter Size | | Actual Cutter Size | | Standard Hot Tap Cutters | | | Standard Hot Tap Pilot Drills | | |
| Part No | In | DN | In | MM | Lbs | Kgs | Part No | Part No | Lbs | Kgs |
| MHT1242TD- 21-001 | 12 | 300 | 11 | 292 | 35 | 16 | HTC12 | SHTPD12 | 5 | 2.2 |
| | 14 | 350 | 12 | 324 | 42 | 19 | HTC14 | SHTPD14 | 5.5 | 2.5 |
| | 16 | 400 | 14 | 373 | 55 | 25 | HTC16 | SHTPD16 | 6 | 2.7 |
| | 18 | 450 | 15 | 383 | 53 | 24 | HTC18 | SHTPD18 | 6 | 2.7 |
| | 20 | 500 | 17 | 432 | 84 | 38 | HTC20 | SHTPD20 | 6.5 | 2.9 |
| | 22 | 550 | 19 | 483 | 99 | 45 | HTC22 | SHTPD22 | 7.5 | 3.4 |
| | 24 | 600 | 21 | 533 | 126 | 57 | HTC24 | SHTPD24 | 8 | 3.6 |
| MHT1242TD- 21-002 | 24 | 600 | 21 | 533 | 126 | 57 | HTC24 | SHTPD24 | 8 | 3.6 |
| | 26 | 660 | 23 | 584 | 187 | 85 | HTC26 | SHTPD26 | 8.5 | 3.8 |
| | 28 | 711 | 25 | 635 | 220 | 100 | HTC28 | SHTPD28 | 10.5 | 4.7 |
| | 30 | 762 | 27 | 685 | 238 | 108 | HTC30 | SHTPD30 | 11 | 5 |
| | 32 | 813 | 29 | 737 | 273 | 124 | HTC32 | SHTPD32 | 15 | 6.8 |
| | 34 | 864 | 31 | 787 | 311 | 141 | HTC34 | SHTPD34 | 15 | 6.8 |
| | 36 | 914 | 33 | 838 | 346 | 157 | HTC36 | SHTPD36 | 18 | 8.1 |
| | 38 | 965 | 35 | 889 | 386 | 175 | HTC38 | SHTPD38 | 19 | 8.8 |
| | 40 | 1016 | 37 | 937 | 432 | 196 | HTC40 | SHTPD40 | 21 | 9.6 |
| | 42 | 1067 | 39 | 987 | 476 | 216 | HTC42 | SHTPD42 | 23 | 10.5 |

The MHT1242-H comes with two different cutter adapters, the MHT1242TD-21-001 which is for cutter diameters of between 12 to 24 inches & the MHT1242TD-21-002 for cutter diameters of 24 to 42 inches. Depending on which cutter is being used, select the appropriate cutter adapter (see table above).

A 'cutter housing' or 'adapter flange' is fitted before the cutter itself. This acts as an adapter between the hot tapping machine & the 'Gate Valve' as well as housing the cutter assembly. Be sure to fit a new R.T.J sealing element between the 'cutter housing' & MHT Hot tapping Machine.

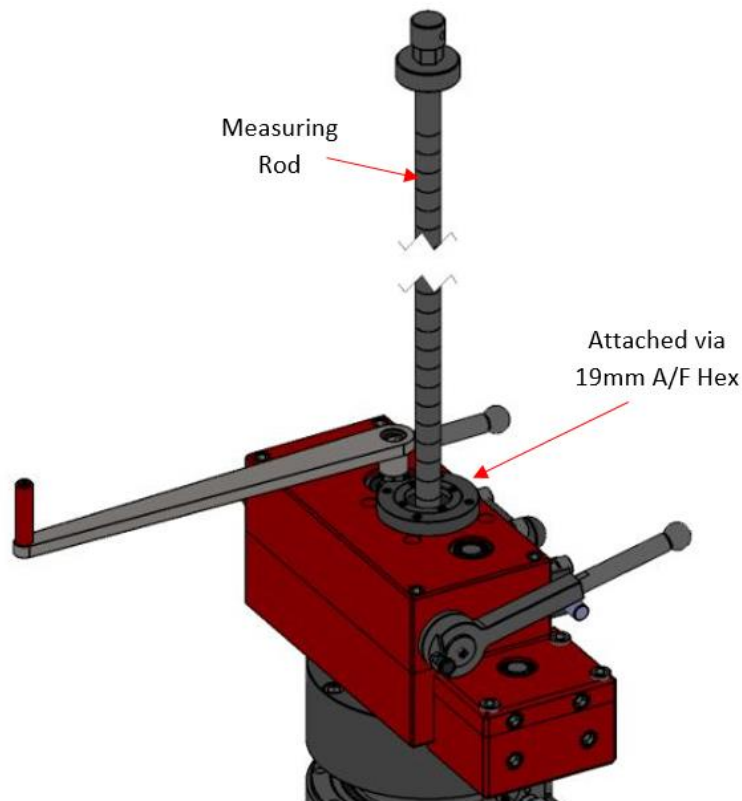
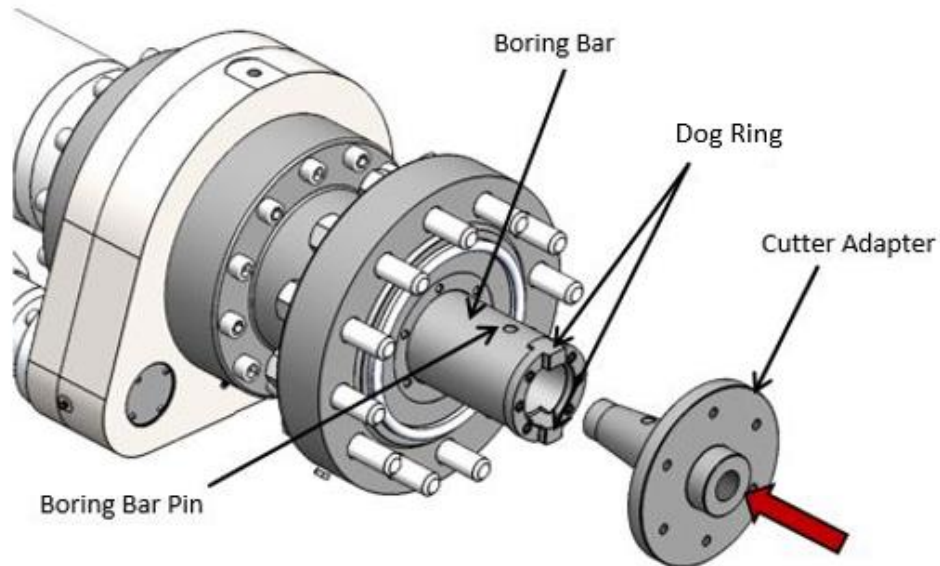


Extend the boring bar by positioning the feed handle in the backwards, neutral position & turning the 'Cranked Handle' anti-clockwise until it protrudes from the 'Cutter Housing', this will allow the cutter adapter to be fitted easily. Alternatively, use the fast traversal method to advance the boring bar (ref. Section 6)



Note: The 'Cutter Housing' is not shown in subsequent diagrams to allow them to be viewed easily.

To install cutter adapter, align its slots to the Dog Ring on the boring bar, push adapter into tapered bore, tighten drawbar using the Measuring Rod from the back of the gearbox and then insert the boring bar retaining pin.



Note: The remaining instructions do not apply to the entire range of cutters & pilot drills, this example is for a 24" cutter.

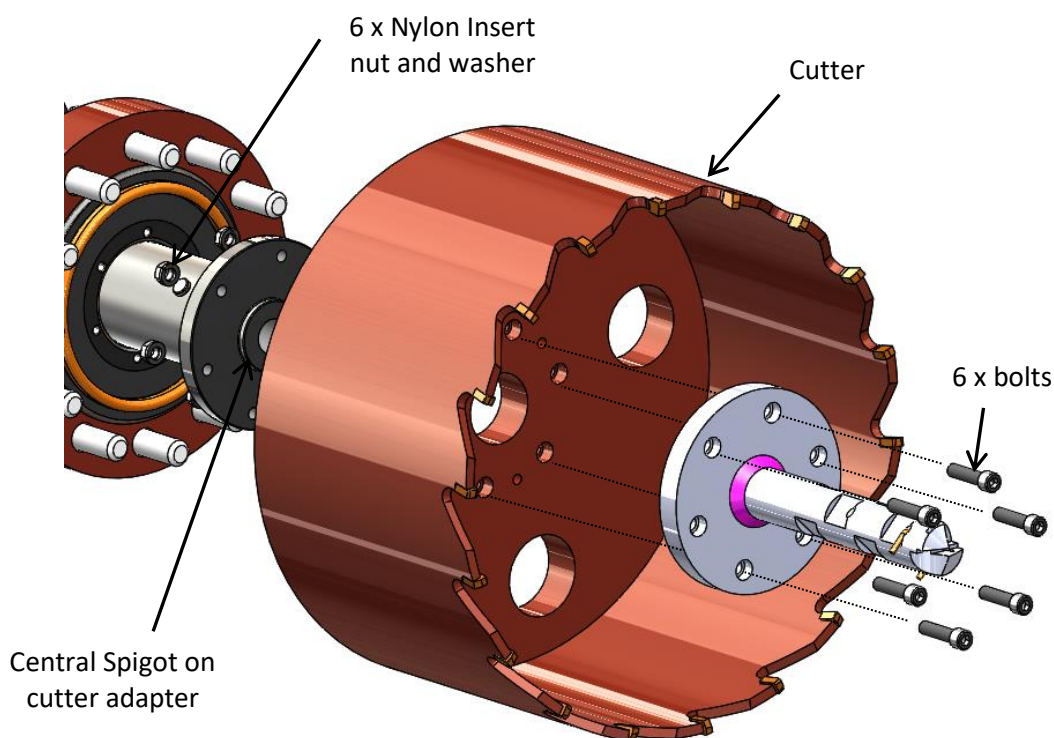
Installing the Cutter and pilot drill.

Align the six bolt holes in the cutter to the bolt holes in the pilot drill flange. Fit through 6 bolts as specified in the table below.

Align this cutter/ pilot drill assembly to the cutter adapter and then secure all 6 bolts through the plug adapter and fasten with nylon insert nuts.

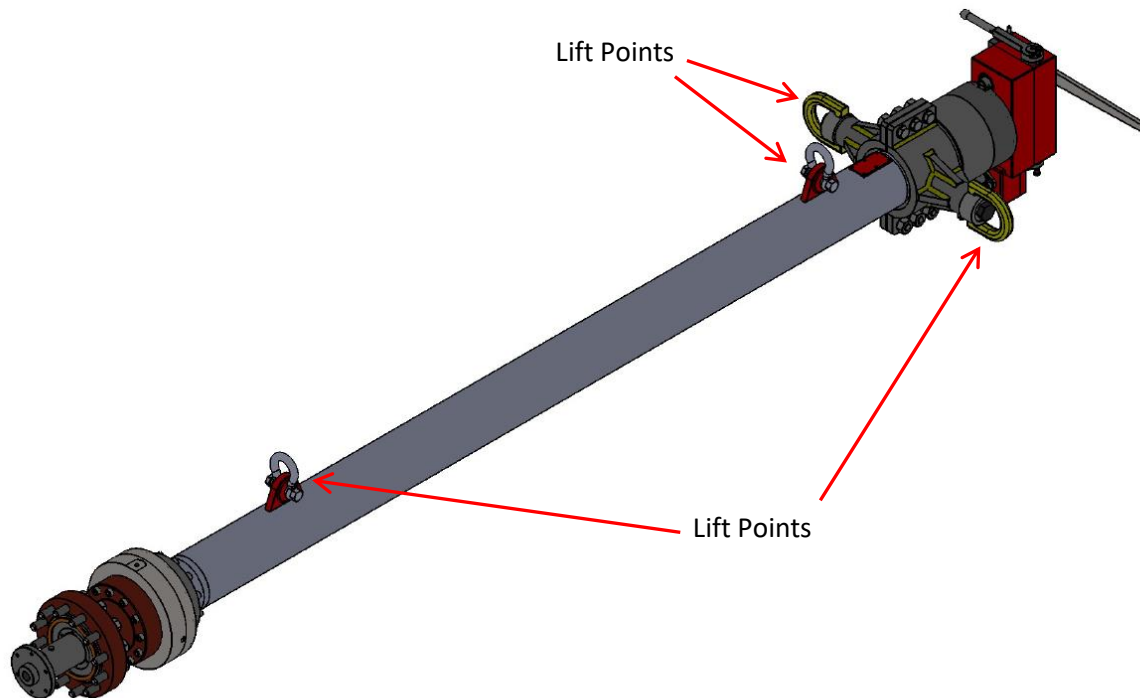
If the pilot drill does not have a flanged end, the drill is directly screwed into the cutter adapter. The cutter should be secured to the cutter adapter using all six bolts.

| Cutter adapter / holder number | Bolt size |
|--------------------------------|------------|
| MHT824-56-001 | 3/8-16 UNC |
| MHT1242TD-21-001 | 1/2-20 UNF |
| MHT1242TD-22-002 | 1/2-20 UNF |

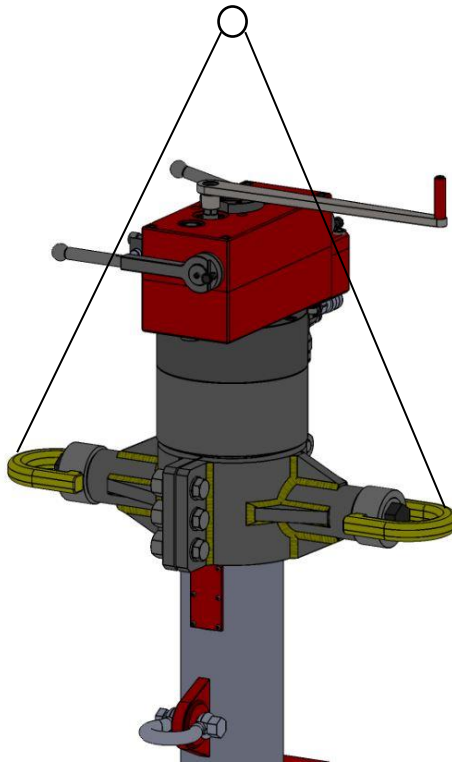


5.2.Lifting

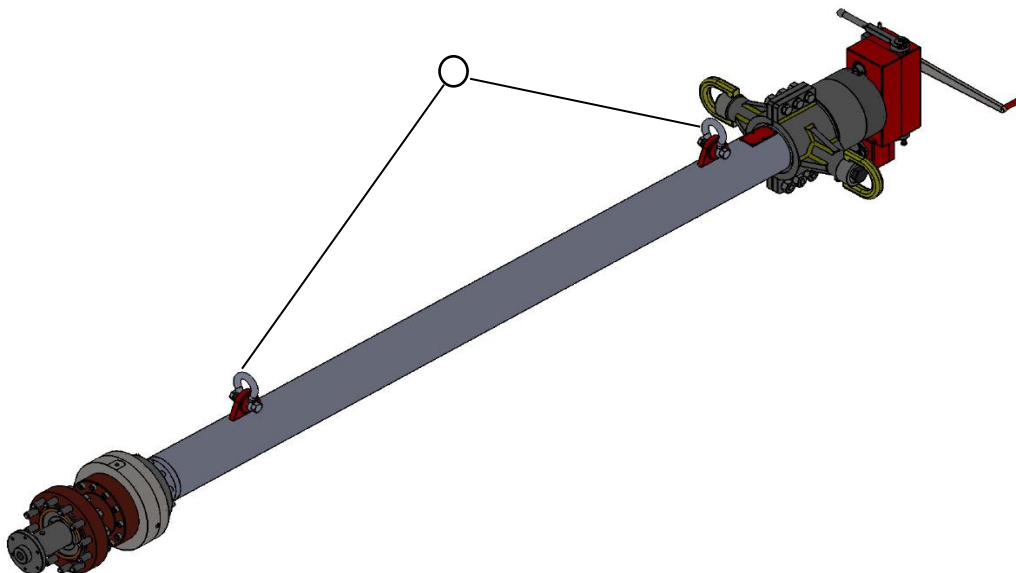
The MHT hot tapping machine is lifted & installed using a combination of four Lift Points mounted along the body of the machine as can be seen below.



If not already installed, fit the 'Rotating Lift Points' by screwing them into the machine body. Tighten the M16 lifting point bolts with a torque wrench to 320Nm (236 Lb/ft).



If lifting the machine in a vertical arrangement, with the nose of the machine pointing downwards then only use the rearward mounted lifting points with suitable lifting equipment i.e. overhead crane as shown above.



If lifting the machine in a horizontal arrangement the two lifting points along the body of the machine should be used along with suitable lifting equipment i.e. overhead crane as shown above.

5.3. Securing to pipeline.

The hot tapping machine is mounted to a live pipeline via a pre-installed 'Gate Valve'. It is secured by a series of twelve high tensile 1" studs & nuts to the cutter housing or 'Adapter Flange'. The 'Adapter Flange' is then secured to the 'Gate Valve' by a similar series of bolts or studs.

Before making any attempt to secure the hot tapping machine to a 'Gate Valve', measurements should be taken to predict how far the cutter should be fed until it has completely cut through one side of the pipe wall. Use the 'Hot Tapping Data Sheet' in the back of this manual to record such measurements.

1. Retract the cutter into the 'Cutter Housing' to prevent it clashing with any of the pipeline assembly whilst lifting the hot tapping machine into place.
2. Fit a new sealing element between the 'Cutter Housing' & the 'Gate Valve'.
3. Safely lift & manoeuvre the MHT hot tapping machine until the 'Cutter Housing' is roughly aligned with the 'Gate Valve'.
4. Ensure that before securing the MHT to the pipeline, it is orientated such that the gearbox controls will be easily accessible when the machine is in place.
5. Align the corresponding holes between the 'Cutter Housing' & 'Gate Valve', insert appropriate studs & nuts & tighten equally using a calibrated torque wrench to the correct torque figure.
6. To make sure the cutter has not been trapped, rotate the 'Cranked Handle' to check the cutter can move freely up & down the cutter housing.
7. The MHT is now properly installed & the Motor hoses can now be connected.

5.4. Service and Supplies

The OMT500 hydraulic motor fitted to the MHT machines requires a flow rate of 80 litres per minute at 120 bar of pressure (21 gallons per minute at 1740 psi) to operate correctly.

5.4.1. Personnel

As a specialist portable machine the minimum standard for an operator is to be:

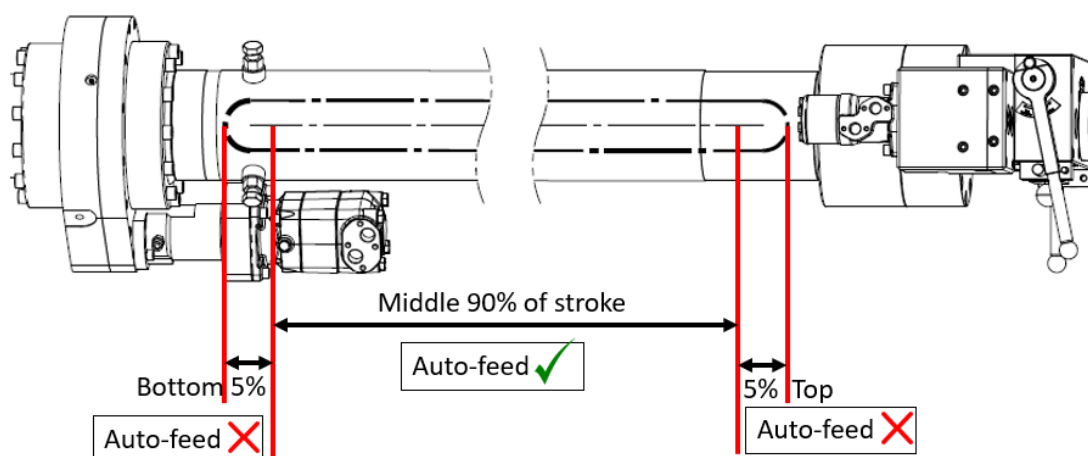
- The operator must be trained and conversant with the Enerpac MHT machines.
- The operator to be able to identify the correct and incorrect use of static or portable machines
- Comply with all local and internationally recognised safe use of powered machines

6. Machine Operation

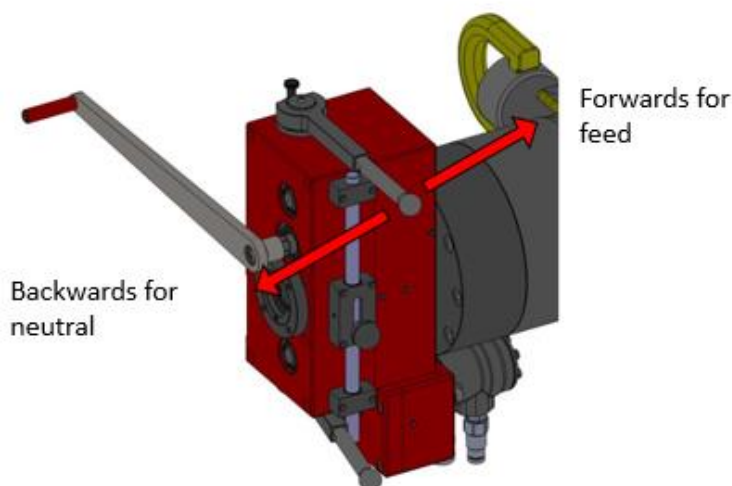


Note: Before turning the hydraulic motor on ensure the 'Crank Handle' is removed or the gear lever is in the neutral position otherwise this will rotate when the motor is turned on.

Note: The automatic feed options should only be used in the middle 90% of the machine stroke. The manual feed **MUST** be used for the top and bottom 5% of the stroke. Failure to stop the automatic feed will result in **DAMAGE** to the machine. The machine stroke is specified in section 4.

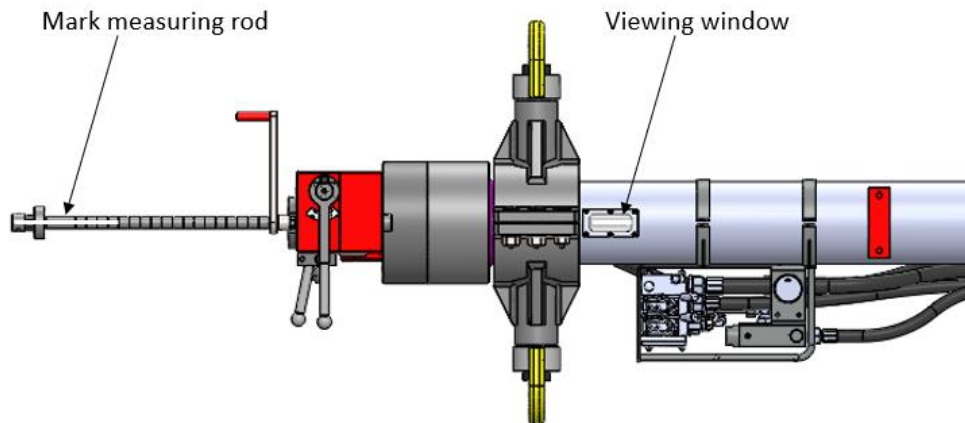


1. To position the cutter & pilot drill assembly prior to cutting, turn the 'Crank Handle' anti-clockwise with the gear lever pushed backwards, the motor turned off & the 'Gate Valve' open until the pilot drill stops when it hits the pipe. Turn the 'Crank Handle' the opposite direction for half a turn to allow a gap between the pilot drill & pipe.
2. Ensure the cutter does not feed forwards when the hydraulic motor is turned on by positioning the gear lever in the neutral position. Also, **remove the crank handle before engaging the hydraulic motor.**



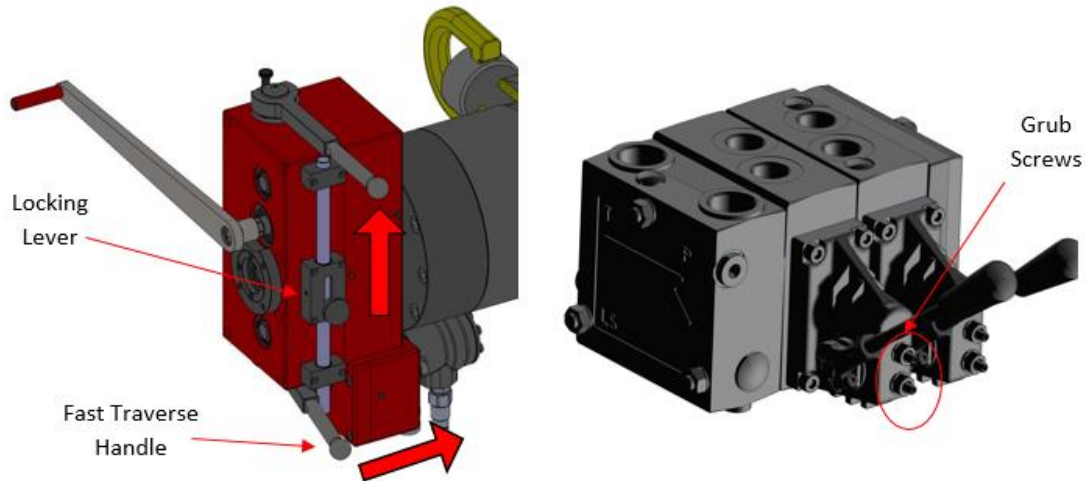
3. Start the cutter rotation by engaging the hydraulic motor, the cutter will now be rotating but not feeding towards the pipe.

The cutter speed and direction can be monitored by using the viewing window located in the machine cylinder. A white mark will be painted on the inner tubing to assess the speed by counting the revolutions per minute. Alternatively mark the measuring rod and this can be used to assess the speed and cutter direction.



4. Note where the measuring rod is sitting at the back of the gearbox, this is marked at 25.4mm (1") increments, use these along with pre-cut data that should have been recorded on the 'Hot Tapping Data Sheet' at the back of this manual as a guide for how far the cutter needs to be advanced.
5. To start feeding the cutter towards the pipe, push the gear lever forwards (towards the cutter end of the machine). The hydraulic motor can be slowed momentarily to make the gear selection easier, return motor to operational speed afterwards.
6. Using the 'Measuring Rod' & pre-cut data which should have been recorded on the 'Hot Tapping Data Sheet' at the back of this manual, continue to feed the cutter into the pipeline until it has made a complete cut through one side of the pipe.
7. Stop the cutter from feeding by returning the gear lever to the neutral position & turn the hydraulic motor off.
8. Retract the cutter by turning the 'Cranked Handle'. The pipeline 'coupon' will be retained by the pilot drill, this can be recovered later when the machine is removed from the pipeline.

9. To quickly return the assembly, engage the fast traverse. This is achieved by pulling the locking lever at the back of the gearbox upwards to lock off the feed handle in neutral, and then pushing the fast traverse handle forwards. It may be necessary to power the motor at low speeds to engage the gears. Ensure that the cutter is not spinning during fast traverse by hydraulically locking the feed motor. Note that the hydraulic controls for the drive motor have grub screws which prevent the use of the drive motor to reverse the cutter out – this is to stop the cutter tips from being stripped from the cutter.

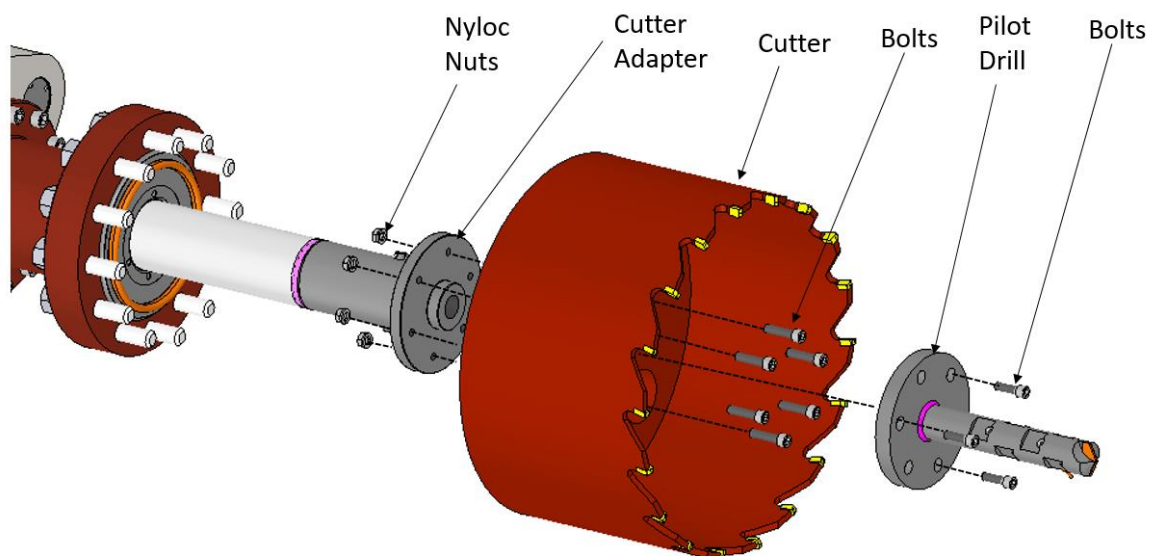


7. Completion Plug Installation Guidance

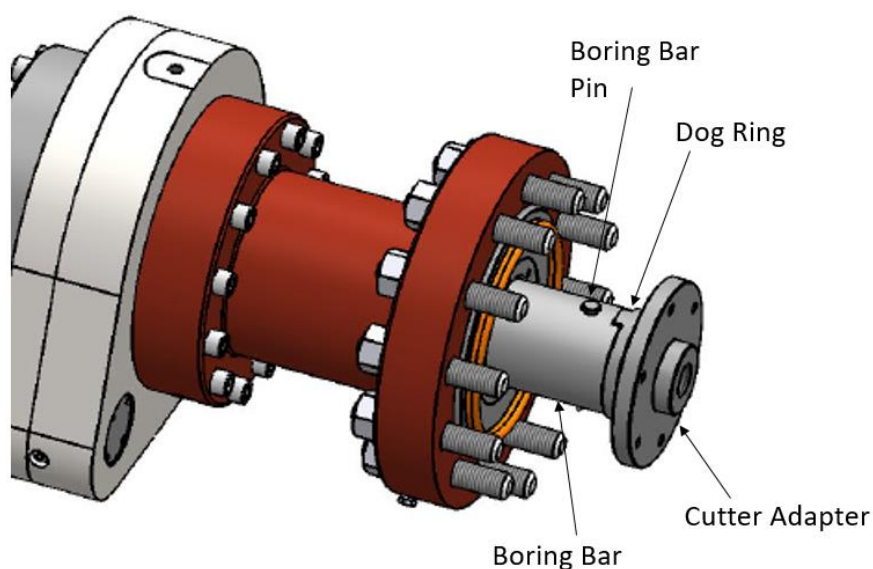
The hot tapping machine can be used to install a completion plug which is used to seal the opening branch in the pipeline used by the cutting operation of the hot tapping machine.

To install the plug to the hot tapping machine, the cutter and adapter must first be removed.

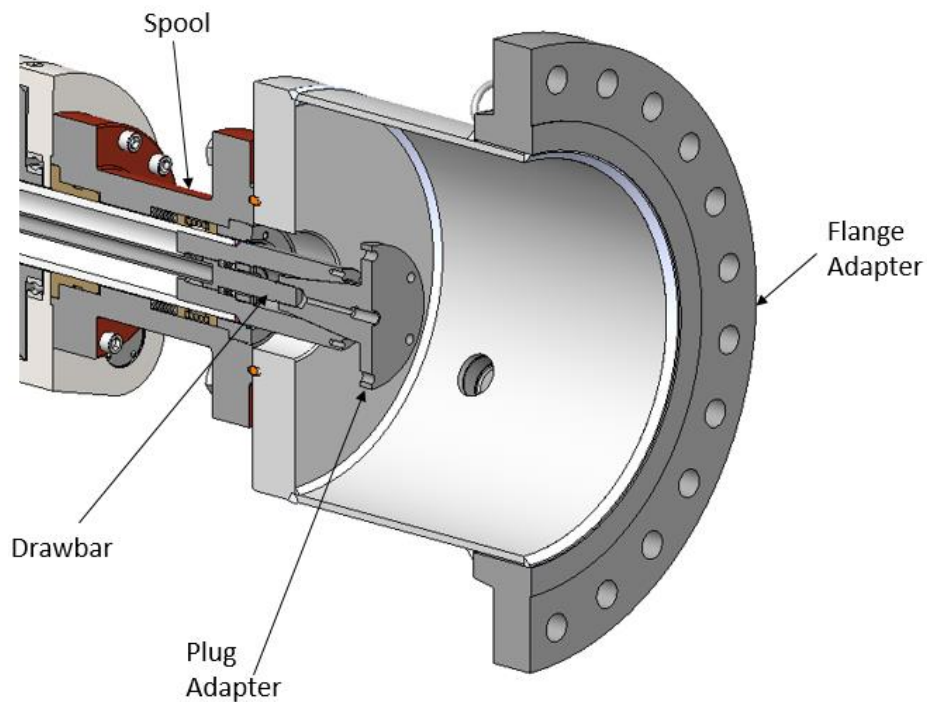
The Cutter and pilot drill is removed from the cutter adapter by unscrewing the bolts and Nyloc nuts.



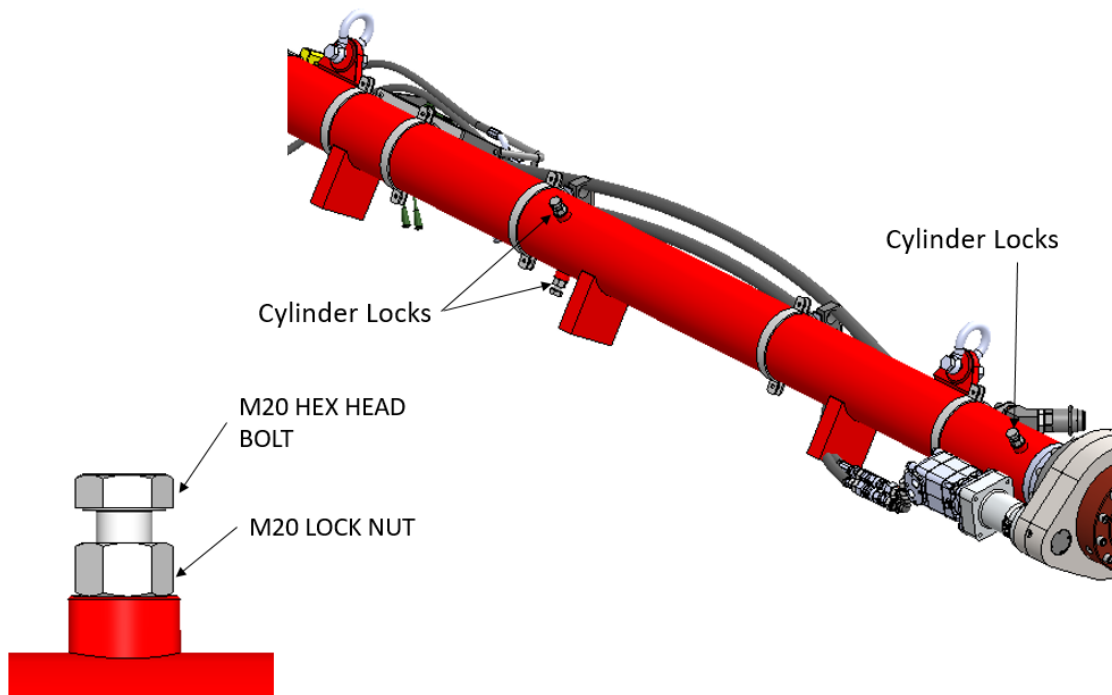
The cutter adapter should then be detached by removing the boring bar pin and then unscrewing the cutter adapter from the drawbar. The dog ring should also be removed.



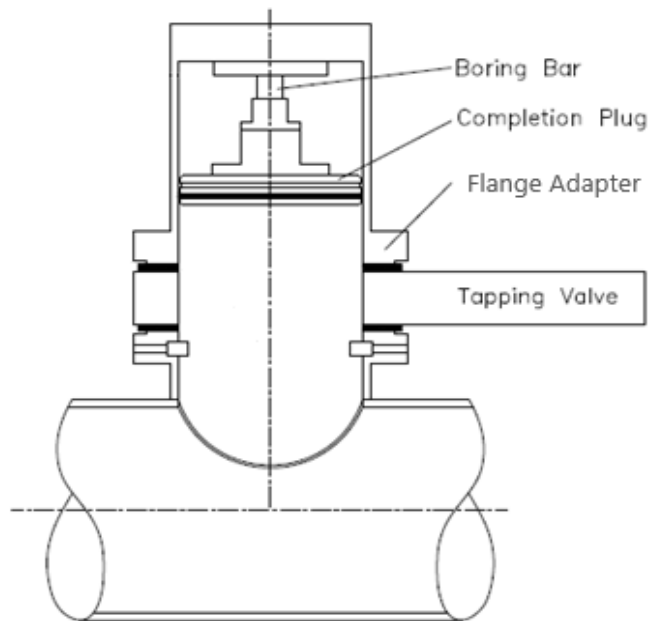
Fit the required size flange adapter to the spool end. The plug adapter can now be installed. Use the measuring rod to rotate the drawbar into the plug adapter. Do not overtighten.



To ensure that the cylinder does not rotate when traversing the plug to position, lock 6 x M20 bolts. There are 2 banks of 3x M20 bolts. Each should be tightened by loosening the locknut, then tightening the bolt to the cylinder, and finally re-tightening the lock nut.

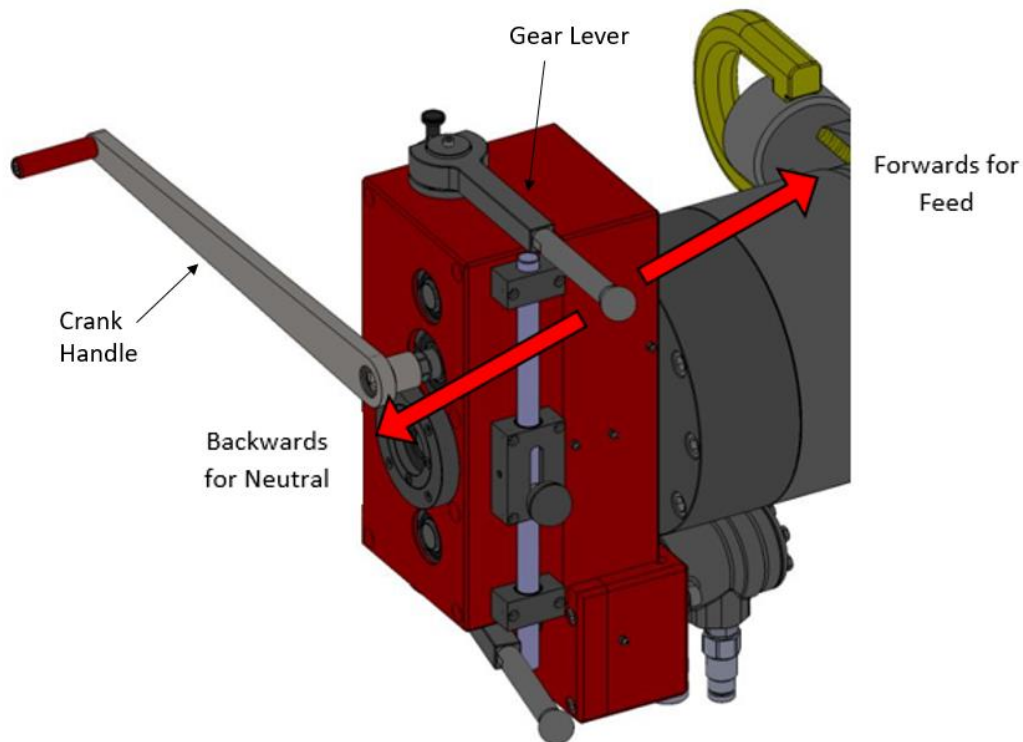


Fit the completion plug to the plug adapter, and securely remount machine to the gate valve.

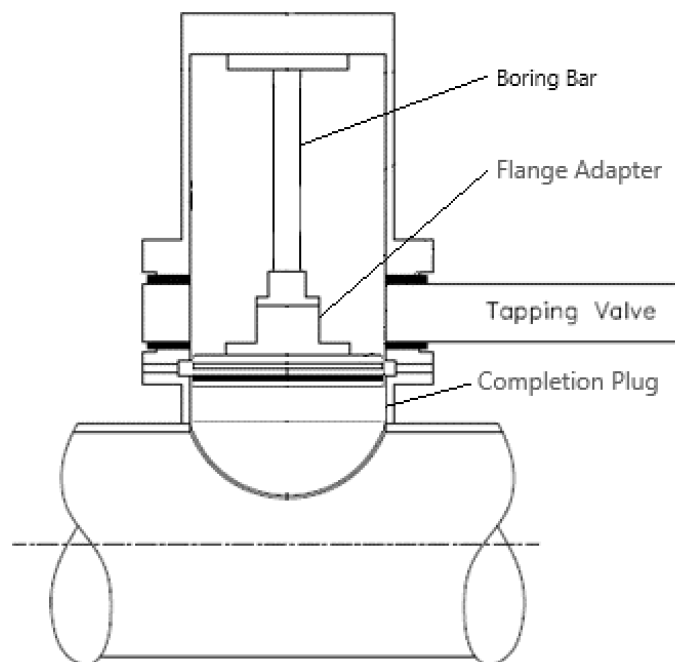


If available, the fast traverse can be used to position the plug into the gate valve branch for 95% of the distance – refer to section 6, machine operation – on guidance of using the fast traverse.

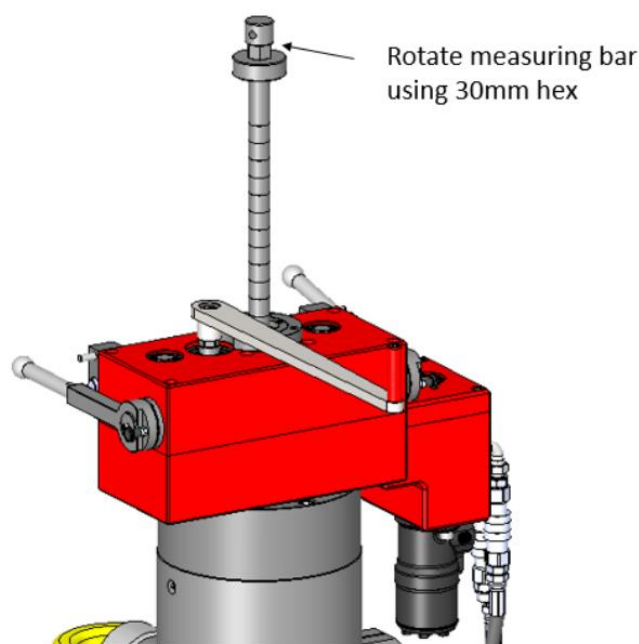
For the final 5%, use the 'Crank Handle', turning it anti-clockwise with the gear lever pushed in the neutral position and the motor turned off.



When the plug is in position, secure the completion plug as required.



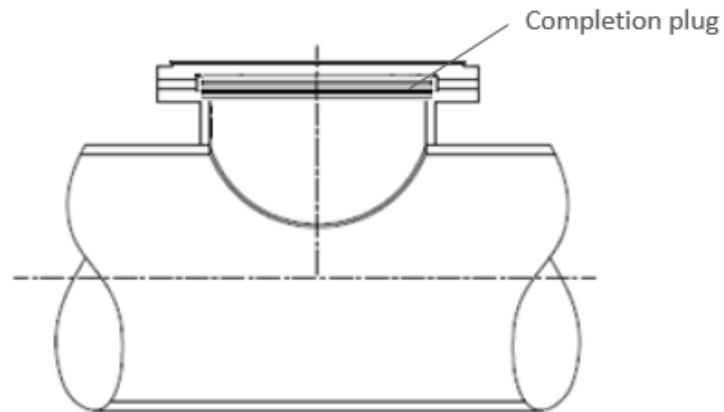
Once the plug is secured satisfactorily, the plug and plug adapter are separated from the hot tapping machine by using the measuring bar to unscrew the drawbar from the plug adapter. Continue to rotate the measuring bar until the plug is detached.



Once the drawbar has been detached from the plug holder, begin retracting the boring bar using the crank handle. Withdraw the first 50mm using the crank handle. Once past this point, the fast traverse motor can be used if supplied.

When the boring bar is retracted and the completion plug is safely secured, the hot tapping machine can be removed from the gate valve.

The plug adapter should be removed from the plug before securing a suitable blind flange.



8. Machine Maintenance

General wear and tear items should be replaced with like for like components as per the machine general assembly drawings detailed in this manual. Failure to do so may result in a machine that is not fit for purpose and is outside the design intent it was supplied for. Items that require specific maintenance regimes and products will be detailed here in.

| General Maintenance Schedule | | |
|--|--|---|
| Time Period | Action | Recommended Lubricant |
| After every use | Clean all cutting debris from machine. Pay particular attention to lead screws, pivots, sealing, sliding & rotating faces. | General water displacing, cleaning oil. |
| As required | Replace cutting tool/cutting tool inserts. | N/A |
| Every 10 hours | Apply a small amount of low viscosity oil to all lead screws, pivots, sliding & rotating faces. | Mineral based SAE 10 oil. |
| | Check all securing nuts & bolts are tight. | N/A |
| Every 100 hours | Check for backlash in lead screw/lead screw nut & correct if necessary. | N/A |
| Before long term storage (12 months minimum) | Protect machine, components & accessories from corrosion. Store all machine components securely in original packing box. | General, oil based, rust inhibitor. |

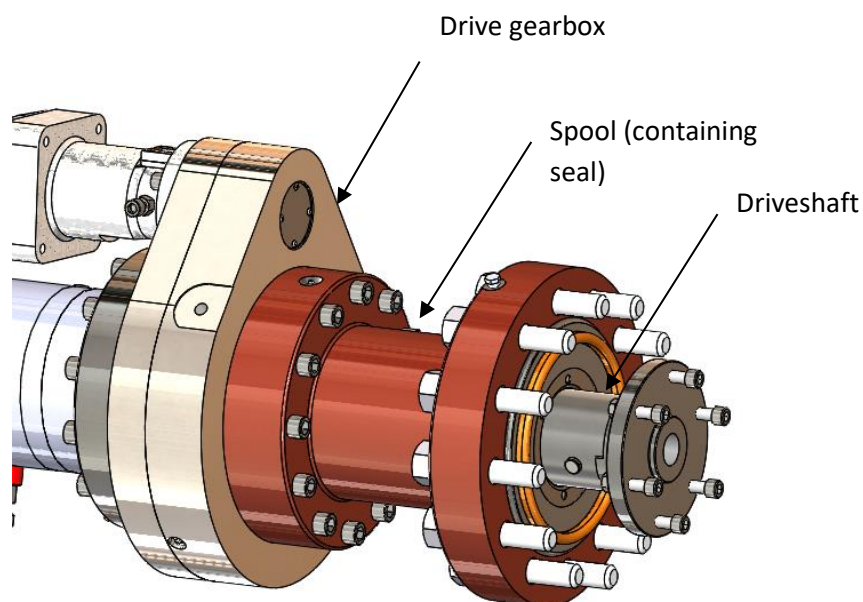
8.1.Maintenance

- To ensure that the machine is lubricated, either apply grease through the grease point on the machine spool, or extend the boring bar completely and apply oil to the bar.
- Check the tightness of the seal cartridge located in the spool and the locking nut within the driveshaft end.
- Remove the inspection cover on the main cylinder and check the keys. Wind the driveshaft assembly out of the way to access the leadscrew and apply grease to it.
- The machine seals must be pressure tested before every use of the machine.
- Pay close attention to the full thread length of the feedscrew, check for signs of wear or damage

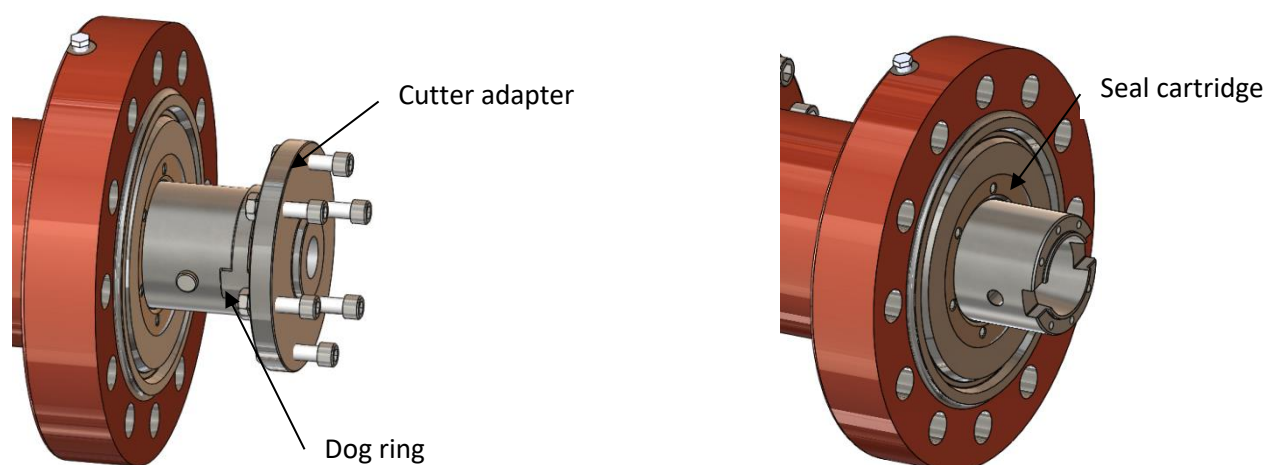
8.2. Seal Replacement Procedure

8.2.1. Replacing the spool seal

The MHT824-H, MHT1236-H and MHT1242-H all utilize the MHT1242-1 drive gearbox assembly in which the seal is contained.

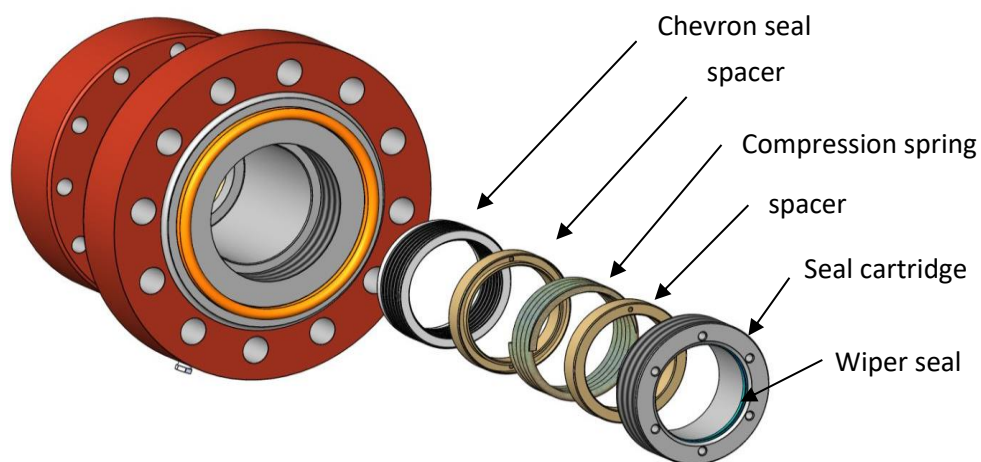


1. Before removing the spool from the drive gearbox, ensure that the cutter holder and dog ring have been removed from the driveshaft.

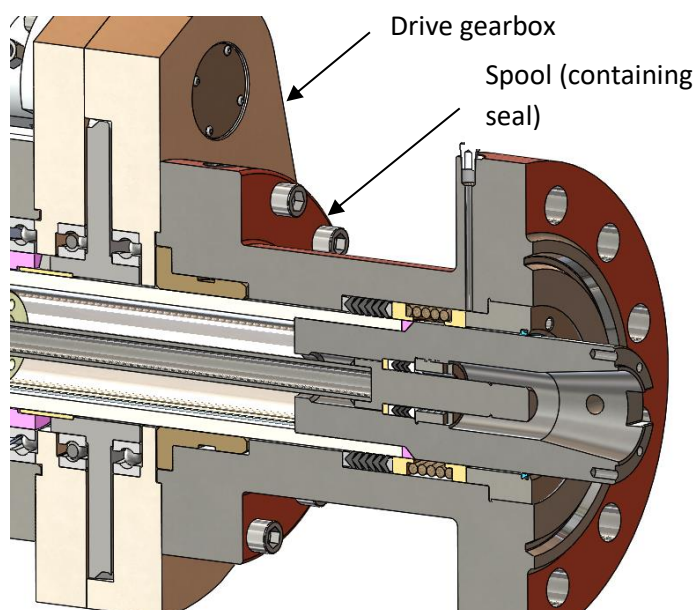


2. Then slightly loosen the seal cartridge using a face spanner (p/n 95350.W0201). Note that this is a left-hand thread.
3. Unbolt the spool assembly from the drive gearbox, and carefully remove the spool from the drive shaft.

4. Fully unscrew the seal cartridge and remove it from the spool.
5. Remove the spacers and compression spring.
6. Remove the existing chevron seal.

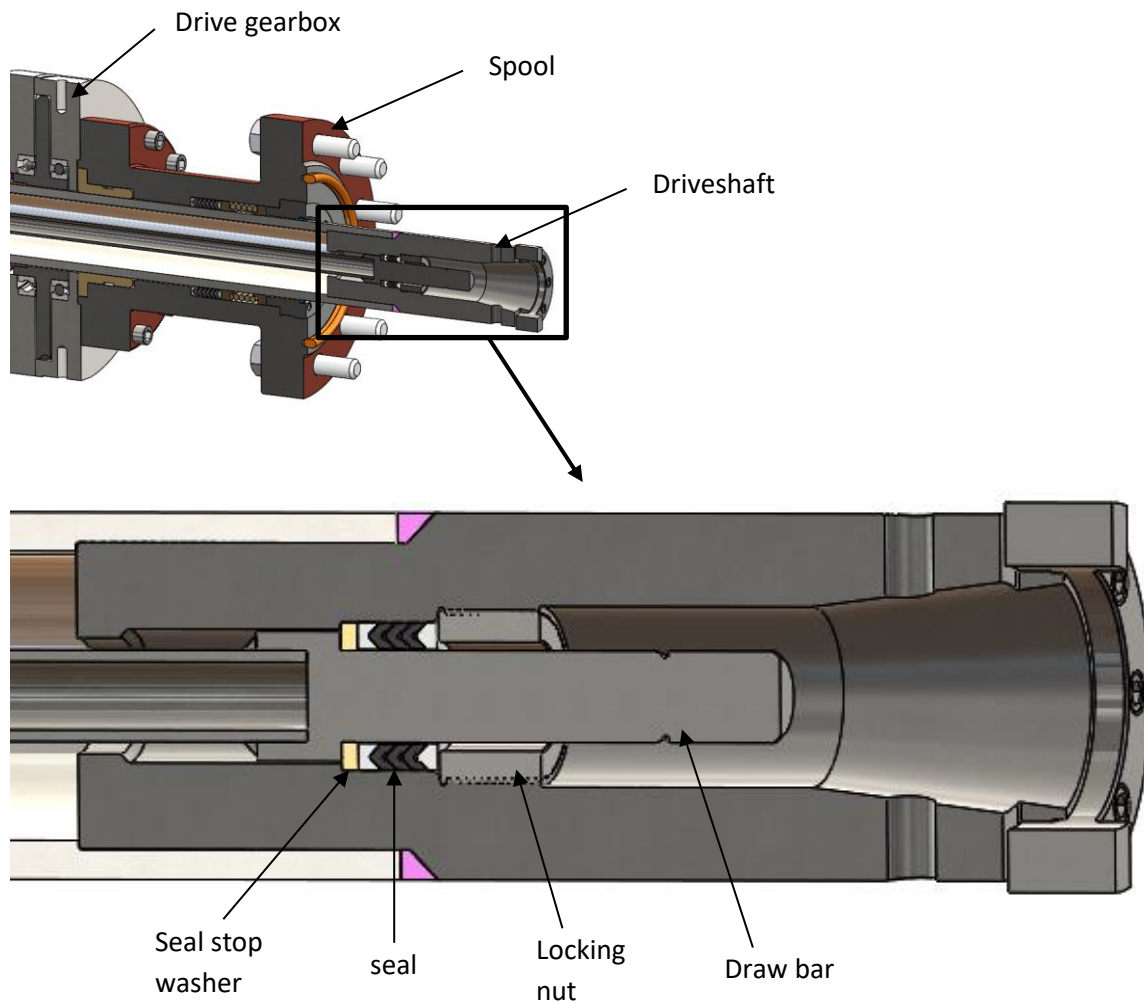


7. As the new seal is positioned in the spool, oil the individual components and ensure the chevrons are facing the same direction as shown on the machine general assembly drawing.
8. Replace wiper seal within the seal cartridge (SWAN2204000-FLN2V).
9. Then replace the remaining components as shown above.
10. Ensure the drive shaft is clean and debris free before re-fitting the spool onto it. Take care not to damage the surface of the seal.
11. Connect the spool to the drive gearbox using the M16 bolts.

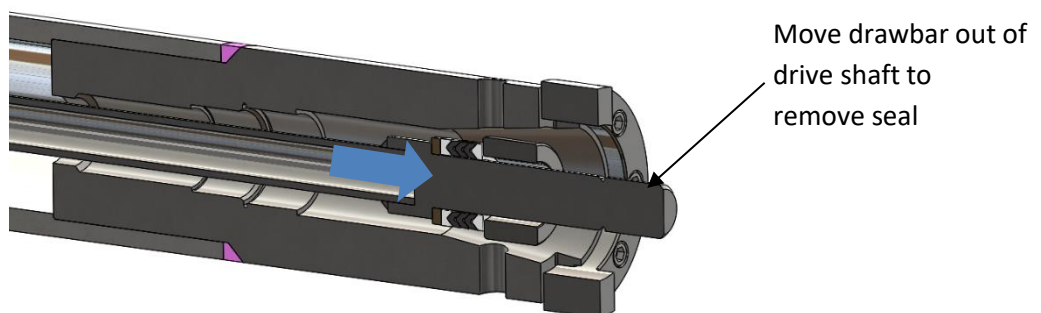


8.2.2. Replacing the drawbar seal

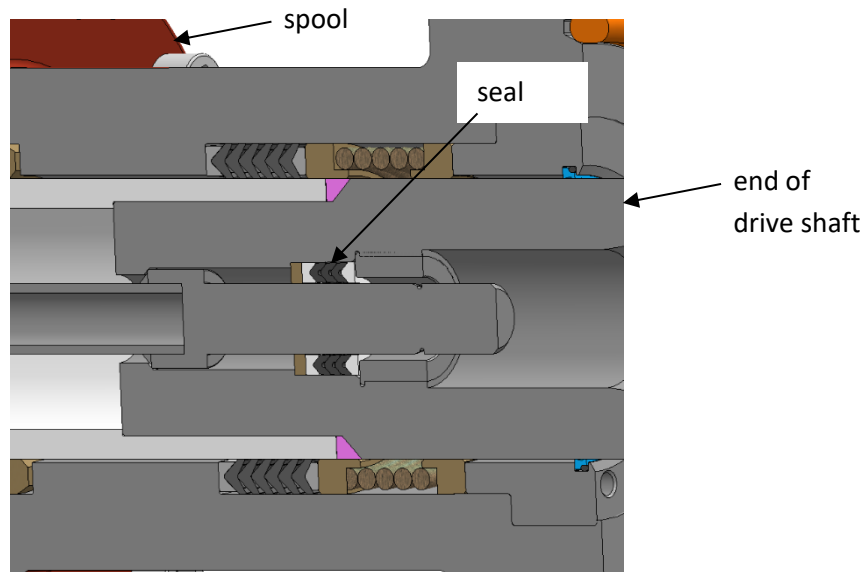
The drawbar seal can be found in the drive shaft as shown below.



1. Remove the locking nut (MHT1242-5A-003) from within the driveshaft taper using the extraction tool (MMT-1-006). Note this is a left hand thread.
2. When the locking nut is removed, push the drawbar forward to release the seal assembly and remove the existing chevron seal package.



3. Oil the individual components as they are fitted and ensure that the chevrons are facing the same way as shown below.



4. Retract the drawbar back into the drive shaft.
5. Ensure the seals are fully pushed into the bore by using the chevron seal setting tube (MHT1242TD-TK-001).
6. Refit and fully tighten the locking nut.

9. Troubleshooting Guide

| Symptom | Possible cause | Action |
|--------------------------------------|--|---|
| The machine will not rotate | 1. Hydraulic/Pneumatic supply not available | Check supply |
| | 2. Hydraulic/Pneumatic supply is below the minimum required to operate the machine | Check supply |
| | 3. Drive motor faulty | Remove motor and check operation |
| | 4. Damage to drive gear train | Remove motor and check free rotation |
| | 5. Faulty valve or emergency shut off operational | Check supply to motor |
| | | |
| The machine does not traverse | 1. The feed control valve is not correctly set | Check position |
| | 2. Drive gear problem | Remove and check drive assembly operation |
| | 3. Depth of cut too deep | Remove cut and check rotation |

In the event that the cutter has become stuck and the instructions in the machine operation section have not solved the issue;

The hydraulic controls for the drive motor have grub screws which prevent the use of the drive motor to reverse the cutter out – this is to stop the cutter tips from being stripped from the cutter. If all other methods have been exhausted, then adjust those grub screws to allow the drive motor to reverse the cutter out. This will almost certainly damage the cutter, so it must only be considered as a last resort.

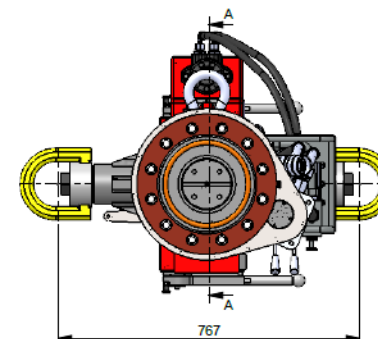
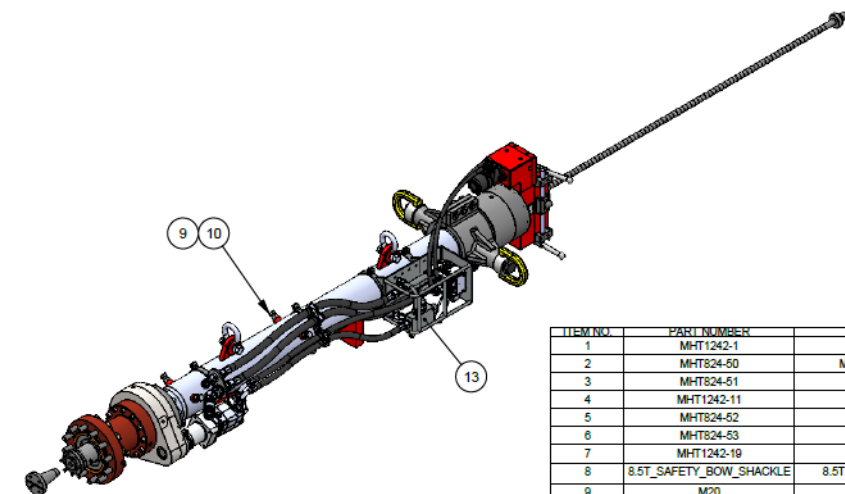
10. General Assembly Drawings

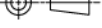

The table below can be used as a quick reference to the drawings provided in this section.

| Drawing name | MHT824-H drawing Numbers | MHT1236-H drawing Numbers | MHT1242-H drawing Numbers |
|--------------------------|--------------------------|---------------------------|---------------------------|
| General assembly drawing | MHT824-H | MHT1236-H | MHT1242-H |
| Drive gearbox assembly* | MHT1242-1 | MHT1242-1 | MHT1242-1 |
| Drive shaft | MHT824-50 | MHT1236-50 | MHT1242TD-2 |
| Drawbar assembly | MHT824-51 | MHT1236-51 | MHT1242TD-5A |
| Lifting bracket | MHT1242-11 | MHT1242-11 | MHT1242-11 |
| Drive tube assembly | MHT824-52 | MHT1236-52 | MHT1242-13 |
| Leadscrew assembly | MHT824-53 | MHT1236-53 | MHT1242-14 |
| Gearbox assembly | MHT1242-19 | MHT1242-19 | MHT1242-19 |
| Cutter holder set | MHT824-56 | MHT1242TD-21 | MHT1242TD-21 |
| Plug holder set | MHT824-57 | MHT1242TD-20 | MHT1242TD-20 |
| Tool kit | MHT1242-H-TK | MHT1242-H-TK | MHT1242-H-TK |
| Spares kit | MHT824-H-SK | MHT1236-H-SK | MHT1242-H-SK |
| Hydraulic control panel | MHT824-HDCP-CM | MHT1236-HDCP-CM | MHT1242-HDCP-CM |

* For alternative gearbox assembly (part number MHT1242-34) refer to appendix 11.5

IF IN DOUBT ASK



| | | | | | |
|---|------|--|--|----------|------------|
| D | | Matching windmill revision, no change | 19/03/2020 | DIB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  <p>THIRD ANGLE PROJECTION</p> | | | <p>BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS</p>  <p>AN ENERPAC BRAND</p> | | |
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| WEIGHT | | 995.411kg | | | |
| DRAWN BY | | DC | 19/12/2019 | | |
| CHECKED BY | | DMS | 19/03/2020 | | |
| APPROVED BY | | DMS | 19/03/2020 | | |
| TITLE | | <p>8"-24" 80° STROKE HOT TAPPING MACHINE SCALE: 1:10</p> | | | |
| DWG No | | | <p>MHT824-H SHEET 1 OF 3</p> | | |
| | | | A | | |

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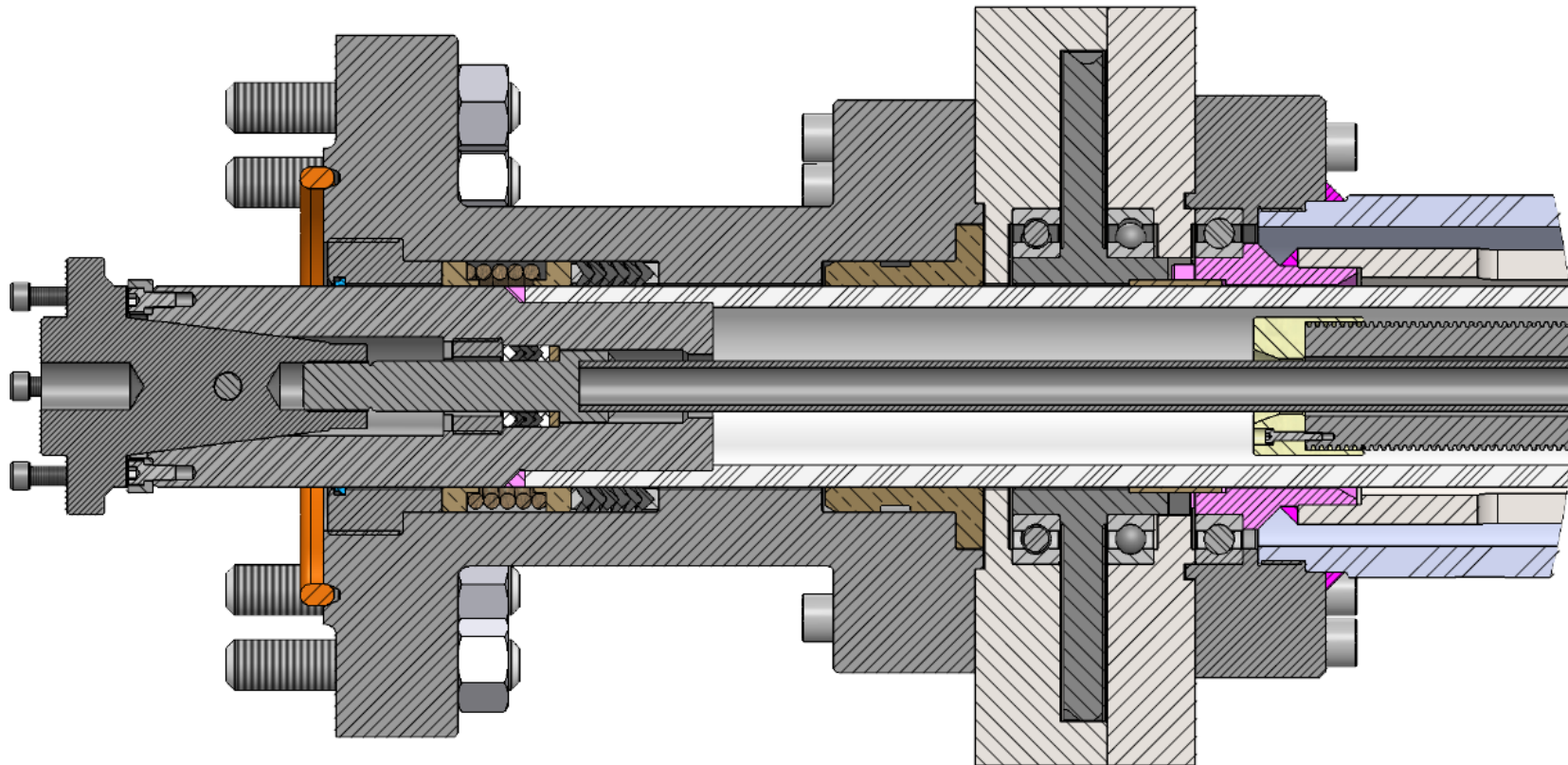
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Issue Date: 13.06.2013

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DETAIL B

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

| | | | | | |
|---|-------------------|--|---|----------|------------|
| D | | Matching windchill revision, no change | 19/03/2020 | DRB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  THIRD ANGLE PROJECTION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
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| WEIGHT | 995.411kg | | | | |
| DRAWN BY | DC | 25/04/2018 | | | |
| CHECKED BY | DMS | 19/03/2020 | | | |
| APPROVED BY | DMS | 19/03/2020 | | | |
| TITLE | 8"-24" 80" STROKE | | | | |
| SCALE: 1:10 | | | DWG No MHT824-H | | |
| | | | SHEET 2 OF 3 | | |
| | | | A3 | | |

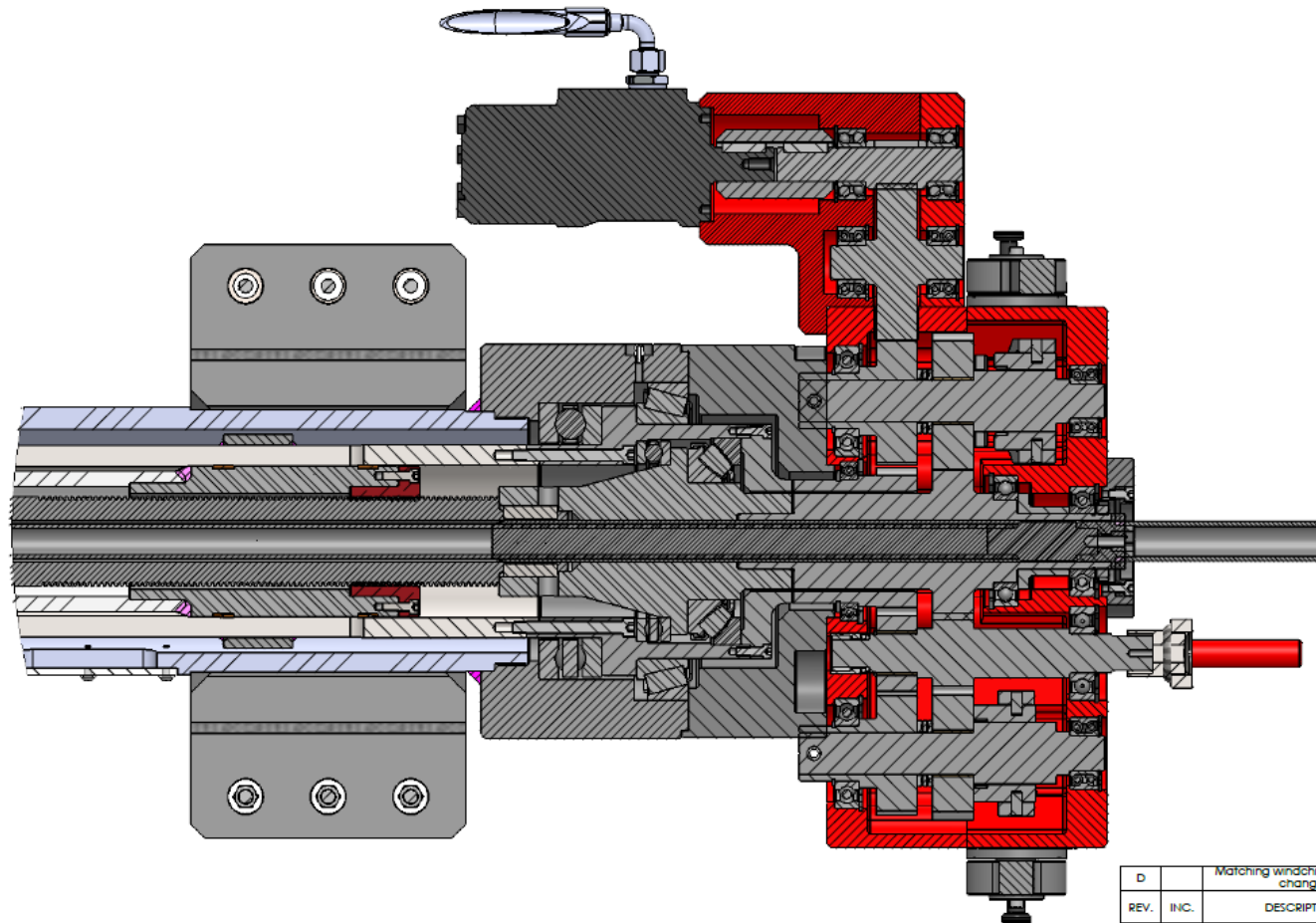
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AN ENERPAC BRAND

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 201707 FAX (01332) 370358
E MAIL info@mirage-machines.co.uk



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DETAIL C

| | | | | | |
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| D | Matching windchill revision, no change | | 19/03/2020 | DRB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
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| WEIGHT | 995.411Kg | | | | |
| DRAWN BY | DC | 25/04/2018 | | | |
| CHECKED BY | DMS | 19/03/2020 | | | |
| APPROVED BY | DMS | 19/03/2020 | | | |
| TITLE | 8"-24" 80" STROKE | | MHT824-H | | A3 |
| | SCALE: 1:10 | | SHEET 3 OF 3 | | |
| | | | DWG NO | | |

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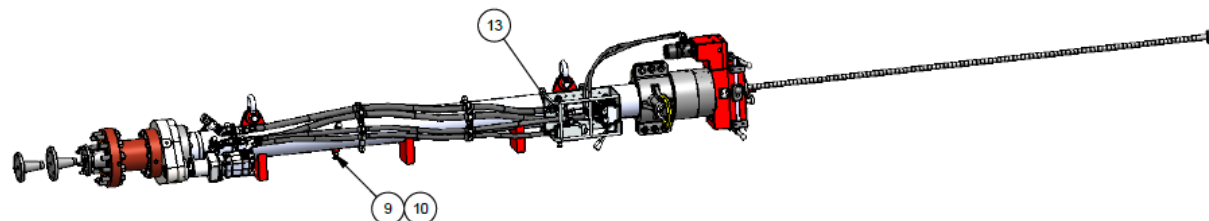
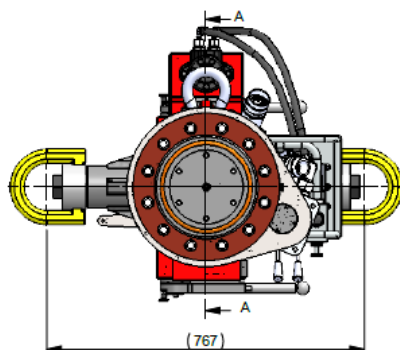
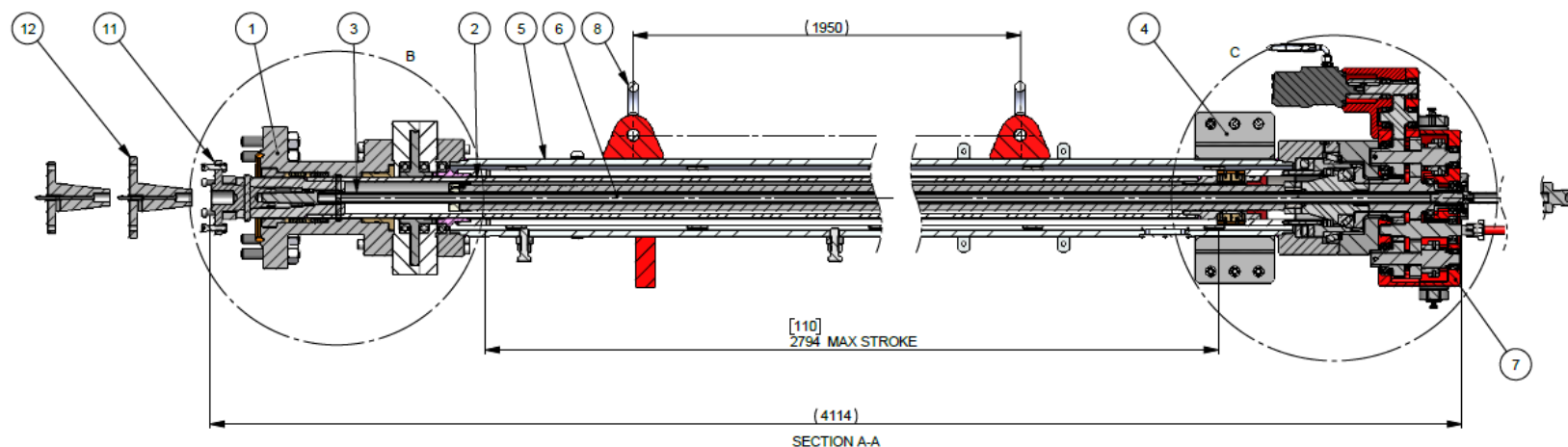
Issue: 004

Issue Date: 13.06.2013

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NOTES:

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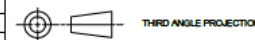
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Layouts\MHT1236-H\MHT1236-H

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|-------------------------|--|------|
| 1 | MHT1242-1 | DRIVE GEARBOX ASSEMBLY | 1 |
| 2 | MHT1236-50 | MHT1236 DRIVESHAFT ASSEMBLY | 1 |
| 3 | MHT1236-51 | DRAWBAR ASSEMBLY | 1 |
| 4 | MHT1242-11 | MHT1242 LIFTING BRACKET | 1 |
| 5 | MHT1236-52 | DRIVE TUBE ASSEMBLY | 1 |
| 6 | MHT1236-53 | LEADSCREW ASSEMBLY | 1 |
| 7 | MHT1242-19 | GEARBOX ASSEMBLY | 1 |
| 8 | 8.5T SAFETY_BOW_SHACKLE | 8.5T Safety Bow Anchor Shackle EN13889 | 2 |
| 9 | M20 | Hex Nut Grade C - BS EN 24034 | 8 |
| 10 | M20 x 70 | Hex Screw Grade AB - BS EN 24017 | 8 |
| 11 | MHT1242TD-21 | MHT1242TD CUTTER HOLDER SET | 1 |
| 12 | MHT1242TD-20 | MHT1242TD PLUG HOLDER SET | 1 |
| 13 | MHT1236-HDCP-CM | HYDRAULIC CONTROL PANEL - CYLINDER MOUNT | 1 |
| 14 | MHT1236-10 | MHT1236 BOX ASSEMBLY | 1 |
| 15 | LABEL-PACK-43 | LABEL PACK | 1 |
| 16 | MHT1242-H-TK | MHT1242-H TOOLKIT | 1 |

| | | | | | |
|------|------|--|------------|----------|------------|
| C | | Matching windchill revision, no change | 19/03/2020 | DRB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |



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| | |
|-------------|--|
| WEIGHT | 1137.300kg |
| DRAWN BY | DC |
| CHECKED BY | DMS |
| APPROVED BY | DMS |
| TITLE | 12"-36" 110" STROKE HOT TAPPING MACHINE |
| SCALE | 1:10 |

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TEL (01332) 291787 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1236-H
SHEET 1 OF 3

A3

Doc: MML265

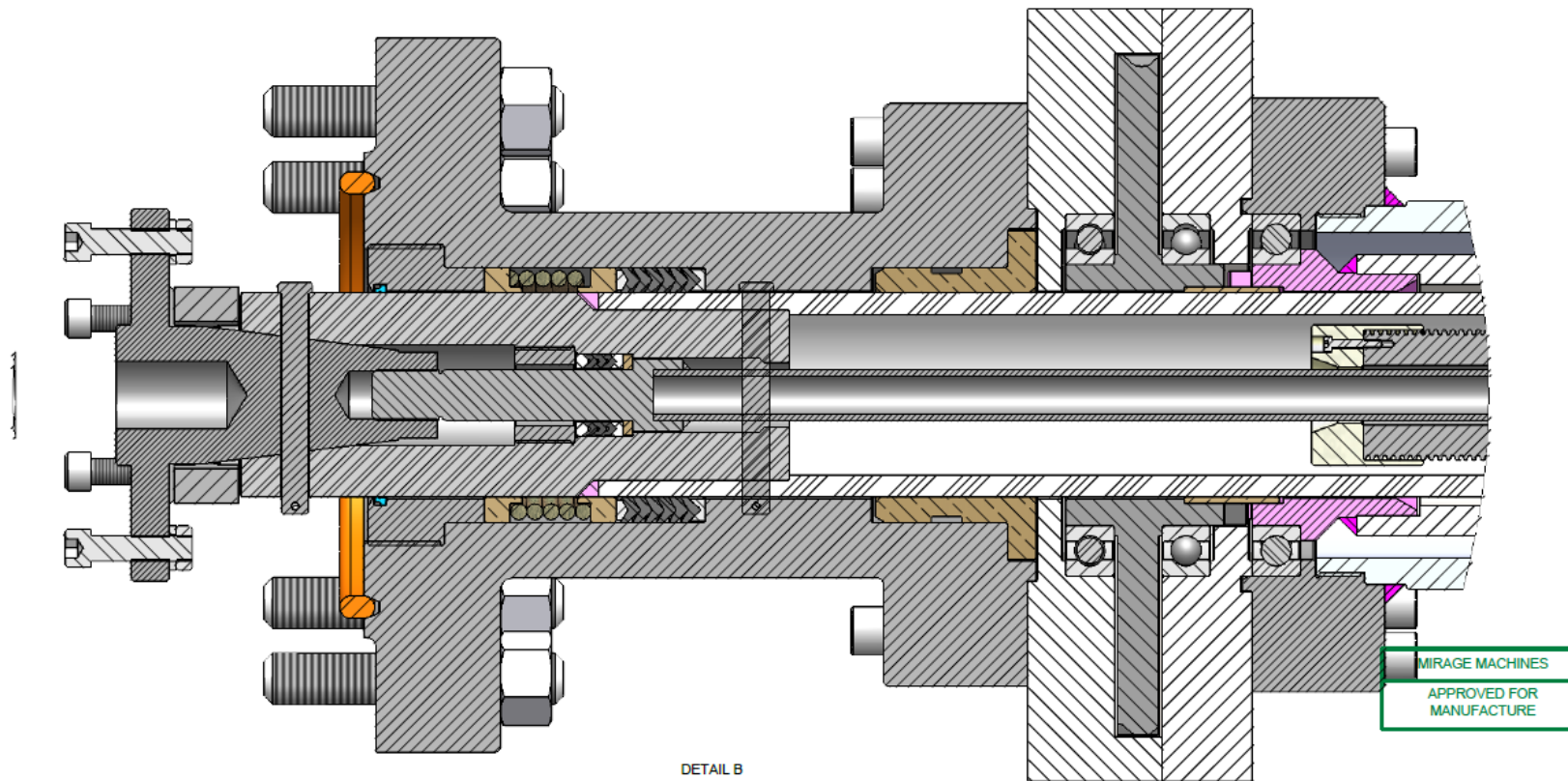
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DETAIL B

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| | | | | | |
|---|---------------------------------------|---|--|----------|------------|
| C | Matching windmill revision, no change | | 19/03/2020 | DRB | DWG |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  <p>THIRD ANGLE PROJECTION</p> | | | <p>BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS</p>  <p>AN ENERPAC BRAND</p> | | |
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| WEIGHT | | 1137.300KG | | | |
| DRAWN BY | | DCG | 19/12/2019 | | |
| CHECKED BY | | DMS | 19/03/2020 | | |
| APPROVED BY | | DMS | 19/03/2020 | | |
| TITLE | | <p>12"-36" 110" STROKE HOT TAPPING MACHINE</p> | | | |
| SCALE: | | 1:3 | | | |
| | | | <p>DWG No</p> <p>MHT1236-H</p> | | A |
| | | | <p>SHEET 2 OF 3</p> | | |

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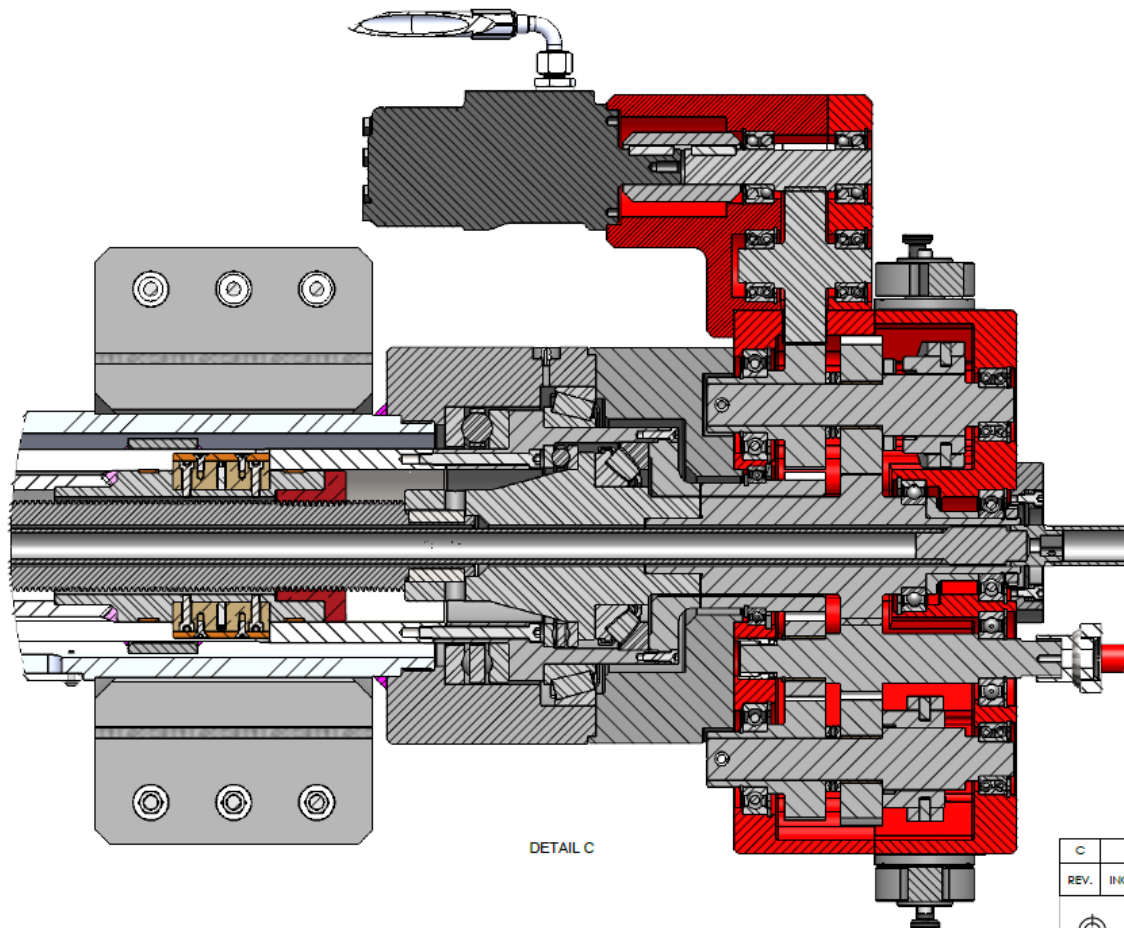
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Issue Date: 13.06.2013

Printed on 19/03/2020

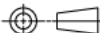

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DETAIL C

| | | | | | |
|---|--|--|--|----------|------------|
| C | | Matching windchill revision, no change | 19/03/2020 | DRB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  | | | THIRD ANGLE PROJECTION | | |
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| WEIGHT | 1137.350kg | | | | |
| DRAWN BY | DC | | 19/12/2019 | | |
| CHECKED BY | DMS | | 19/03/2020 | | |
| APPROVED BY | DMS | | 19/03/2020 | | |
| TITLE | 12"-36" 110" STROKE HOT TAPPING MACHINE SCALE: 1:3 | | | | |
| | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
| | | |  AN ENERPAC BRAND | | |
| | | | 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291787 FAX (01332) 370358 E MAIL info@mirage-machines.co.uk | | |
| DWG No: | | | MHT1236-H | | A3 |
| | | | SHEET 3 OF 3 | | |

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Doc: MML265

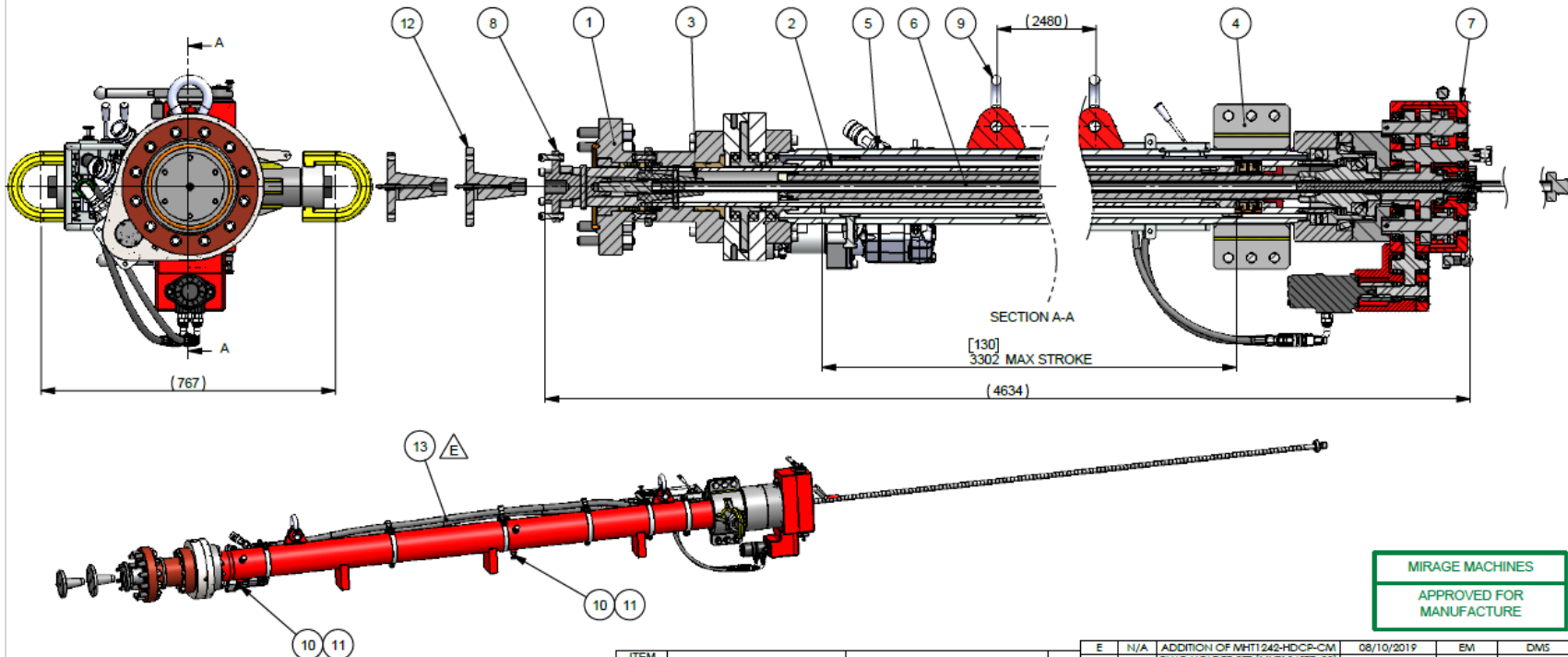
Issue: 004

Issue Date: 13.06.2013

Printed on 04/12/2019

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| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. | REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|----------|-------------------------|---|------|------|------|--|------------|----------|------------|
| 1 | MHT1242-1 | DRIVE GEARBOX ASSEMBLY | 1 | C | N/A | ADDITION OF MHT1242-HDCP-CM PLUG HOLDER SET (MHT1242TD-20) ADDED | 08/10/2019 | EM | DMS |
| 2 | MHT1242TD-2 | MHT1242 DRIVESHAFT ASSEMBLY | 1 | B | N/A | CYLINDER LOCKS ADDED | 15/08/2019 | RW | DB |
| 3 | MHT1242TD-5A | DRAWBAR ASSEMBLY | 1 | A | N/A | ADDITION OF MHT1242TD-23 & MHT1242TD-25 | 07/06/2019 | DC | EM |
| 4 | MHT1242-11 | MHT1242 LIFTING BRACKET | 1 | REV. | INC. | REVISED TO INCORPORATE NEW GEARBOX AND NEW FRONT END | 31/05/2019 | EM | DMS |
| 5 | MHT1242-13 | DRIVE TUBE ASSEMBLY | 1 | | | | 03/05/2018 | DC | DRB |
| 6 | MHT1242-14 | LEADSCREW ASSEMBLY | 1 | | | | | | |
| 7 | MHT1242-19 | GEARBOX ASSEMBLY | 1 | | | | | | |
| 8 | MHT1242TD-21 | MHT1242TD CUTTER HOLDER SET | 1 | | | | | | |
| 9 | 8.5T SAFETY_BOW_SHACKLE | 8.5T Safety Bow Anchor Shackle EN13889 | 2 | | | | | | |
| 10 | M20 | Hex Nut Grade C - BS EN 24034 | 6 | | | | | | |
| 11 | M20 x 70 | Hex Screw Grade AB - BS EN 24017 | 6 | | | | | | |
| 12 | MHT1242TD-20 | MHT1242TD PLUG HOLDER SET | 1 | | | | | | |
| 13 | MHT1242-HDCP-CM | HYDRAULIC CONTROL PANEL- CYLINDER MOUNT | 1 | | | | | | |

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT1242\MHT1242-H

Doc: MML265

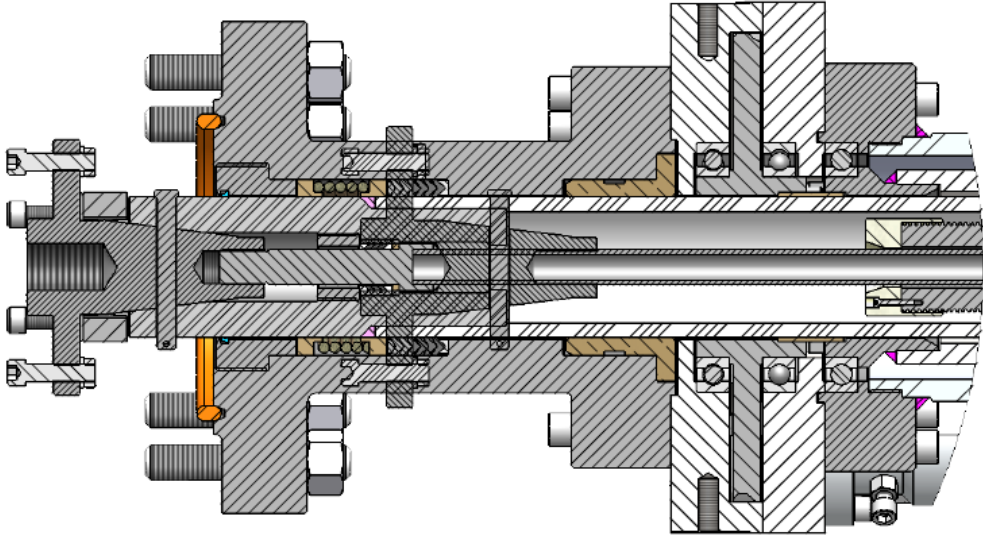
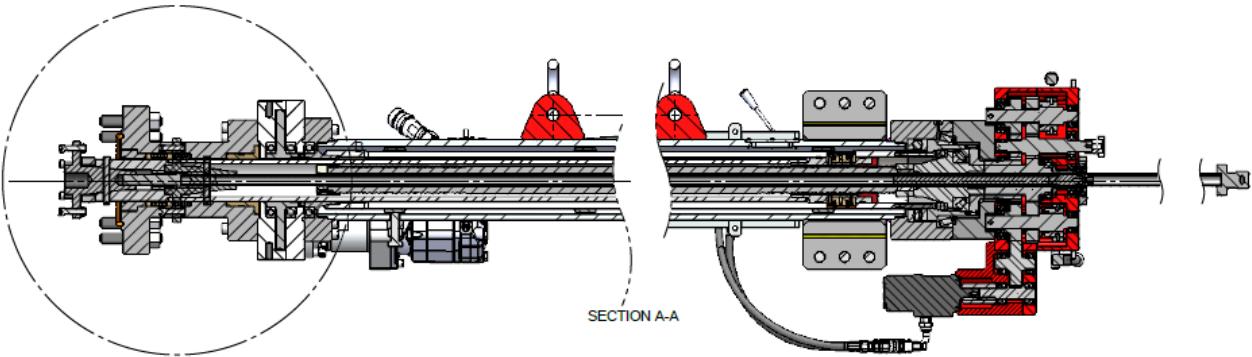
Issue: 004

Issue Date: 13.06.2013

Printed on 04/12/2019

DO NOT SCALE

IF IN DOUBT ASK



MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

| | | | | | |
|------|------|--|------------|----------|------------|
| E | N/A | ADDITION OF MHT1242-HDCP-CM | 08/10/2019 | EM | DM5 |
| D | N/A | PLUG HOLDER SET (MHT1242TD-20) ADDED | 15/08/2019 | RW | DB |
| C | N/A | CYLINDER LOCKS ADDED | 07/06/2019 | DC | EM |
| B | N/A | ADDITION OF MHT1242TD-23 & MHT1242TD-25 | 31/05/2019 | EM | DM5 |
| A | N/A | REVISED TO INCORPORATE NEW GEARBOX AND NEW FRONT END | 03/05/2018 | DC | DR8 |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |



THIRD ANGLE PROJECTION

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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MIRAGE
AN ENERPAC BRAND

WEIGHT 1234.495kg
DRAWN BY DC 25/04/2018
CHECKED BY DB 06/05/2018
APPROVED BY RS 06/05/2018
TITLE 12"-42" 130" STROKE
HOT TAPPING MACHINE
SCALE: 1:10

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk
DWG No MHT1242-H
SHEET 2 OF 3

A3

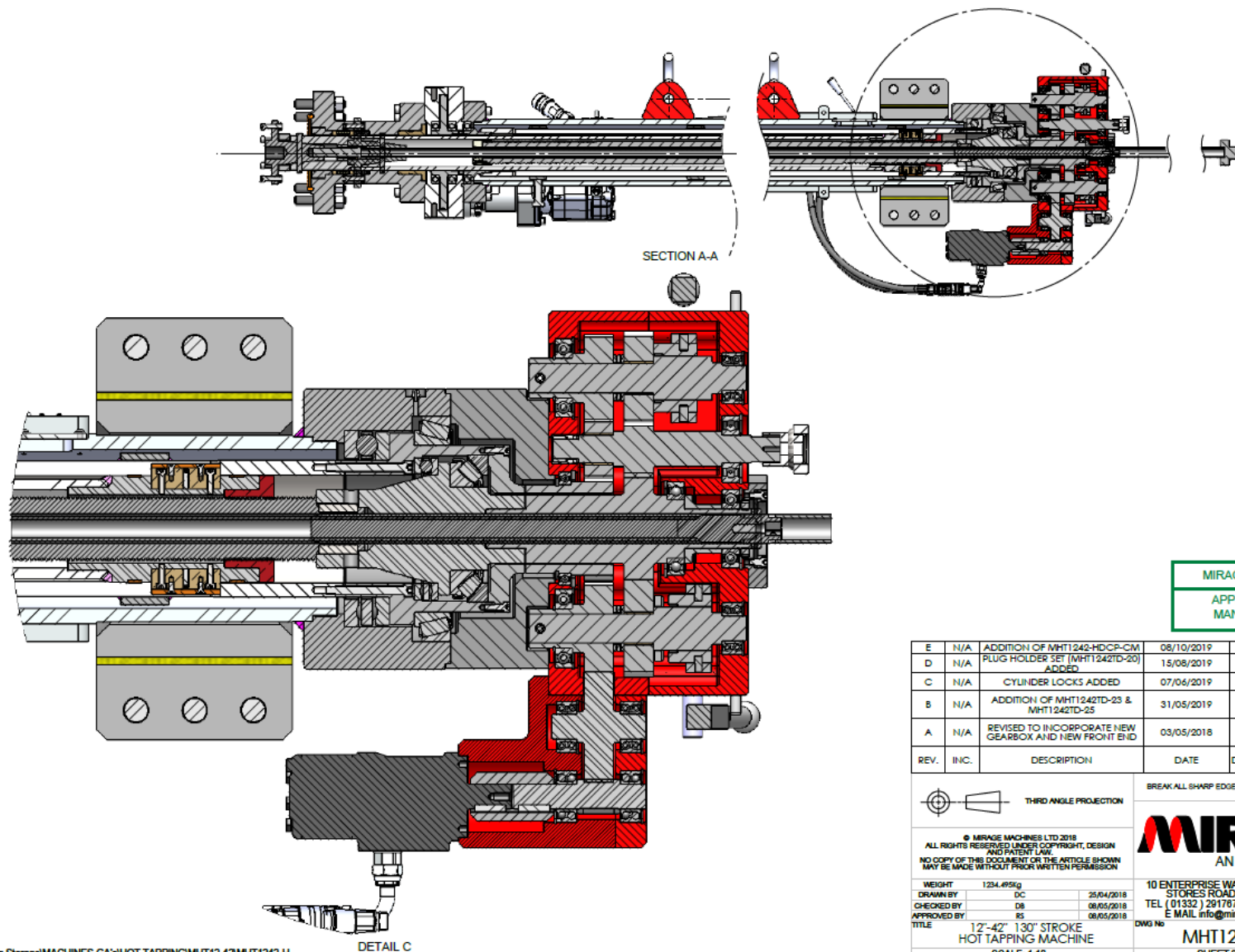
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Doc: MML265 Issue: 004 Issue Date: 13.06.2013

Printed on 04/12/2019

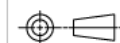
DO NOT SCALE

IF IN DOUBT ASK



MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

| E | N/A | ADDITION OF MHT1242-HDCP-CM | 08/10/2019 | EM | DMS |
|------|------|--|------------|----------|------------|
| D | N/A | PLUG HOLDER SET (MHT1242TD-20) ADDED | 15/08/2019 | RW | D8 |
| C | N/A | CYLINDER LOCKS ADDED | 07/06/2019 | DC | EM |
| B | N/A | ADDITION OF MHT1242TD-23 & MHT1242TD-25 | 31/05/2019 | EM | DMS |
| A | N/A | REVISED TO INCORPORATE NEW GEARBOX AND NEW FRONT END | 03/05/2018 | DC | DR8 |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |



THIRD ANGLE PROJECTION

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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MIRAGE
AN ENERPAC BRAND

WEIGHT 1234.455kg
DRAWN BY DC 25/04/2018
CHECKED BY D8 06/05/2018
APPROVED BY RS 08/05/2018
TITLE 12"-42" 130" STROKE
HOT TAPPING MACHINE
SCALE: 1:10

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No MHT1242-H
SHEET 3 OF 3

A3

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\MHT1242-H

Doc: MML265

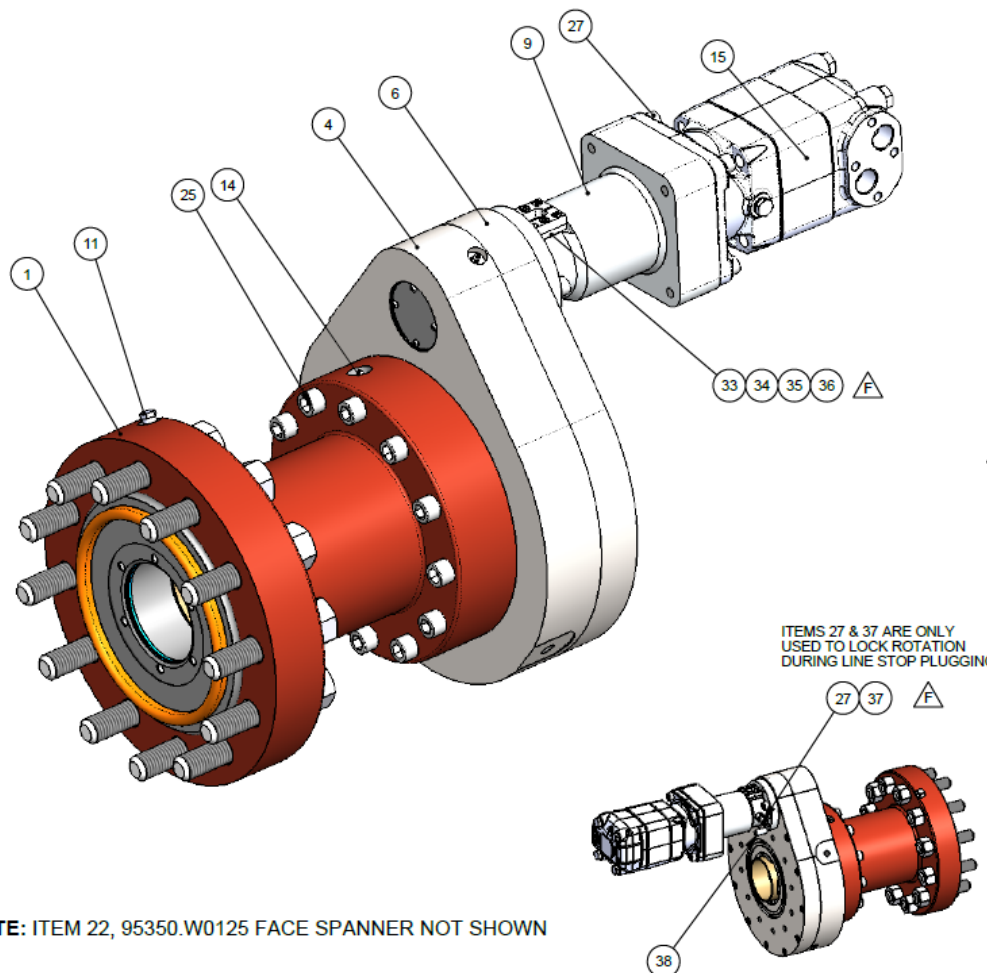
Issue: 004

Issue Date: 13.06.2013

Printed on 04/12/2019

DO NOT SCALE

IF IN DOUBT ASK

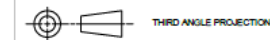


NOTE: ITEM 22, 95350.W0125 FACE SPANNER NOT SHOWN

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------------------------|---|------|
| 1 | MHT1242-1-001A | MHT1242 SPOOL | 1 |
| 2 | MHT1242-1-004 | FLANGED SUPPORT BUSH | 1 |
| 3 | MHT1242-1-005 | BUSH | 1 |
| 4 | MHT824-1-001 | GEARBOX BODY | 1 |
| 5 | MHT824-1-004 | 125t DRIVE GEAR | 1 |
| 6 | MHT824-1-002 | GEARBOX LID | 1 |
| 7 | MHT824-1-009 | 25t HELICAL GEAR | 1 |
| 8 | MHT312-1-009 | BEARING CAP | 1 |
| 9 | MHT1238-1-014 | MOTOR SPOOL | 1 |
| 10 | MHT1238-1-012 | MOTOR SHAFT | 1 |
| 11 | AT - 04 | 1/4" NPT PORT PLUG | 1 |
| 12 | STUD-1"-8UNCx5.875 | 1" HIGH TENSILE STUD | 12 |
| 13 | R45 | RING-JOINT GASKET | 1 |
| 14 | M6 | STRAIGHT GREASE NIPPLE | 3 |
| 15 | OMT500 | HYDRAULIC MOTOR | 1 |
| 16 | 6208-2RS1 | DEEP GROOVE BALL BEARING | 1 |
| 17 | KK12-8-80A | TYPE A KEY | 1 |
| 18 | 61828 | DEEP GROOVE BALL BEARING | 2 |
| 19 | MB4 | LOCKING WASHER | 1 |
| 20 | KM4 | LOCK NUT | 1 |
| 21 | 3304-2RS | Angular contact ball bearings, double row | 1 |
| 22 | 95350.W0125 | FACE SPANNER, ADJUSTABLE WITH FIXED PINS | 1 |
| 23 | CHRR17-SWAN-200UGS-CHEVRON | CHEVRON SEAL VITON PACKERS | 1 |
| 24 | 1"-8 UNC HH NUT | HEAVY HEX NUT - ANSI B18.2.2 - GD 2H | 12 |
| 25 | M16 x 100 | Hex Socket Head - BS EN ISO 4762 | 12 |
| 26 | M4 x 10 | Hex Socket Button Head - BS EN ISO 7380 | 4 |
| 27 | M12 x 35 | Hex Socket Head - BS EN ISO 4762 | 7 |
| 28 | M10 x 55 | Hex Socket Head - BS EN ISO 4762 | 14 |
| 29 | MHT1242-1-007 | SPACER | 2 |
| 30 | MHT1242-1-008 | COMPRESSION SPRING | 1 |
| 31 | MHT1242-1-006 | SEAL CARTRIDGE | 1 |
| 32 | SWANZ204000-FLN2V | Seal with O-Ring | 1 |
| 33 | MHT1242-1-010 | WINDOW MOUNT | 1 |
| 34 | MHT1242-1-011 | VIEW PORT | 1 |
| 35 | MHT1242-1-012 | KEEPER PLATE | 1 |
| 36 | M5 x 20 | Hex Socket Head - BS EN ISO 4762 | 8 |
| 37 | M12 | Hexagon Nut | 1 |
| 38 | 12 X 60 | Ø12 DOWEL | 1 |

ITEMS 27 & 37 ARE ONLY USED TO LOCK ROTATION DURING LINE STOP PLUGGING

| | | | | | |
|------|------|---|------------|----------|----------|
| H | 3729 | Updating windchill BoM to match | 04/12/2019 | DRB | R8d |
| G | - | BALLOONS ADDED FOR CLARITY. M10x55 WAS M8x80. | 04/09/2019 | RW | DB |
| F | - | DOWEL & VIEW WINDOW ADDED | 25/04/2019 | DC | DS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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| | |
|-------------|-----------|
| WEIGHT | 235.699Kg |
| DRAWN BY | BC |
| CHECKED BY | BC |
| APPROVED BY | |

TITLE
DRIVE GEARBOX ASSEMBLY
SCALE: 1:4

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291787 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1242-1
SHEET 1 OF 2

A3

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\MHT1242-1

Doc: MML265

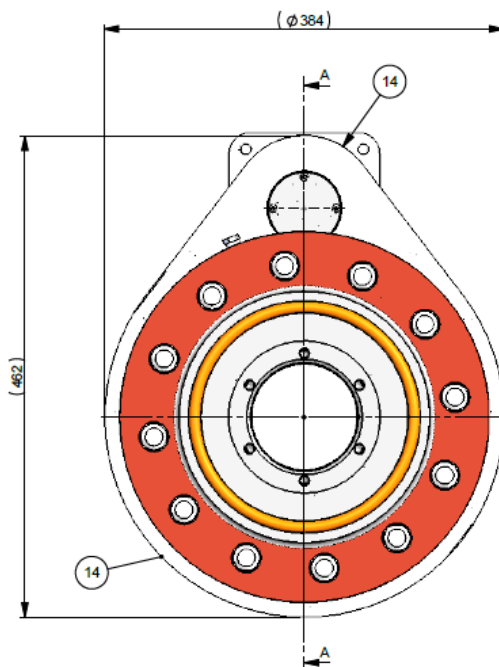
Issue: 004

Issue Date: 13.06.2013

Printed on 04/12/2019

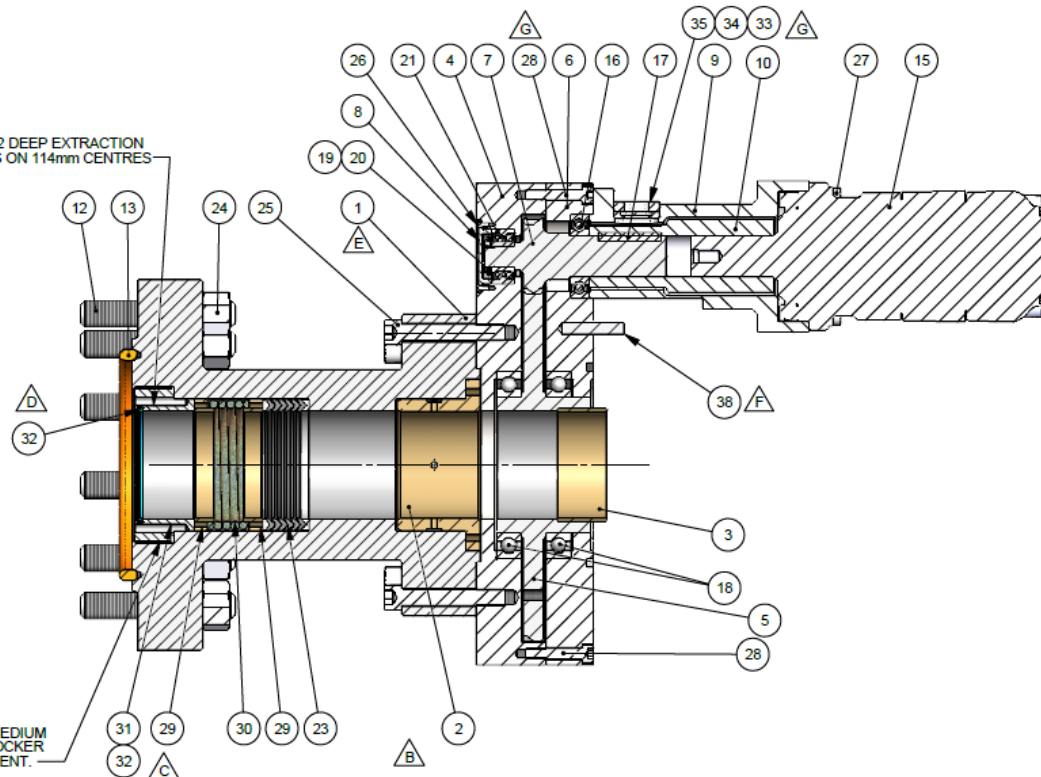
DO NOT SCALE

IF IN DOUBT ASK



M6x12 DEEP EXTRACTION HOLES ON 114mm CENTRES

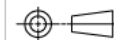
APPLY 'LOCTITE 243' MEDIUM STRENGTH THREADLOCKER OR SIMILAR EQUIVALENT.



SECTION A-A

MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|------|------|---|------------|----------|----------|
| H | 3729 | Updating windchill BoM to match | 04/12/2019 | DRB | R8a |
| G | - | BALLOONS ADDED FOR CLARITY. M10x55 WAS M8x60. | 04/09/2019 | RW | D8 |
| F | - | DOWEL & VIEW WINDOW ADDED | 25/04/2019 | DC | D5 |

| | | | |
|---|-----------|--|-----------|
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| WEIGHT | 235.699kg | <p>MIRAGE PORTABLE PERFORMANCE</p> <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291787 FAX (01332) 370358 E MAIL info@mirage-machines.co.uk</p> | |
| DRAWN BY | BC | | |
| CHECKED BY | BC | | |
| APPROVED BY | BC | | |
| DRIVE GEARBOX ASSEMBLY | | DWG NO | MHT1242-1 |
| SCALE: 1:4 | | SHEET 2 OF 2 | |
| | | A3 | |

N:\Drawing Storage\MACHINES GA'SHOT TAPPING\MHT1242\MHT1242-1

Doc: MML265

Issue: 004

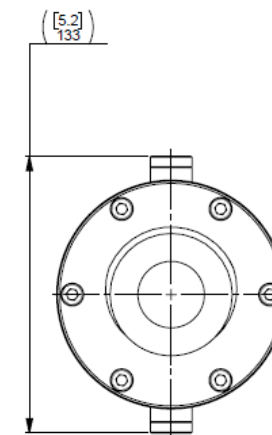
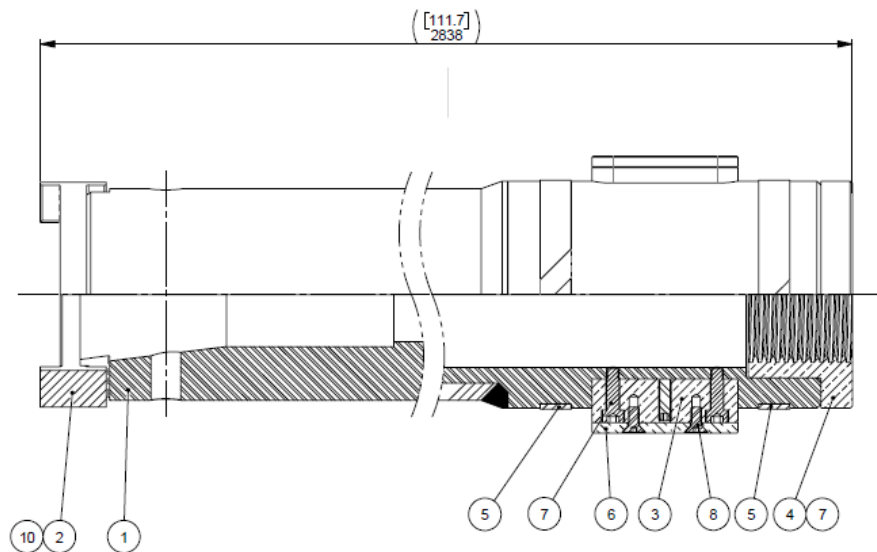
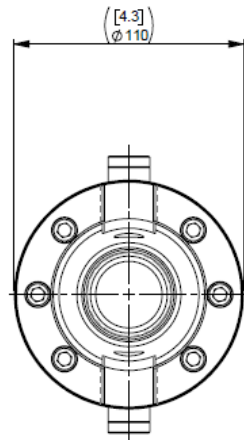
Issue Date: 13.06.2013

Printed on 17/02/2020

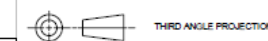
DO NOT SCALE

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MIRAGE MACHINES
APPROVED FOR
MANUFACTURE



| | | | | |
|------|-----------------------------|-------------|------|-------------------|
| B | Updating windchill BoM only | 17/02/2020 | DRB | RH |
| A | INITIAL ISSUE | 10/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY APPROVED |



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| | |
|-------------|----------|
| WEIGHT | 79.085kg |
| DRAWN BY | DC |
| CHECKED BY | DMS |
| APPROVED BY | DMS |
| TITLE | |

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370358
E MAIL info@mirage-machines.co.uk

| ITEM NO. | REV. | PART NUMBER | DESCRIPTION | QTY. |
|----------|------|--------------------|---|------|
| 1 | A | MHT824-50-002 | MHT824 DRIVESHAFT-CHROMED | 1 |
| 2 | | MHT1242TD-2-004 | DOG RING | 1 |
| 3 | B | MHT1242-2-006 | DRIVE KEY | 2 |
| 4 | A | MHT1242-2-009 | LEADSCREW NUT | 1 |
| 5 | | 14.90 x 2.5 x 1000 | PISTON WEAR BAND | 2 |
| 6 | | MHT824-2-010 | TUFNOL CAP | 2 |
| 7 | | M6 x 20 | Hex Socket Head | 10 |
| 8 | | M5 x 12 | Hex Socket CTSK Head | 4 |
| 9 | | M6 x 20 | Socket Set Screw Flat Point - BS 4168-2 | 2 |
| 10 | | 516-18UNFx58-SHCS | 516-18UNFx58-SHCS | 6 |

MHT824 DRIVESHAFT ASSEMBLY
SCALE: 1:2

DWG NO: MHT824-50
SHEET 1 OF 1

A3

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Layouts\MHT824-1\MHT824-50

Doc: MML265

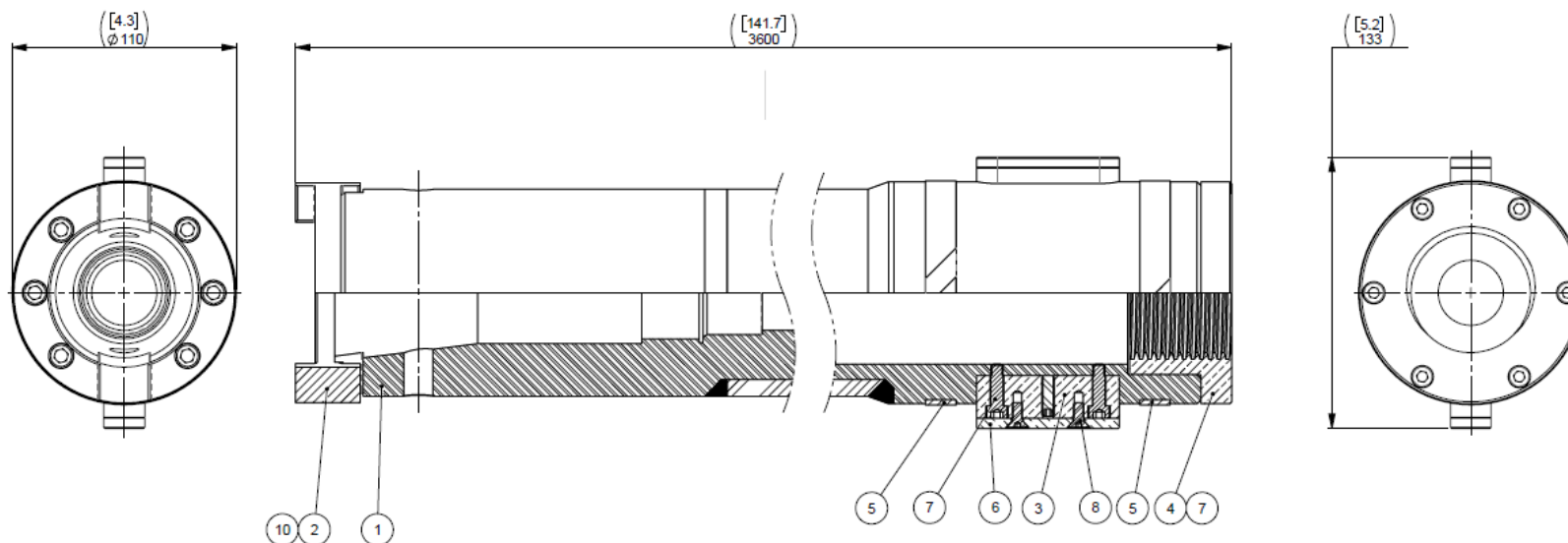
Issue: 004

Issue Date: 13.06.2013

Printed on 17/02/2020

DO NOT SCALE

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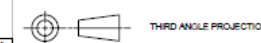


MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

N:\Drawing Storage\DESIGN PROJECTS\FY20\F20MP100271C5 - MHT824_MHT1236\Design\CAD
MHT1236-50.dwg

| ITEM NO. | REV. | PART NUMBER | DESCRIPTION | QTY. |
|----------|------|----------------------|---|------|
| 1 | A | MHT1236-50-002 | MHT1236 DRIVESHAFT-CHROMED | 1 |
| 2 | | MHT1242TD-2-004 | DOG RING | 1 |
| 3 | B | MHT1242-2-006 | DRIVE KEY | 2 |
| 4 | A | MHT1242-2-009 | LEADSCREW NUT | 1 |
| 5 | | 14.90 x 2.5 x 1000 | PISTON WEAR BAND | 2 |
| 6 | | MHT824-2-010 | TUFNOL CAP | 2 |
| 7 | | M6 x 20 | Hex Socket Head | 10 |
| 8 | | M5 x 12 | Hex Socket CTSK Head | 4 |
| 9 | | M6 x 20 | Socket Set Screw Flat Point - BS 4168-2 | 2 |
| 10 | | 516-18UNF x 5/8-SHCS | 5/16"-18UNF x 5/8"-SHCS | 6 |

| | | | | | |
|------|------|----------------------------|------------|----------|----------|
| B | | Updated windchill BoM only | 17/02/2020 | DRB | RH |
| A | | INITIAL ISSUE | 14/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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WEIGHT 97.396kg
DRAWN BY DC 08/01/2020
CHECKED BY DMS 17/01/2020
APPROVED BY

TITLE
MHT1236 DRIVESHAFT ASSEMBLY
SCALE: 1:2

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291707 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1236-50
SHEET 1 OF 1

A3

Doc: MML265

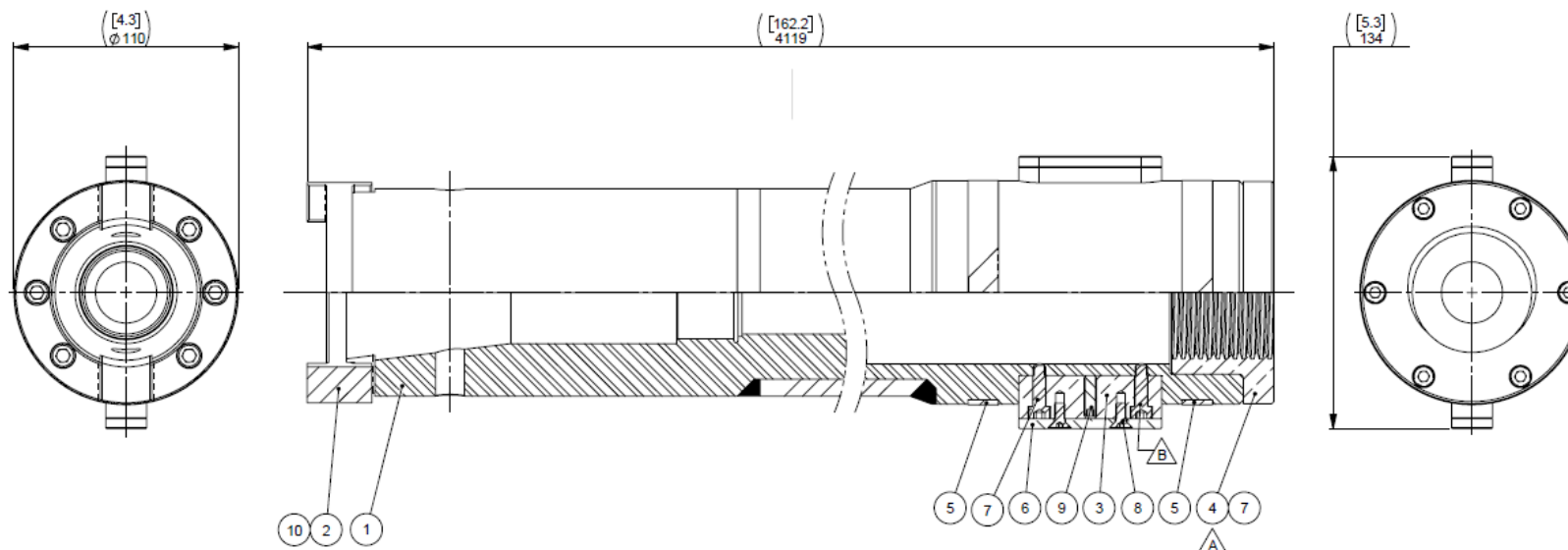
Issue: 004

Issue Date: 13.06.2013

Printed on 04-Apr-16

DO NOT SCALE

IF IN DOUBT ASK



| ITEM NO. | REV. | PART NUMBER | DESCRIPTION | QTY. |
|----------|------|--------------------|---|------|
| 1 | | MHT1242TD-2-003 | MHT1242 DRIVESHAFT-CHROMED | 1 |
| 2 | | MHT1242TD-2-004 | DOG RING | 1 |
| 3 | B | MHT1242-2-006 | DRIVE KEY | 2 |
| 4 | | MHT1242-2-009 | LEADSCREW NUT | 1 |
| 5 | | 14.90 x 2.5 x 1000 | PISTON WEAR BAND | 2 |
| 6 | | MHT824-2-010 | TUFNOL CAP | 2 |
| 7 | | M6 x 20 | Hex Socket Head - BS EN ISO 4762 | 10 |
| 8 | | M5 x 12 | Hex Socket CTSK Head | 4 |
| 9 | | M6 x 20 | Socket Set Screw Flat Point - BS 4168-2 | 2 |
| 10 | | 5/16 UNF x 5/8 | SOCKET HEAD CAP SCREW SELF COLOUR | 6 |

MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\MHT1242TD-2

| | | | | | |
|------|------|--|------------|----------|----------|
| B | 3033 | M6 x 20 socket head bolts were M5 x 20 | 04-Apr-16 | DRB | SR |
| A | N/A | MHT1242-2-009 WAS MHT1242-2-005 | 01/02/2016 | SR | MMW |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |

THIRD ANGLE PROJECTION

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WEIGHT 106.950kg
DRAWN BY SR 22-Jan-16
CHECKED BY MML 29-Jan-16
APPROVED BY
TITLE MHT1242 DRIVESHAFT ASSEMBLY
SCALE: 1:2

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1242TD-2
SHEET 1 OF 1

A3

Doc: MML265

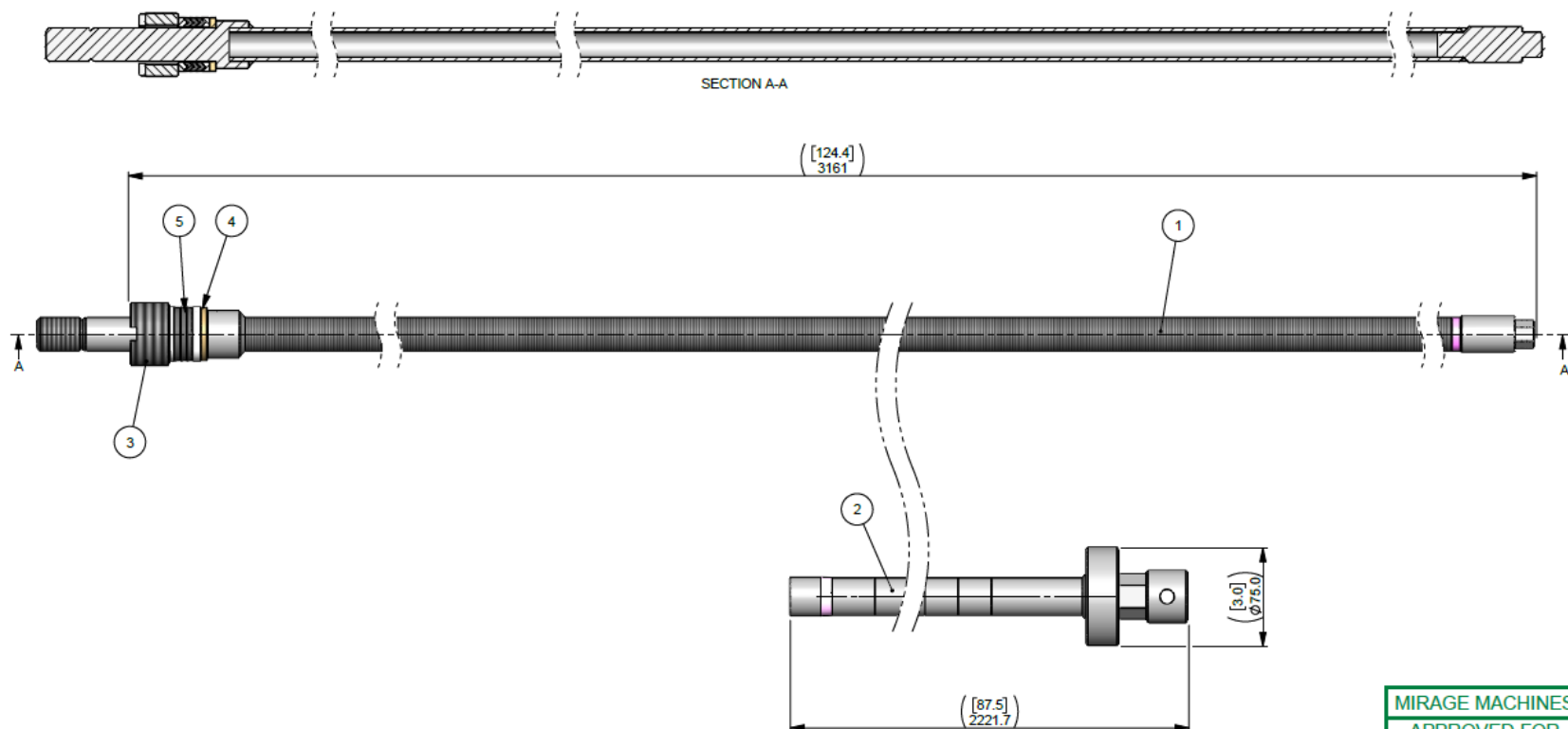
Issue: 004

Issue Date: 13.06.2013

Printed on 10/01/2020



DO NOT SCALE

IF IN DOUBT ASK



MIRAGE MACHINES
APPROVED FOR
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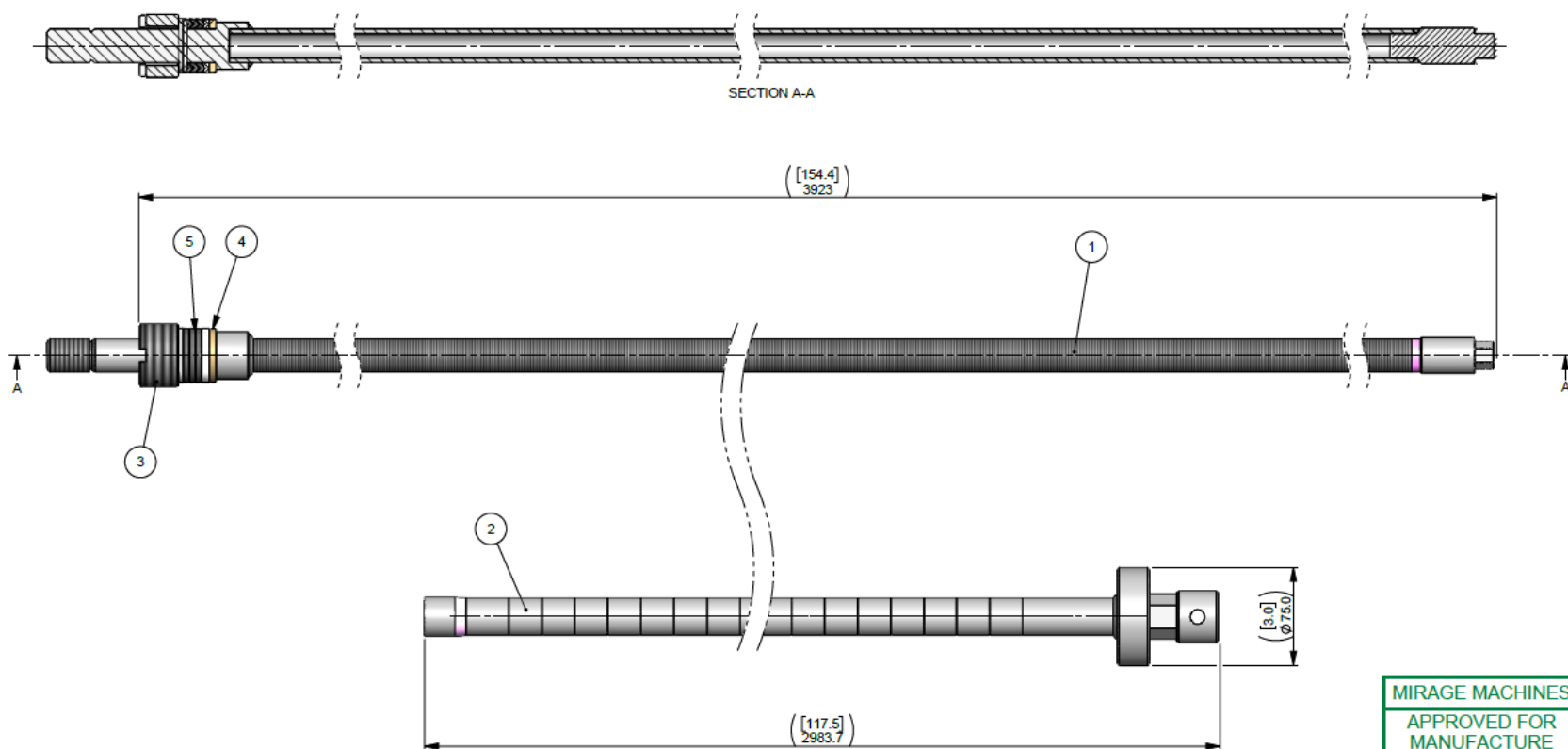
| ITEM NO. | Revision | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------|---------------------------|--|------|
| 1 | A | MHT824-51-001 | DRAWBAR | 1 |
| 2 | A | MHT824-51-002 | MEASURING ROD | 1 |
| 3 | | MHT1242TD-5A-003 | LOCKING NUT | 1 |
| 4 | | MHT1242TD-5A-005 | SEAL STOP WASHER | 1 |
| 5 | | CHEVRON SEAL STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm VITON / PTFE (200degC) | 1 |

| | | | | | |
|---|------|---|---|--------------|------------|
| A | | INITIAL ISSUE | 10/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  | | THIRD ANGLE PROJECTION | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
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| WEIGHT 12.371 KG | | 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE1 1AB TEL 01332 201767 FAX 01332 370358 E MAIL info@mirage-machines.co.uk | | | |
| DRAWN BY DC | | 19/12/2019 | | DWG NO | |
| CHECKED BY DMS | | 10/01/2020 | | MHT824-51 | |
| APPROVED BY DMS | | 10/01/2020 | | SHEET 1 OF 1 | |
| TITLE DRAWBAR ASSEMBLY | | | A3 | | |
| SCALE 1:1 | | | | | |

Printed on 17/01/2020

DO NOT SCALE

IF IN DOUBT ASK



| ITEM NO. | Revision | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------|---------------------------|--|------|
| 1 | A | MHT1236-51-001 | DRAWBAR | 1 |
| 2 | A | MHT1236-51-002 | MEASURING ROD | 1 |
| 3 | | MHT1242TD-5A-003 | LOCKING NUT | 1 |
| 4 | | MHT1242TD-5A-005 | SEAL STOP WASHER | 1 |
| 5 | | CHEVRON-SEAL-STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm VITON / PTFE (200degC) | 1 |

| | | | | | | |
|---|------|------------------|---|------------|------------|-----|
| A | | INITIAL ISSUE | | 14/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY | |
| THIRD ANGLE PROJECTION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | | |
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| WEIGHT | | 15.289kg | | | | |
| DRAWN BY | | DC | | 19/12/2019 | | |
| CHECKED BY | | DMS | | 17/01/2020 | | |
| APPROVED BY | | | | | | |
| TITLE | | DRAWBAR ASSEMBLY | | | | |
| SCALE | | 1:3 | | | | |
| DWG NO | | MHT1236-51 | | | | |
| SHEET | | 1 OF 1 | | | | |

N:\Drawing Storage\DESIGN PROJECTS\FY20\F20MP100271C5 - MHT824_MHT1236\Design\CAD
MHT1236-51.dwg

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 11/10/2019

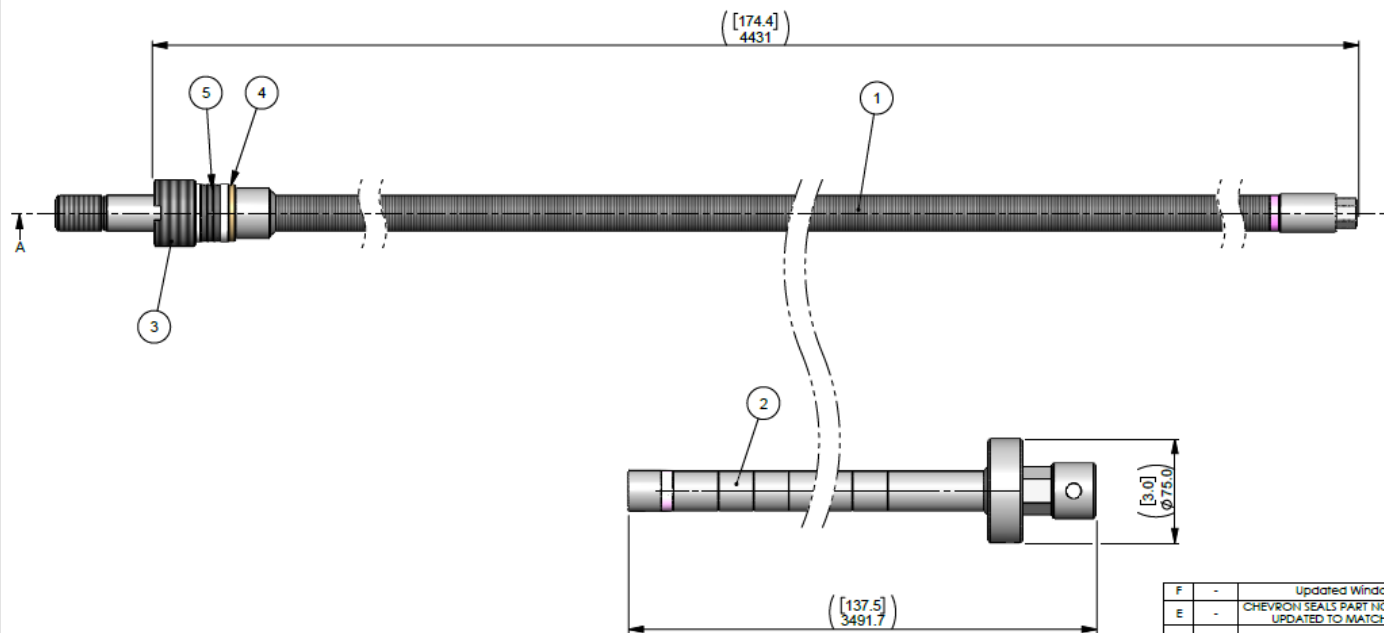
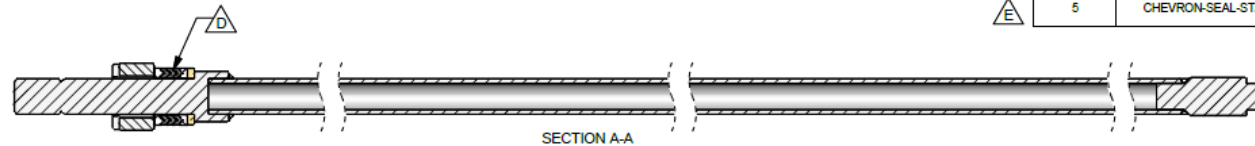
DO NOT SCALE

IF IN DOUBT ASK

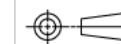
MIRAGE MACHINES
APPROVED FOR
MANUFACTURE



| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|---------------------------|--|------|
| 1 | MHT1242TD-5A-001 | DRAWBAR | 1 |
| 2 | MHT1242TD-5A-002 | MEASURING ROD | 1 |
| 3 | MHT1242TD-5A-003 | LOCKING NUT | 1 |
| 4 | MHT1242TD-5A-005 | SEAL STOP WASHER | 1 |
| 5 | CHEVRON-SEAL-STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm VITON / PTFE (200DegC) | 1 |



| | | | | | |
|------|------|---|------------|----------|------------|
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
| F | - | Updated Windchill BoM | 11/10/2019 | DRB | RH |
| E | - | CHEVRON SEALS PART NO. & DESCRIPTION UPDATED TO MATCH WINDCHILL | 12/09/2019 | RW | DB |



THIRD ANGLE PROJECTION

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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MIRAGE
AN ENERPAC BRAND

WEIGHT 17.235kg
DRAWN BY DC 15/08/2013
CHECKED BY DB 06/05/2018
APPROVED BY
TITLE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1242TD-5A
SCALE: 1:3

SHEET 1 OF 1

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\MHT1242TD-5A

Doc: MML265

Issue: 004

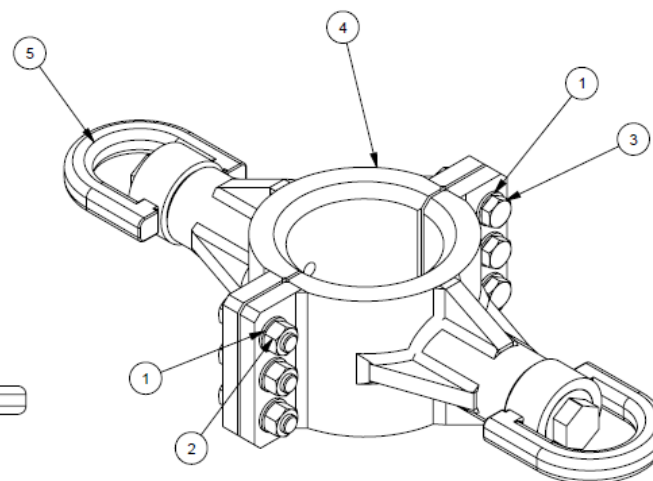
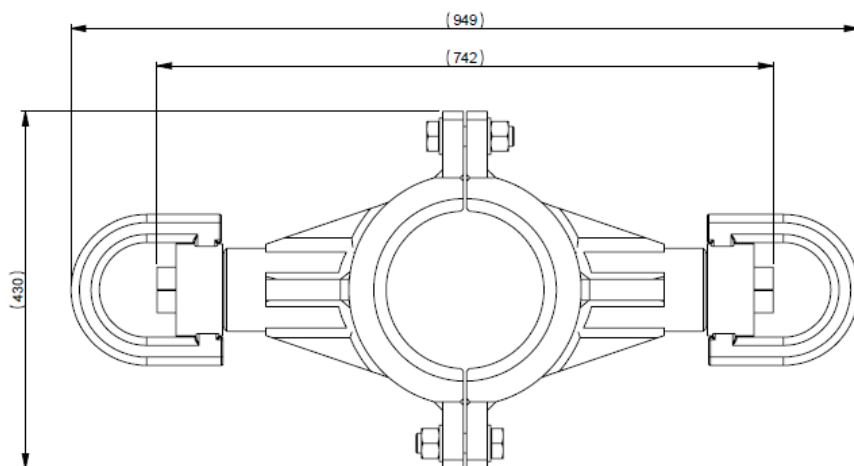
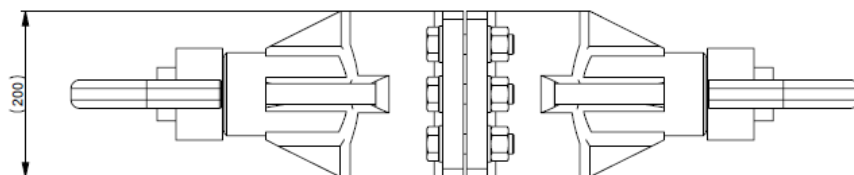
Issue Date: 13.06.2013

Printed on 21/01/2016

DO NOT SCALE

IF IN DOUBT ASK

| ITEM NO. | REV. | PART NUMBER | DESCRIPTION | Class | QTY |
|----------|------|----------------|----------------------------------|-------|-----|
| 1 | | M24 | WASHER (FORM A) | | 12 |
| 2 | | M24 | Hex Nut Style 1 - BS EN 24493 | 12.9 | 6 |
| 3 | | M24x90 | Hex Screw Grade AB - BS EN 24014 | 12.9 | 6 |
| 4 | | MHT1242-11-001 | MHT1242 LIFTING BRACKET | | 1 |
| 5 | | RLP-M36-10 | ROTATING LIFTING POINT | | 2 |



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N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\MHT1242-11

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|--|------|-------------------------|------|----------|----------|
| | | THIRD ANGLE PROJECTION | | | |
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| WEIGHT | | 105.534kg | | | |
| DRAWN BY | | BC 01/06/2016 | | | |
| CHECKED BY | | SR 21/01/2016 | | | |
| APPROVED BY | | | | | |
| TITLE | | MHT1242 LIFTING BRACKET | | | |
| | | SCALE: 1:5 | | | |
| | | DWG No: MHT1242-11 | | | |
| | | SHEET 1 OF 1 | | | |
| | | | | | A3 |

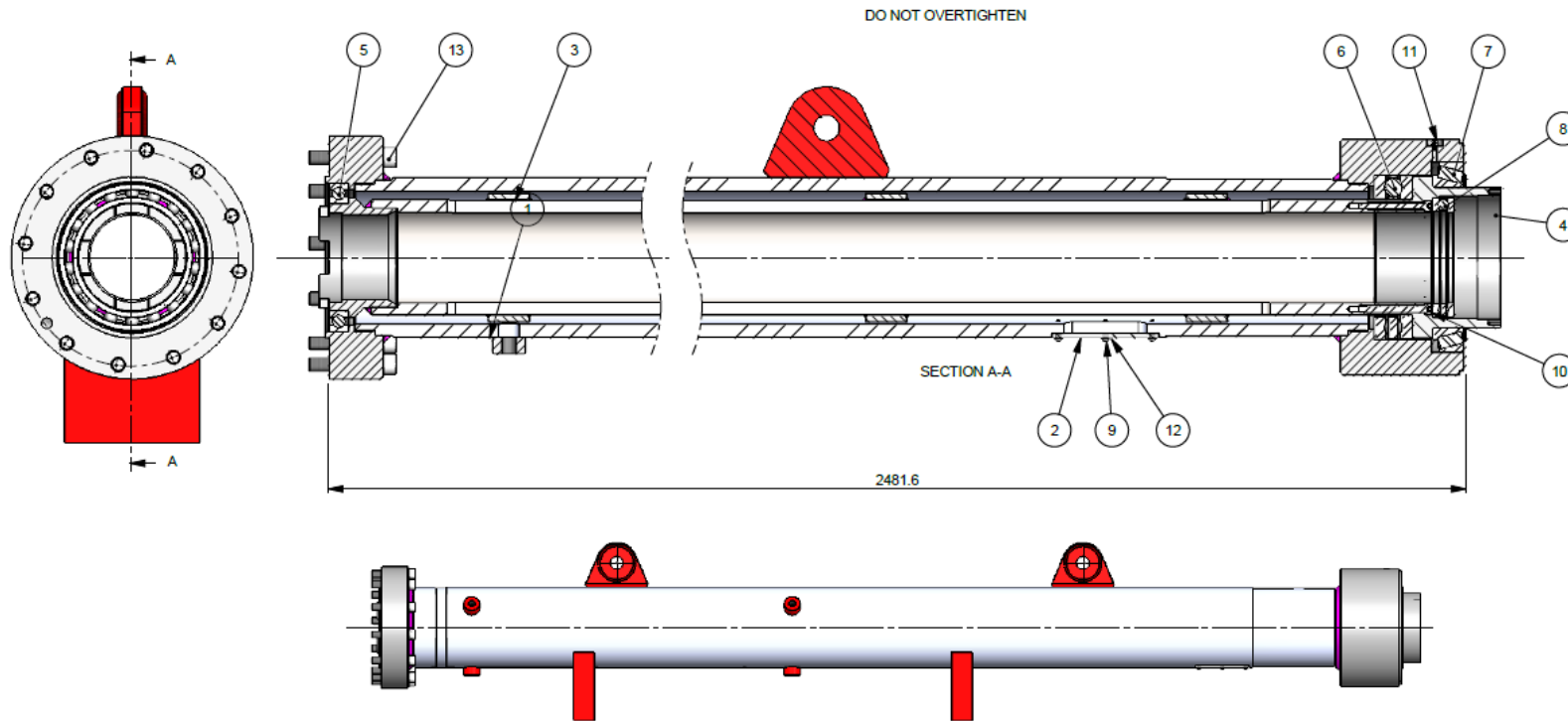
MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291707 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

Printed on 20/03/2020

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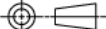


MIRAGE MACHINES

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MANUFACTURE

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|-------------------------|--------------------------------------|------|
| 1 | MHT824-52-001 | MHT824 CYLINDER ASSY - WELDED | 1 |
| 2 | MHT312-19-010 | INSPECTION PLATE | 1 |
| 3 | MHT824-52-003 | DRIVETUBE | 1 |
| 4 | MHT1242-12-003 | TUBE ADAPTER | 1 |
| 5 | 61926 | DEEP GROOVE BALL BEARING | 1 |
| 6 | 51228 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 7 | 32934 | TAPER ROLLER BEARING-SINGLE ROW | 1 |
| 8 | 51122 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 9 | M5 x 16 | Hex Socket Button Head | 6 |
| 10 | M6x80 | SOCKET HEAD CAP SCREW | 12 |
| 11 | M6 | STRAIGHT GREASE NIPPLE | 1 |
| 12 | M6 x 1.5mm NYLON WASHER | PLAIN NYLON SEALING WASHER | 6 |
| 13 | M16 x 90 | Hex Socket Head - BS EN ISO 4762 | 12 |

| | | | | | | | |
|------|--|---------------------|--|-------------------|--|------------|--|
| S | | Window moved 180deg | | 20/03/2020 | | RSA | |
| A | | - | | Windchill release | | 14/01/2020 | |
| REV. | | INC. | | DESCRIPTION | | DATE | |
| | | | | | | DRAWN BY | |
| | | | | | | CHECKED BY | |




THIRD ANGLE PROJECTION

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| | | |
|-------------|---------------------|------------|
| WEIGHT | 370.742kg | |
| DRAWN BY | DC | 25/04/2018 |
| CHECKED BY | - | |
| APPROVED BY | - | |
| TITLE | DRIVE TUBE ASSEMBLY | |
| SCALE | 1:5 | |

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS



10 ENTERPRISE WAY, JUBILEE PARKWAY,
 STORES ROAD, DERBY DE21 4BB
 TEL (01332) 291767 FAX (01332) 370356
 E MAIL info@mirage-machines.co.uk

DWG No

MHT824-52

SHEET 1 OF 1

A3

N:\Drawing Storage\DESIGN PROJECTS\FY20\F20MP100271C5 - MHT824_MHT1236\Design\CAD
L:\P\SUM\MHT824-52\MHT824-52.dwg
13.06.2013

Doc: MML265

Issue: 004

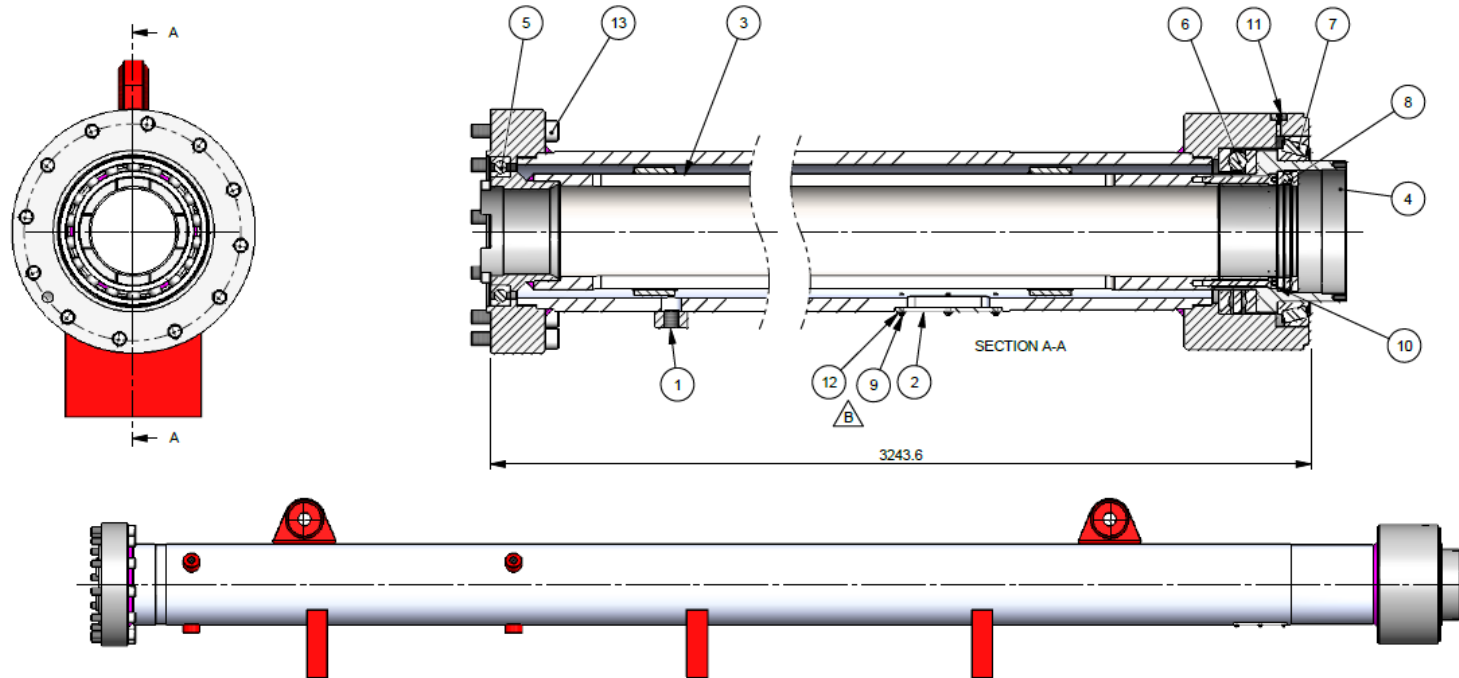
Issue Date: 13.06.2013

Printed on 20/03/2020

DO NOT SCALE

IF IN DOUBT ASK

DO NOT OVERTIGHTEN



MIRAGE MACHINES

APPROVED FOR
MANUFACTURE

| ITEM NO. | Revision | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------|-------------------------|--------------------------------------|------|
| 1 | A | MHT1236-52-001 | MHT1236 CYLINDER ASSY - WELDED | 1 |
| 2 | | MHT312-19-010 | INSPECTION PLATE | 1 |
| 3 | A | MHT1236-52-003 | DRIVETUBE | 1 |
| 4 | | MHT1242-12-003 | TUBE ADAPTER | 1 |
| 5 | | 61928 | DEEP GROOVE BALL BEARING | 1 |
| 6 | | 51228 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 7 | | 32934 | TAPER ROLLER BEARING-SINGLE ROW | 1 |
| 8 | | 51122 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 9 | | M5 x 16 | Hex Socket Button Head | 6 |
| 10 | | M8x80 | SOCKET HEAD CAP SCREW | 12 |
| 11 | | M6 | STRAIGHT GREASE NIPPLE | 1 |
| 12 | | M6 x 1.5mm NYLON WASHER | PLAIN NYLON SEALING WASHER | 6 |
| 13 | | M16 x 90 | Hex Socket Head - BS EN ISO 4762 | 12 |

| | | | | |
|---|---------------------|-------------|------|------------|
| 5 | Window Moved 180deg | 20/03/2020 | RBA | |
| A | INITIAL ISSUE | 14/01/2020 | DC | |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY |
| | | | | CHECKED BY |
| THIRD ANGLE PROJECTION | | | | |
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| WEIGHT | 445.683kg | | | |
| DRAWN BY | DC | 25/04/2018 | | |
| CHECKED BY | - | | | |
| APPROVED BY | - | | | |
| TITLE | DRIVE TUBE ASSEMBLY | | | |
| SCALE | 1:5 | | | |
| MIRAGE AN ENERPAC BRAND | | | | |
| 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291787 FAX (01332) 370356 E MAIL info@mirage-machines.co.uk | | | | |
| DWG No | MHT1236-52 | | | |
| | SHEET 1 OF 1 | | | |

N:\Drawing Storage\DESIGN PROJECTS\FY20\F20MP100271C5 - MHT824_MHT1236\Design\CAD
LAYOUT\MHT1236-52-MHT1236-52.dwg 24.03.2020

Doc: MML265

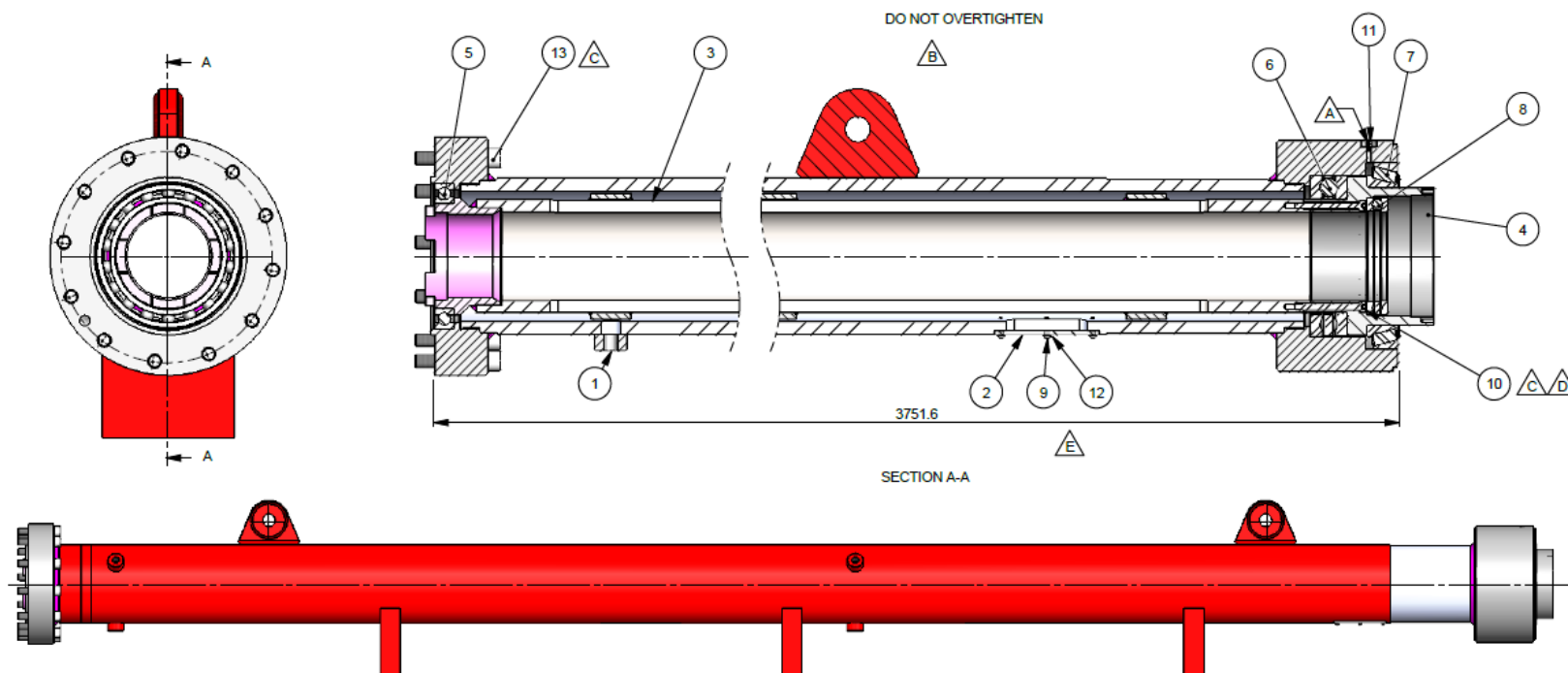
Issue: 004

Issue Date: 13.06.2013

Printed on 20/03/2020

DO NOT SCALE

IF IN DOUBT ASK



MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|-------------------------|--------------------------------------|------|
| 1 | MHT1242-13-001 | MHT1242 CYLINDER ASSY - WELDED | 1 |
| 2 | MHT312-19-010 | INSPECTION PLATE | 1 |
| 3 | MHT1242-12-001 | DRIVETUBE | 1 |
| 4 | MHT1242-12-003 | TUBE ADAPTER | 1 |
| 5 | 61928 | DEEP GROOVE BALL BEARING | 1 |
| 6 | 51228 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 7 | 32934 | TAPER ROLLER BEARING-SINGLE ROW | 1 |
| 8 | 51122 | THRUST BALL BEARING-SINGLE DIRECTION | 1 |
| 9 | M5 x 16 | Hex Socket Button Head | 6 |
| 10 | M8x80 | SOCKET HEAD CAP SCREW | 12 |
| 11 | M6 | STRAIGHT GREASE NIPPLE | 1 |
| 12 | M6 x 1.5mm NYLON WASHER | PLAIN NYLON SEALING WASHER | 6 |
| 13 | M16 x 90 | Hex Socket Head - BS EN ISO 4762 | 12 |

| | | | | | |
|--|------|--|------------|----------|------------|
| E | | Window moved 180deg | 20/03/2020 | RBA | DRB |
| D | N/A | BOLT SIZES CHANGED FROM M8X90 TO M8X80 | 03/09/2019 | RW | DB |
| C | N/A | BOLT SIZES CHANGED FROM M16X80 TO M16X90 & M8X90 | 16/07/2019 | EM | DRB |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
| <p>THIRD ANGLE PROJECTION</p> <p>BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS</p> <p>MIRAGE AN ENERPAC BRAND</p> <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291767 FAX (01332) 370356 E MAIL info@mirage-machines.co.uk</p> <p>DWG No: MHT1242-13 SHEET 1 OF 1</p> | | | | | |
| <p>DRIVE TUBE ASSEMBLY SCALE: 1:5</p> | | | | | |

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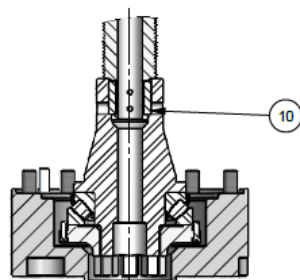
Doc: MML265

Issue: 004

Issue Date: 13.06.2013


IF IN DOUBT ASK

APPROVED FOR
MANUFACTURE



SECTION B-B

| ITEM NO. | Revision | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------|----------------|----------------------------------|------|
| 1 | A | MHT1242-14-001 | LEADSCREW ADAPTER | 1 |
| 2 | B | MHT1242-14-002 | END COVER | 1 |
| 3 | A | MHT824-53-001 | MHT824 LEADSCREW | 1 |
| 4 | | MHT1242-14-003 | TUBE ADAPTER DRIVE | 1 |
| 5 | | MHT824-4-005 | GRUB SCREW | 4 |
| 6 | A | MHT1242-4-006 | LEADSCREW SUPPORT | 1 |
| 7 | | 29317 E | SPHERICAL ROLLER THRUST BEARING | 1 |
| 8 | | M16 x 110 | Hex Socket Head - BS EN ISO 4762 | 10 |
| 9 | | M6 x 20 | Hex Socket Head - BS EN ISO 4762 | 20 |
| 10 | | 14 x 9 x 40 | PARALLEL KEY - TYPE A | 2 |
| 11 | | 12 x 60 | Ø12 DOWEL | 1 |
| 12 | | M4 x 25 | Hex Socket Head - BS EN ISO 4762 | 3 |

| | | | | | |
|--|-----------------------------------|-------------|---|----------|----------|
| B | Updating windchill BOM references | | 17/02/2020 | DRB | RH |
| A | INITIAL ISSUE | | 10/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|  THIRD ANGLE PROJECTION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
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| WEIGHT | | 95.244kg | | | |
| DRAWN BY | | DC | 19/12/2019 | | |
| CHECKED BY | | DMS | 10/01/2020 | | |
| APPROVED BY | | DMS | 10/01/2020 | | |
| TITLE | | | | | |
| LEADSCREW ASSEMBLY | | | MHT824-53 | | A3 |
| SCALE: 1:5 | | | SHEET 1 OF 1 | | |

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

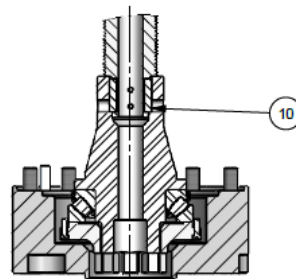
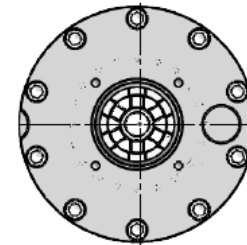
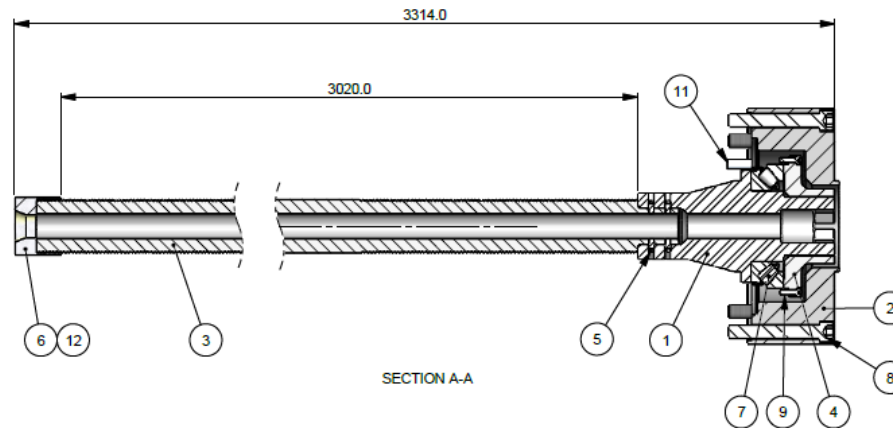
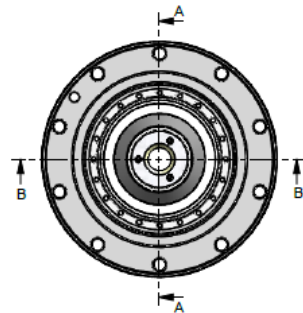
Printed on 17/02/2020

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SECTION B-B

| ITEM NO. | Revision | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------|----------------|----------------------------------|------|
| 1 | A | MHT1242-14-001 | LEADSCREW ADAPTER | 1 |
| 2 | B | MHT1242-14-002 | END COVER | 1 |
| 3 | A | MHT1236-53-001 | MHT1236 LEADSCREW | 1 |
| 4 | | MHT1242-14-003 | TUBE ADAPTER DRIVE | 1 |
| 5 | | MHT824-4-005 | GRUB SCREW | 4 |
| 6 | A | MHT1242-4-006 | LEADSCREW SUPPORT | 1 |
| 7 | | 29317 E | SPHERICAL ROLLER THRUST BEARING | 1 |
| 8 | | M16 x 110 | Hex Socket Head - BS EN ISO 4762 | 10 |
| 9 | | M8 x 20 | Hex Socket Head - BS EN ISO 4762 | 20 |
| 10 | | 14 x 9 x 40 | PARALLEL KEY - TYPE A | 2 |
| 11 | | 12 X 60 | Ø12 DOWEL | 1 |
| 12 | | M4 x 25 | Hex Socket Head - BS EN ISO 4762 | 3 |

| | | | | |
|--|-----------------------------|-------------|------|-------------------|
| B | Updating windchill BoM only | 17/02/2020 | DRB | RH |
| A | INITIAL ISSUE | 14/01/2020 | DC | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY APPROVED |
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| <p>BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS</p> <p>MIRAGE AN ENERPAC BRAND</p> <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL: (01332) 291767 FAX: (01332) 370356 E MAIL: info@mirage-machines.co.uk</p> <p>DWG NO: MHT1236-53 SHEET 1 OF 1</p> | | | | |
| | | | | A3 |

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L:\MHT1236-MHT1236-53
17/02/2020

Doc: MML265

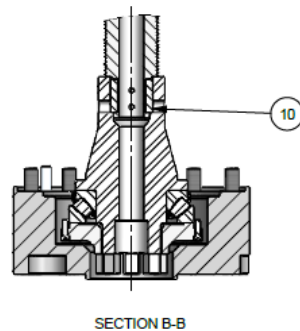
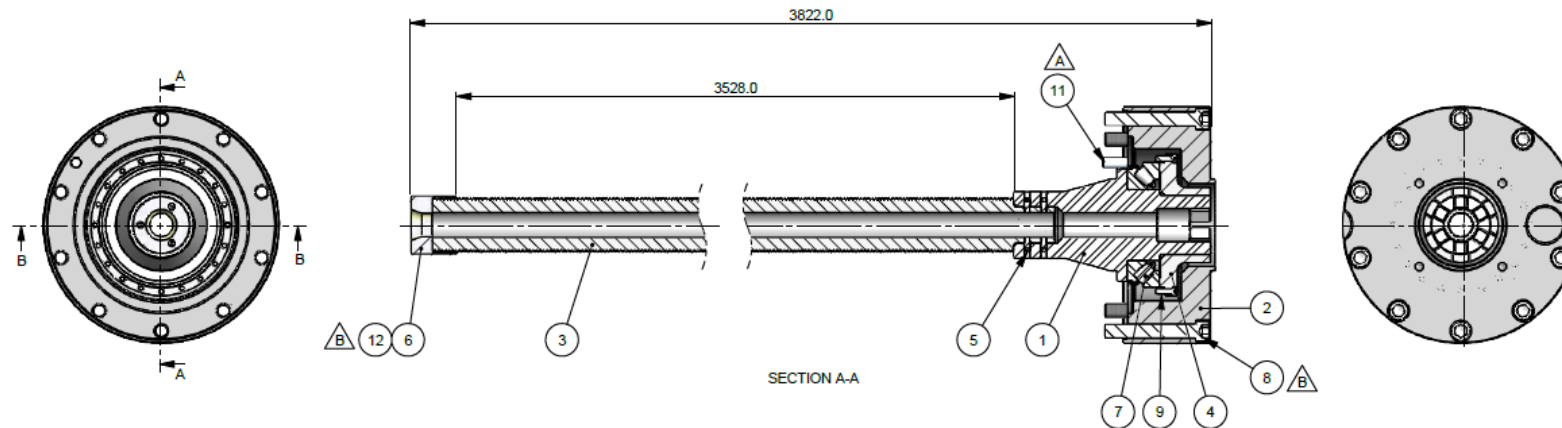
Issue: 004

Issue Date: 13.06.2013

Printed on 30/09/2019

DO NOT SCALE

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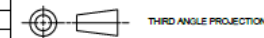


MIRAGE MACHINES

APPROVED FOR
MANUFACTURE

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|----------------|----------------------------------|------|
| 1 | MHT1242-14-001 | LEADSCREW ADAPTER | 1 |
| 2 | MHT1242-14-002 | END COVER | 1 |
| 3 | MHT1242-4-005 | MHT1242 LEADSCREW | 1 |
| 4 | MHT1242-14-003 | TUBE ADAPTER DRIVE | 1 |
| 5 | MHT824-4-005 | GRUB SCREW | 4 |
| 6 | MHT1242-4-006 | LEADSCREW SUPPORT | 1 |
| 7 | 29317 E | SPHERICAL ROLLER THRUST BEARING | 1 |
| 8 | M16 x 110 | Hex Socket Head - BS EN ISO 4762 | 10 |
| 9 | M6 x 20 | Hex Socket Head - BS EN ISO 4762 | 20 |
| 10 | 14 x 9 x 40 | PARALLEL KEY - TYPE A | 2 |
| 11 | 12 X 60 | Ø12 DOWEL | 1 |
| 12 | M4 x 25 | Hex Socket Head - BS EN ISO 4762 | 3 |

| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|------|------|---|------------|----------|----------|
| B | - | M16x110 QTY 10 WAS M16x80 QTY 13. MAX25 ADDED. | 03/09/2019 | RW | DB |
| A | - | TIMING DOWEL ADDED | 25/04/2019 | DC | DS |



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WEIGHT 121.431kg
DRAWN BY DC 25/04/2018
CHECKED BY DB 03/05/2018
APPROVED BY --

TITLE LEADSCREW ASSEMBLY
SCALE: 1:5

MIRAGE
AN ENERPAC BRAND

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
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E-MAIL info@mirage-machines.co.uk

DWG NO MHT1242-14
SHEET 1 OF 1

A3

N:\Drawing Storage\DESIGN PROJECTS\2018\MHT GEARBOX\MHT1242-14

Doc: MML265

Issue: 004

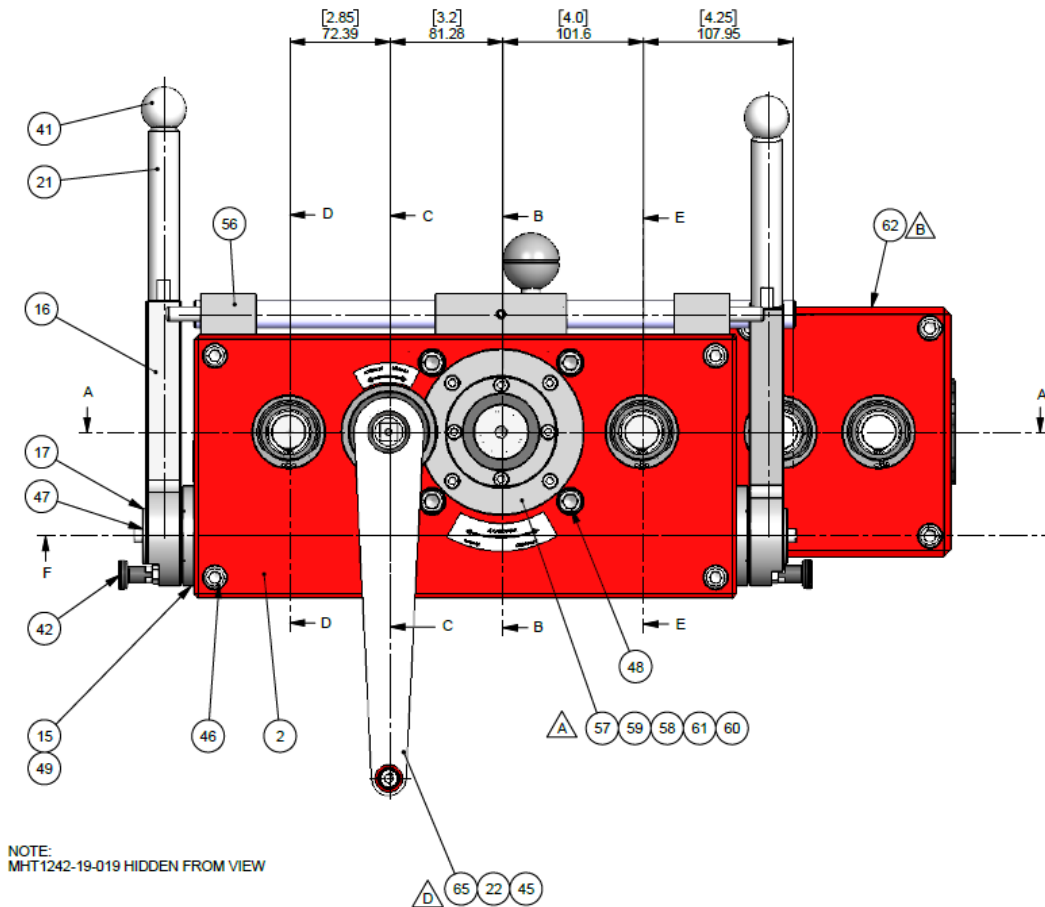
Issue Date: 13.06.2013

Printed on 10/09/2020

DO NOT SCALE

IF IN DOUBT ASK

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|---------------------|--|------|
| 1 | MHT1242-19-001 | REAR GEARCASE | 1 |
| 2 | MHT1242-19-002 | FRONT GEARCASE | 1 |
| 3 | MHT1242-19-003 | 10DP 43I SPUR GEAR | 1 |
| 4 | MHT1242-19-004 | 10DP 21I SPUR GEAR | 1 |
| 5 | MHT1242-19-005 | 10DP 24I SPUR GEAR | 1 |
| 6 | MHT1242-19-006 | Spine External 45-21I DIN 5482 | 2 |
| 7 | MHT1242-19-007 | 10DP 33I SPUR GEAR | 1 |
| 8 | MHT1242-19-008 | 10DP 36I SPUR GEAR | 1 |
| 9 | MHT1242-19-009 | 10DP 36I SPUR GEAR | 1 |
| 10 | MHT1242-19-010 | 10DP 37I SPUR GEAR | 1 |
| 11 | MHT1242-19-011 | 10DP 40I SPUR GEAR | 1 |
| 12 | MHT1242-19-012 | SELECTOR DOG | 2 |
| 13 | MHT1242-19-013 | SELECTOR FORK | 2 |
| 14 | MHT1242-19-014 | GEAR SELECTOR SPINDAL | 2 |
| 15 | MHT1242-19-015 | GEAR SELECTOR MOUNT | 2 |
| 16 | MHT1242-19-016 | GEAR LEVER | 2 |
| 17 | MHT1242-19-017 | GEAR LEVER WASHER | 2 |
| 18 | MHT1242-19-018 | BEARING SPACER | 1 |
| 19 | MHT1242-19-019 | ASSEMBLY LOCATION BAR | 1 |
| 20 | MHT1236-19-004-DUKE | CLUTCH PEG | 4 |
| 21 | MHT1236-19-015-DUKE | GEAR LEVER BAR | 2 |
| 22 | HTD 0434 | HANDWHEEL KNOB | 1 |
| 23 | 6208-2RS1 | DEEP GROOVE BALL BEARING | 3 |
| 24 | 51106 | THRUST BEARING | 2 |
| 25 | 6325-RS | Deep Groove Ball Bearing | 1 |
| 26 | 10 x 40 | Spring Pin ISO 8752 | 2 |
| 27 | D1400-0200 | DIN 471 EXTERNAL CIRCLIP | 2 |
| 28 | D1400-0250 | DIN 471 EXTERNAL CIRCLIP | 2 |
| 29 | D1400-0280 | DIN 471 EXTERNAL CIRCLIP | 2 |
| 30 | D1400-0400 | DIN 471 EXTERNAL CIRCLIP | 2 |
| 31 | D1400-0900 | DIN 471 EXTERNAL CIRCLIP | 1 |
| 32 | D1300-0520 | DIN 472 INTERNAL CIRCLIP | 2 |
| 33 | D1300-0660 | DIN 472 INTERNAL CIRCLIP | 1 |
| 34 | D1300-0800 | DIN 472 INTERNAL CIRCLIP | 3 |
| 35 | D1300-0960 | DIN 472 INTERNAL CIRCLIP | 1 |
| 36 | D1300-0115 | DIN 472 INTERNAL CIRCLIP | 1 |
| 37 | AMF202420 | Flanged Oilette Bush | 2 |
| 38 | AMF162220 | Flanged Oilette Bush | 2 |
| 39 | 6004-2RS | Deep groove ball bearings, single row | 2 |
| 40 | M6 | STRAIGHT GREASE NIPPLE | 3 |
| 41 | 73000.W0132 | Ball Knob | 2 |
| 42 | 32710.W0205 | INDEX PLUNGER | 2 |
| 43 | 61818-2RS1 | DEEP GROOVE BALL BEARING | 1 |
| 44 | 6012-2RS1 | SINGLE ROW DEEP GROOVE BALL BEARING | 1 |
| 45 | M8 x 80 | Hex Socket Head - BS EN ISO 4762 | 1 |
| 46 | M10 x 100 | Hex Socket Head - BS EN ISO 4762 | 4 |
| 47 | M6 x 16 | Hex Socket Head - BS EN ISO 4762 | 2 |
| 48 | M12 x 200 | BTS.3.1M - 12 x 1.75 x 200 Hex SHCS | 4 |
| 49 | M4 X 10 | Hex Socket CTSK Head - BS EN ISO 10642 | 8 |
| 50 | NK20-ZXL | Needle Roller/Axial Ball Bearing | 1 |
| 51 | 3205 A-2RS1 | DOUBLE ROW ANGULAR CONTACT BEARING | 2 |
| 52 | 3030DU | DU BUSH | 2 |
| 53 | MB8 | TAB WASHER | 1 |
| 54 | KM8 | LOCK NUT M4X1.5 | 1 |
| 55 | 2630DU | DU BUSH | 1 |
| 56 | MHT1242-21 | GEAR INTERLOCK ASSEMBLY | 1 |
| 57 | MHT1242-19-020 | SEAL HOUSING | 1 |
| 58 | MHT1242-19-021 | MEASURING ROD SEAL | 1 |
| 59 | MHT1242-19-022 | CLAMP RING | 1 |
| 60 | M6 x 20 | Hex Socket Head - BS EN ISO 4762 | 4 |
| 61 | M6 x 12 | Hex Socket Head - BS EN ISO 4762 | 4 |
| 62 | MHT1242-25 | FAST TRAVERSE GEARBOX (3:1 REDUCTION) | 1 |
| 63 | MHT1242-19-025 | GREASE NIPPLE PROTECTOR PLATE | 1 |
| 64 | M6 x 10 | Hex Socket Head - BS EN ISO 4762 | 4 |
| 65 | MHT312-12-015 | HANDLE | 1 |
| 66 | LABEL-MM-050 | LABEL ADVANCE ANTI-CLOCKWISE | 1 |
| 67 | LABEL-MM-051 | LABEL ENGAGE CLOCKWISE | 1 |
| 68 | LABEL-MM-052 | LABEL ENGAGE FAST FEED CWISE | 1 |
| 69 | LABEL-MM-053 | LABEL ENGAGE 0.003" FEED CWISE | 1 |
| 70 | LABEL-MM-054 | FEED INTERLOCK LABEL | 1 |



NOTE:
MHT1242-19-019 HIDDEN FROM VIEW

MIRAGE MACHINES

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MANUFACTURE

N:\Drawing Storage\DESIGN PROJECTS\2018\MHT GEARBOX\MHT1242-19

| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|------|------|--|------------|----------|----------|
| F | 1840 | Correcting part number on windchill BoM, no drawing change | 10/09/2020 | DRB | EM |
| E | 3694 | Changed 8x45 spring pin to 10x40 | 24/01/2020 | DRB | RH |

| | |
|---|------------------|
| THIRD ANGLE PROJECTION | |
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| WEIGHT | 80.873kg |
| DRAWN BY | DC |
| CHECKED BY | DB |
| APPROVED BY | |
| TITLE | GEARBOX ASSEMBLY |
| SCALE | SCALE: 1:3 |

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291787 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT1242-19
SHEET 1 OF 5

A3

Doc: MML265

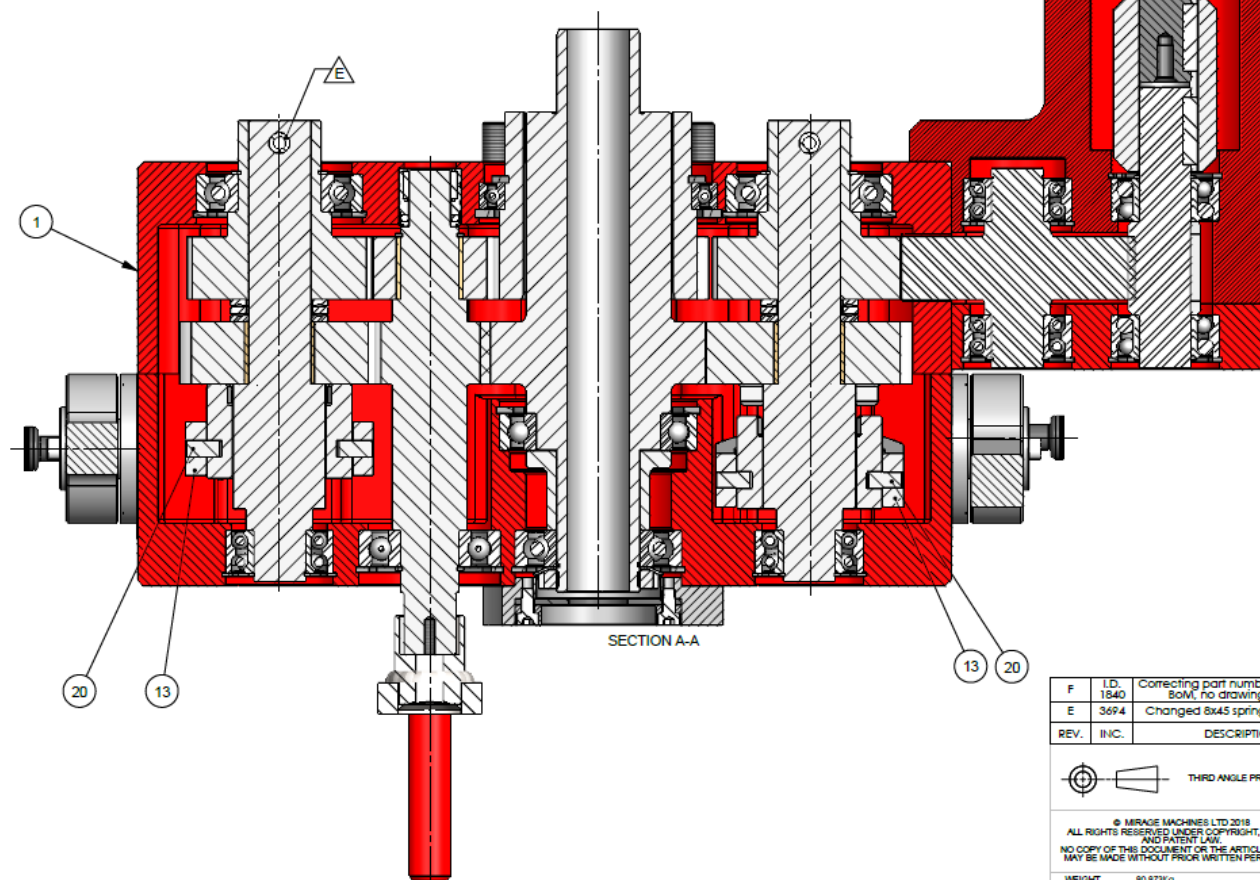
Issue: 004

Issue Date: 13.06.2013

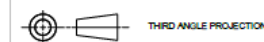
Printed on 10/09/2020

DO NOT SCALE

IF IN DOUBT ASK



| F | I.D. 1840 | Correcting part number on windchill BoM, no drawing change | 10/09/2020 | DRB | EM |
|------|-----------|--|------------|----------|----------|
| E | 3694 | Changed 8x45 spring pin to 10x40 | 24/01/2020 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



THIRD ANGLE PROJECTION

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WEIGHT 80.873kg
DRAWN BY DC 17/04/2018
CHECKED BY DB 03/05/2018
APPROVED BY --
TITLE

GEARBOX ASSEMBLY
SCALE: 1:2

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
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E MAIL info@mirage-machines.co.uk

DWG NO: MHT1242-19
SHEET 2 OF 5

A3

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Doc: MML265

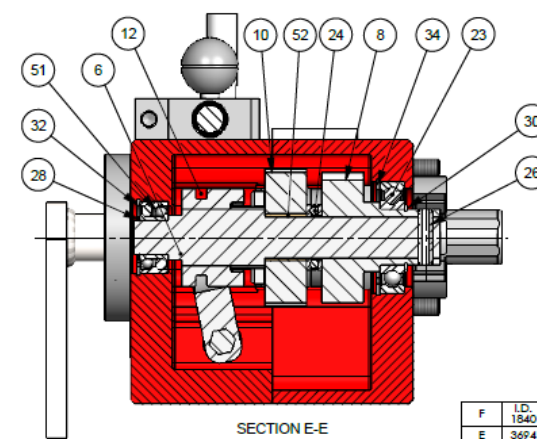
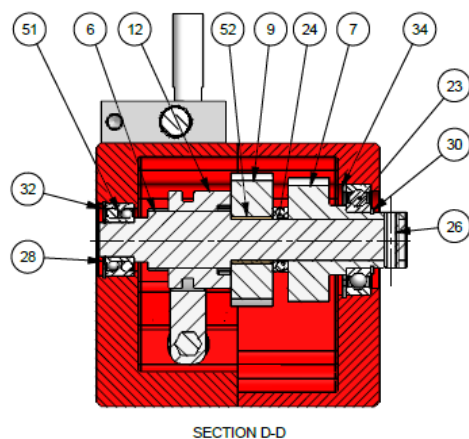
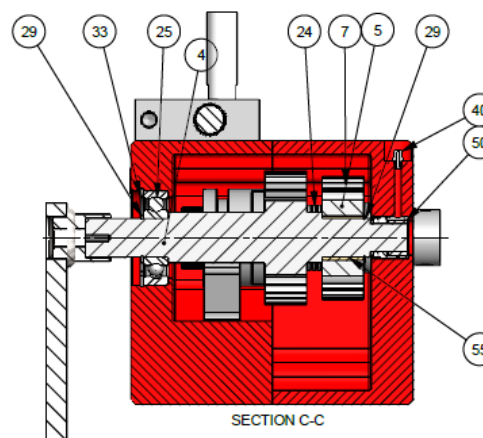
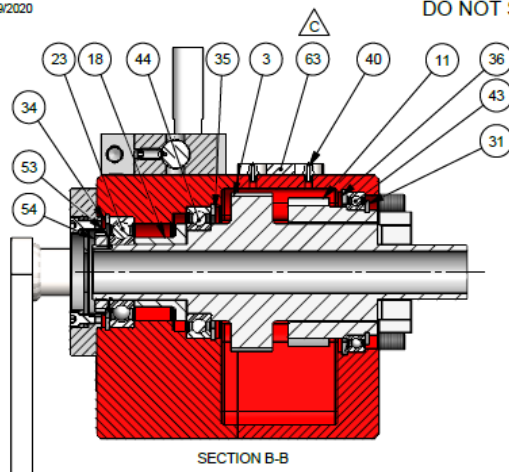
Issue: 004

Issue Date: 13.06.2013

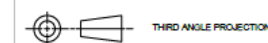
Printed on 10/09/2020

DO NOT SCALE

IF IN DOUBT ASK



| | | | | | |
|------|------|-------------------------------------|------------|----------|----------|
| F | LD. | Correcting part number on windchill | 10/09/2020 | DRB | EM |
| E | 3694 | 80M, no drawing change | 24/01/2020 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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WEIGHT 80.873Kg
DRAWN BY DC 17/04/2018
CHECKED BY DB 03/05/2018
APPROVED BY --

TITLE
GEARBOX ASSEMBLY
SCALE: 1:3

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
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E MAIL info@mirage-machines.co.uk

DWG No
MHT1242-19
SHEET 3 OF 5

A3

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Doc: MML265

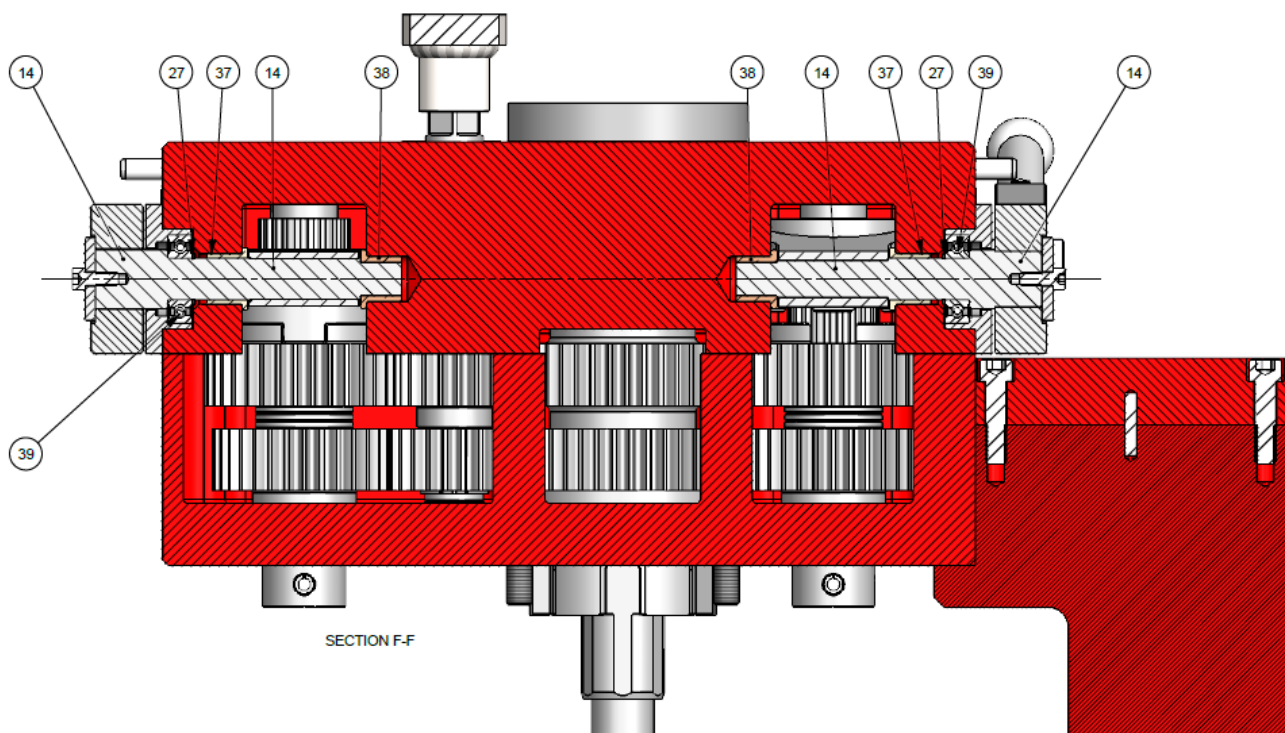
Issue: 004

Issue Date: 13.06.2013

Printed on 10/09/2020

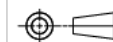
DO NOT SCALE

IF IN DOUBT ASK



SECTION F-F

| F | LD 1840 | Correcting part number on windchill 80M, no drawing change | 10/09/2020 | DRB | EM |
|------|---------|--|------------|----------|----------|
| E | 3694 | Changed 8x45 spring pin to 10x40 | 24/01/2020 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



THIRD ANGLE PROJECTION

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WEIGHT 80.873Kg
DRAWN BY DC 17/04/2018
CHECKED BY DB 03/05/2018
APPROVED BY --

TITLE
GEARBOX ASSEMBLY
SCALE: 1:2

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No
MHT1242-19
SHEET 4 OF 5

A3

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Doc: MML265

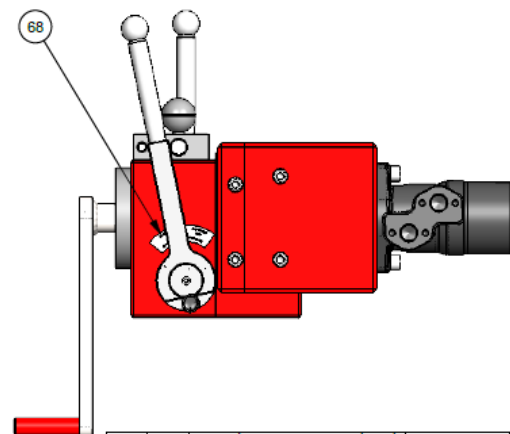
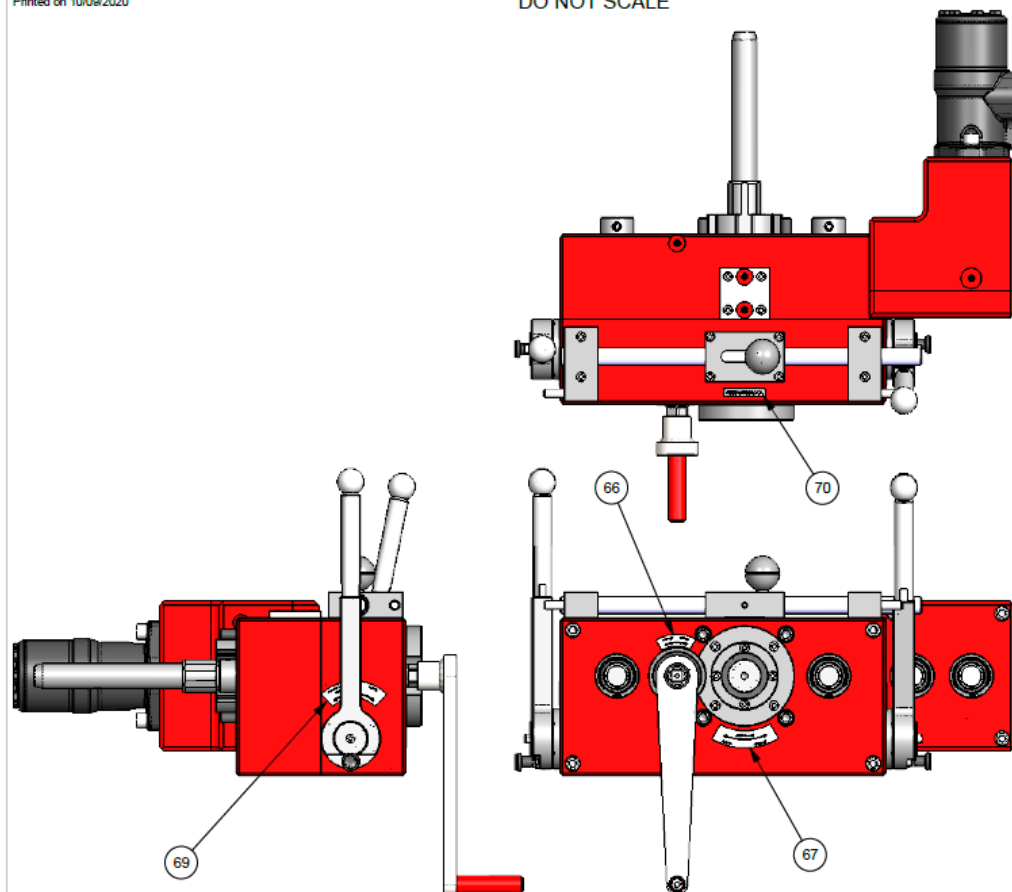
Issue: 004

Issue Date: 13.06.2013

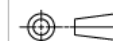
Printed on 10/09/2020

DO NOT SCALE

IF IN DOUBT ASK



| F | LD. | 1840 | Correcting part number on windchill 80M, no drawing change | 10/09/2020 | DRB | EM |
|------|------|------|--|------------|----------|----------|
| E | 3694 | | Changed 8x45 spring pin to 10x40 | 24/01/2020 | DRB | RH |
| REV. | INC. | | DESCRIPTION | DATE | DRAWN BY | APPROVED |



THIRD ANGLE PROJECTION

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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| | |
|-------------|----------|
| WEIGHT | 80.873Kg |
| DRAWN BY | DC |
| CHECKED BY | DB |
| APPROVED BY | — |

TITLE
GEARBOX ASSEMBLY
SCALE: 1:5

MIRAGE
AN ENERPAC BRAND

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No
MHT1242-19
SHEET 5 OF 5

A3

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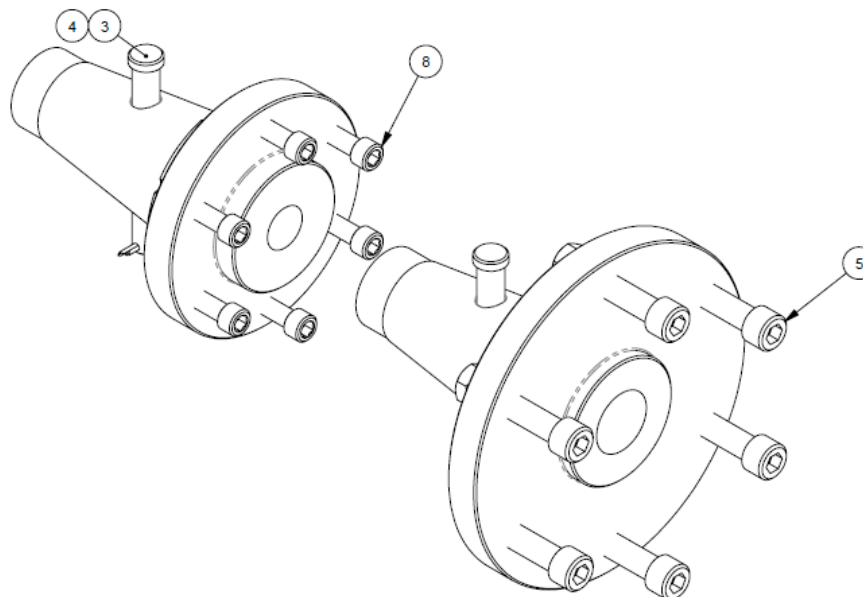
Doc: MML265

Issue: 004

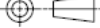

Issue Date: 13.06.2013

IF IN DOUBT ASK

APPROVED FOR
MANUFACTURE



| ITEM NO. | PART NUMBER | DESCRIPTION | Default/Qty |
|----------|---------------------|--|-------------|
| 1 | MHT1242TD-21-001 | 12"-24" CUTTER HOLDER | 1 |
| 2 | MHT824-56-001 | 8"-12" CUTTER HOLDER | 1 |
| 3 | MHT1242TD-21-003 | CLEVIS PIN | 2 |
| 4 | DIN914_M4x20 | DIN 94 SPLIT PIN | 2 |
| 5 | 12-20UNF-12-12-SHCS | 1/2"-20 X 2 1/2" FULL THREAD SOCKET HEAD CAP SCREW | 6 |
| 6 | 12-20UNF-NYLOC | 1/2"-20 UNF NYLOC NUT | 6 |
| 7 | 12SPRINGWASHER | 1/2" SPRINGWASHER | 6 |
| 8 | 3/8"-16 UNC x 1.5 | Socket Head Cap Screw | 6 |

| | | | | | | | | | |
|--|--|---------------|--|--|--|--------------|--|------------------|--|
| A | | INITIAL ISSUE | | 13/02/2020 | | DC | | DMS | |
| REV. | | INC. | | DESCRIPTION | | DATE | | DRAWN BY APPROVE | |
|  | | | | THIRD ANGLE PROJECTION | | | | | |
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| WEIGHT | | 12.551 kg | | <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STONES ROAD, DERBY DE21 4BB TEL (01332) 291767 FAX (01332) 370358 E MAIL info@mirage-machines.co.uk</p> | | | | | |
| DRAWN BY | | DC | | 06/01/2020 | | | | | |
| CHECKED BY | | DMS | | 13/02/2020 | | | | | |
| TITLE | | -- | | | | | | | |
| MHT824 CUTTER HOLDER SET | | | | DWG No | | MHT824-56 | | | |
| SCALE: 1:2 | | | | | | SHEET 1 OF 1 | | | |

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Doc: MML265

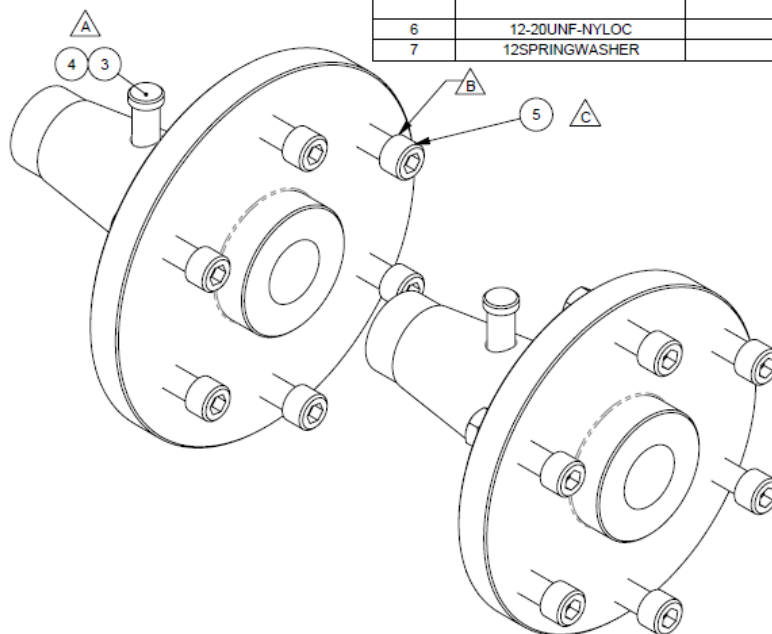
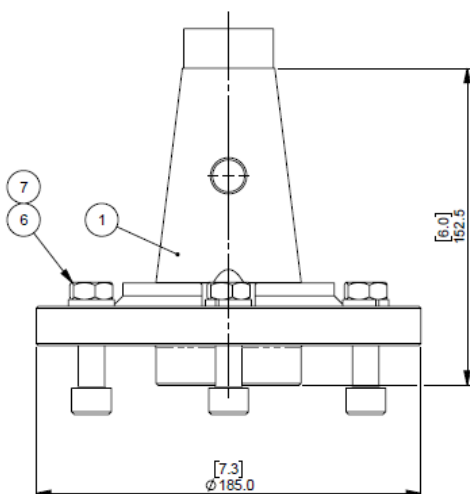
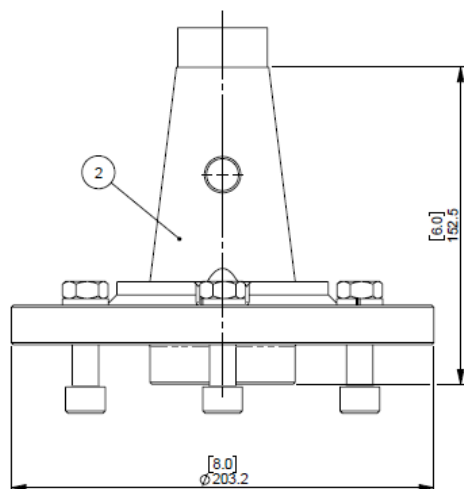
Issue: 004

Issue Date: 13.06.2013

Printed on 01/10/2019

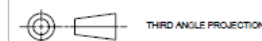
DO NOT SCALE

IF IN DOUBT ASK



| ITEM NO. | PART NUMBER | DESCRIPTION | Default/Qty |
|----------|--------------------|--|-------------|
| 1 | MHT1242TD-21-001 | 12"-24" CUTTER HOLDER | 1 |
| 2 | MHT1242TD-21-002 | 24"-42" CUTTER HOLDER | 1 |
| 3 | MHT1242TD-21-003 | CLEVIS PIN | 2 |
| 4 | DIN914_M4x20 | DIN 94 SPLIT PIN | 2 |
| 5 | 12-20UNFX2-12-SHCS | 1/2"-20 X 2 1/2" FULL THREAD SOCKET HEAD CAP SCREW | 12 |
| 6 | 12-20UNF-NYLOC | 1/2"-20 UNF NYLOC NUT | 12 |
| 7 | 12SPRINGWASHER | 1/2" SPRINGWASHER | 12 |

| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
|------|------|--|------------|----------|----------|
| C | - | 1/2" FULL THREAD BOLT UPDATED TO 1/2" SHCS. PART NUMBERS UPDATED TO MATCH WITH IDCHILL | 04/09/2019 | RW | DB |
| B | 3525 | Added 12x 1/2" Dots, Nuts, and Washers | 25/01/2019 | DRB | BM |
| A | N/A | 2x MHT1242TD-21-003 & Ø4x20 SPLIT PINS ADDED | 04/02/2016 | SR | MVL |



THIRD ANGLE PROJECTION

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WEIGHT 15.99Kg
DRAWN BY SR
CHECKED BY MML 29/01/2016
APPROVED BY

TITLE MHT1242TD CUTTER HOLDER SET
SCALE: 1:2

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291787 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No MHT1242TD-21
SHEET 1 OF 1

A3

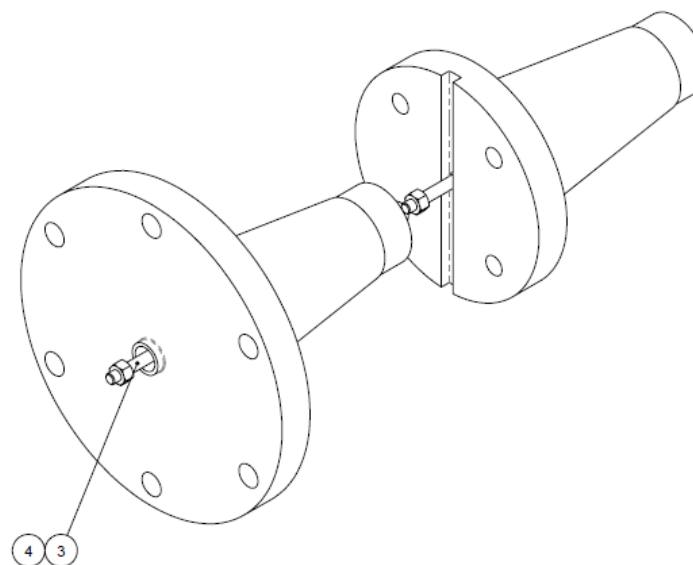
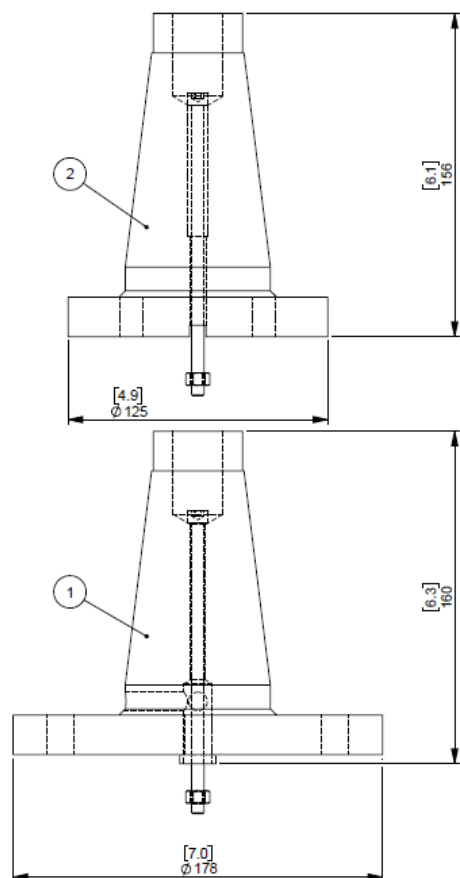
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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

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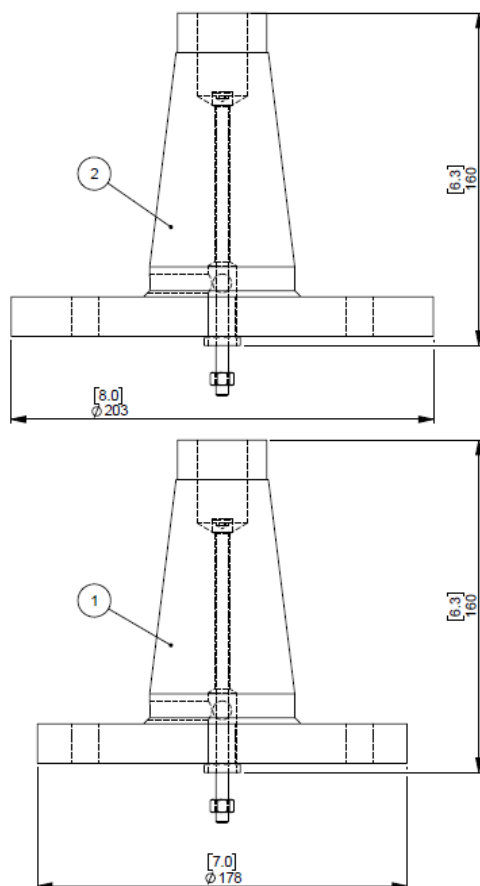


| | | | | | | | | | |
|--|--|---------------|--|---|--|---|--|--|--|
| A | | INITIAL ISSUE | | 13/02/2020 | | DC | | DMS | |
| REV. | | INC. | | DESCRIPTION | | DATE | | DRAWN BY APPROVED | |
|  | | | | THIRD ANGLE PROJECTION | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | | |
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| <p>10.50KG</p> | | | | <p>AN ENERPAC BRAND</p> | | | | | |
| <p>WEIGHT</p> | | | | <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STONES ROAD, DERBY DE1 4BB</p> | | | | | |
| <p>DRAWN BY</p> | | | | DC | | 13/01/2020 | | <p>TEL (01332) 291787 FAX (01332) 370356</p> | |
| <p>CHECKED BY</p> | | | | DMS | | 13/02/2020 | | <p>E MAIL info@mirage-machines.co.uk</p> | |
| <p>APPROVED BY</p> | | | | — | | | | <p>DWG No</p> | |
| <p>TITLE</p> | | | | MHT824 PLUG HOLDER SET | | MHT824-57 | | A | |
| | | | | SCALE: 1:2 | | SHEET 1 OF 1 | | | |

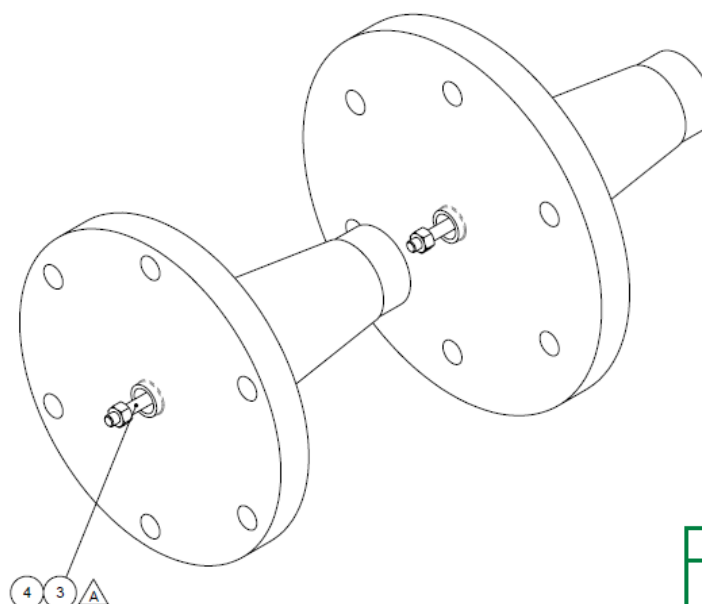
Printed on 08-Apr-16

DO NOT SCALE

IF IN DOUBT ASK



| ITEM NO. | REV. | PART NUMBER | DESCRIPTION | QTY. |
|----------|------|------------------|----------------------------------|------|
| 1 | | MHT1242TD-20-001 | 16" TO 24" PLUG HOLDER | 1 |
| 2 | | MHT1242TD-20-002 | 24" TO 36" PLUG HOLDER | 1 |
| 3 | | M6x140 | Hex Socket Head - BS EN ISO 4762 | 2 |
| 4 | | M6 | Hex Nut Grade C - BS EN 24034 | 2 |



MIRAGE MACHINES
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MANUFACTURE

| | | | | | |
|--|------|-------------------------------|---|----------|----------|
| A | N/A | M6 NUTS & M6x140 BOLTS ADDED. | 08-Apr-16 | SR | DC |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |
| <p>THIRD ANGLE PROJECTION</p> <p>© MIRAGE MACHINES LTD 2016 ALL RIGHTS RESERVED UNDER COPYRIGHT, DESIGN AND PATENT LAW. NO COPY OF THIS DOCUMENT OR THE ARTICLE SHOWN MAY BE MADE WITHOUT PRIOR WRITTEN PERMISSION</p> <p>WEIGHT 13.533kg</p> <p>DRAWN BY SR 14-Jan-16</p> <p>CHECKED BY MML 29-Jan-16</p> <p>APPROVED BY</p> <p>TITLE MHT1242TD PLUG HOLDER SET</p> <p>SCALE: 1:2</p> | | | | | |
| <p>MIRAGE PORTABLE PERFORMANCE</p> <p>10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291767 FAX (01332) 370356 E MAIL info@mirage-machines.co.uk</p> | | | <p>DWG No: MHT1242TD-20</p> <p>SHEET 1 OF 1</p> | | |
| | | | | | A3 |

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

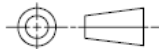
Printed on 29/01/2020

DO NOT SCALE

IF IN DOUBT ASK


| PART NO. | DESCRIPTION | QTY. |
|---------------------------|---|------|
| 2204000-FLN2V | WIPER SEAL WITH ORING | 1 |
| KK12-8-60A | TYPE A KEY | 1 |
| MHT1242-1-008 | COMPRESSION SPRING | 1 |
| CHEVRON-SEAL-STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm | 1 |
| 14.90x2.5x1M | PISTON WEAR BAND | 2 |
| 3304-2RS | BEARING | 1 |
| 6208-2RS | RADIAL BEARING | 4 |
| 61926 | DEEP GROOVE BALL BEARING | 3 |
| MHT824-2-010 | TUFNOL CAP | 2 |
| CH044517-200-CHEVRON | CHEVRON SEAL 200 DEGREES C | 1 |
| R45-RTJ-SEAL | RING JOINT R45 OVAL SOFT IRON ASME B16.20 | 1 |
| MHT1242-2-006 | DRIVE KEY | 2 |
| 51228 | THRUST BALL BEARING SINGLE DIRECTION | 1 |
| 51122 | THRUST BALL BEARING SINGLE DIRECTION | 1 |
| 32934 | TAPER ROLLER BEARING SINGLE ROW | 1 |
| 29317E | SPHERICAL ROLLER THRUST BEARING | 1 |
| 61818-2RS1 | DEEP GROOVE BALL BEARING | 1 |
| 6012-2RS1 | RADIAL BEARING | 1 |
| KK8-7-32A | TYPE A KEY | 2 |
| 3205A-2RS1 | DOUBLE ROW BALL BEARING | 6 |
| 6328-RS | SEALED BEARING | 1 |
| NX20-ZXL | NEEDLE ROLLER BEARING | 1 |
| KK14-9-40A | TYPE A KEY | 2 |

| | | | | | |
|------|------|---|------------|----------|----------|
| D | - | Updated BoM as new machine version in development | 29/01/2020 | DRB | RH |
| C | - | Updated BoM to reflect current machine | 28/01/2020 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



THIRD ANGLE PROJECTION

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PORTABLE PERFORMANCE

| | | |
|-------------|----|------------|
| WEIGHT | | Kg |
| DRAWN BY | DB | 11/06/2015 |
| CHECKED BY | BC | 11/06/2015 |
| APPROVED BY | -- | -- |
| TITLE | | Spares Kit |
| SCALE: 1:1 | | |

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No MHT824-H-SK

A4

MIRAGE MACHINES
APPROVED FOR MANUFACTURE

N:\Drawing Storage\DRAWINGS\MHT824-H-SK

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

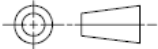
Printed on 29/01/2020

DO NOT SCALE


IF IN DOUBT ASK

| PART NO. | DESCRIPTION | QTY. |
|---------------------------|---|------|
| 2204000-FLN2V | WIPER SEAL WITH ORING | 1 |
| KK12-8-60A | TYPE A KEY | 1 |
| MHT1242-1-008 | COMPRESSION SPRING | 1 |
| CHEVRON-SEAL-STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm | 1 |
| 14.90x2.5x1M | PISTON WEAR BAND | 2 |
| 3304-2RS | BEARING | 1 |
| 6208-2RS | RADIAL BEARING | 4 |
| 61926 | DEEP GROOVE BALL BEARING | 3 |
| MHT824-2-010 | TUFNOL CAP | 2 |
| CH044517-200-CHEVRON | CHEVRON SEAL 200 DEGREES C | 1 |
| R45-RTJ-SEAL | RING JOINT R45 OVAL SOFT IRON ASME B16.20 | 1 |
| MHT1242-2-006 | DRIVE KEY | 2 |
| 51228 | THRUST BALL BEARING SINGLE DIRECTION | 1 |
| 51122 | THRUST BALL BEARING SINGLE DIRECTION | 1 |
| 32934 | TAPER ROLLER BEARING SINGLE ROW | 1 |
| 29317E | SPHERICAL ROLLER THRUST BEARING | 1 |
| 61818-2RS1 | DEEP GROOVE BALL BEARING | 1 |
| 6012-2RS1 | RADIAL BEARING | 1 |
| KK8-7-32A | TYPE A KEY | 2 |
| 3205A-2RS1 | DOUBLE ROW BALL BEARING | 6 |
| 6328-RS | SEALED BEARING | 1 |
| NX20-ZXL | NEEDLE ROLLER BEARING | 1 |
| KK14-9-40A | TYPE A KEY | 2 |

| | | | | | |
|------|------|---|------------|----------|----------|
| C | - | Updated BoM as new machine version in development | 29/01/2020 | DRB | RH |
| B | - | Updated BoM to match current machine design | 28/01/2020 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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| | | |
|-------------|----|------------|
| WEIGHT | Kg | |
| DRAWN BY | DB | 11/06/2015 |
| CHECKED BY | BC | 11/06/2015 |
| APPROVED BY | -- | -- |

TITLE: **Spares Kit**

SCALE: 1:1

DWG No: **MHT1236-H-SK**

SHEET 1 OF 1

A4

MIRAGE MACHINES
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MANUFACTURE

N:\Drawing Storage\DRAWINGS\MHT1236-H-SK

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 21/08/2019

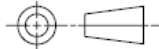
DO NOT SCALE

IF IN DOUBT ASK

A


| PART NO. | DESCRIPTION | QTY. |
|------------------------------|---|------|
| MHT824-2-010 | TUFNOL CAP | 1 |
| 14.90X2.5x1M | 14.9mm x 2.5mm x 1m LENGTH B/F (F01) ECOFLON 3 WEARBAND | 1 |
| KK12-8-60A | FEATHER KEY: 12MM w X 8MM H X 60MM LG KEY 2 ROUND ENDS TYPE A | 1 |
| R45-RTJ-SEAL | RING JOINT R45 OVAL, SOFT IRON ASME B16.20 | 1 |
| SWAN2204000-FLN2V | Seal with O-Ring | 1 |
| CH044517-SWAN-200DEG-CHEVRON | CHEVRON SEAL | 1 |
| CHEVRON-SEAL-STACK-25.4-4 | CHEVRON SEAL STACK 25.4-40.7-23.5mm VITON / PTFE (200DegC) | 1 |
| MHT1242-1-005 | BUSH | 1 |
| 14x9x40 | TYPE A KEY | 1 |
| 61926 | BEARING | 2 |
| 51228D1 | BEARING | 4 |
| 32934D1 | BEARING | 2 |
| 29317ED1 | BEARING | 4 |
| 51122D1 | BEARING | 1 |

| | | | | | |
|------|------|--|------------|----------|----------|
| A | - | Changed seal stack from 147TFW to chevron-seal-stack | 21/08/2019 | DRB | RH |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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| | | |
|-------------|----|--------------|
| WEIGHT | | Kg |
| DRAWN BY | DB | 06/11/2018 |
| CHECKED BY | EM | 06/11/2018 |
| APPROVED BY | -- | |
| TITLE | | DWG No |
| SPARES KIT | | MHT1242-H-SK |
| SCALE: 1:1 | | SHEET 1 OF 1 |

MIRAGE MACHINES

APPROVED FOR MANUFACTURE

A4

N:\Drawing Storage\DRAWINGS\MHT1242-H-SK

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 23/11/2018

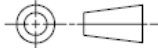
DO NOT SCALE

IF IN DOUBT ASK

| | PART NO. | DESCRIPTION | QTY |
|---|------------------|--|-----|
| | KEN-602-5500K | BALL DRIVER "L" WRENCHES | 1 |
| | KEN-601-5170K | 17mm ALLEN KEY LONG ARM | 1 |
| B | KEN-601-5140K | 14mm ALLEN KEY LONG ARM | 1 |
| | KEN-582-2891K | 55mm COMBI SPANNER | 1 |
| | KEN-582-2880K | 46mm COMBI SPANNER | 1 |
| B | KEN-5822840K | 36mm COMBI SPANNER | 1 |
| | KEN-582-2820K | 30mm COMBI SPANNER | 1 |
| | MMT-54 | WELDED DRIVE BAR | 1 |
| | KEN-582-7010K | 19mm SOCKET 1/2" SQ. DRIVE | 1 |
| | TOOLBOX-706-4701 | TOOLBOX STANLEY FATMAX 1-95-615 | 1 |
| | SELLOC8x45 | 8 x 45 SELLOC PIN | 10 |
| | MMT-1-006 | EXTRACTION TOOL | 1 |
| | MHT312-12-015 | SMALL HANDLE | 1 |
| C | KZ011922 | GEDORE 3293 U-3 REVERSABLE RATCHET 3/4 DR 620MM OAL | 1 |
| | ISM25X3/4 | LJ01 25MMX3/4SD IMPACT SOCKET | 1 |
| | MHT1242-TK-001 | CHEVRON SETTING TOOL | 1 |
| | 95350.W0125 | FACE SPANNER | 1 |


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MANUFACTURE

| | | | | | |
|------|------|--|------------|----------|----------|
| C | - | Added reversable ratchet, face spanner, setting tool and impact socket | 23/11/2018 | DRB | RBA |
| B | - | Added 17mm allen key and 30mm spanner | 16/11/2018 | DRB | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | APPROVED |



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| | | | |
|-------------------|-----|--------------|--|
| WEIGHT | | Kg | |
| DRAWN BY | DRB | 06/11/2018 | |
| CHECKED BY | DMS | 08/11/2018 | |
| APPROVED BY | -- | | |
| TITLE | | DWG No | |
| MHT1242-H TOOLKIT | | MHT1242-H-TK | |
| SCALE: 1:1 | | SHEET 1 OF 1 | |

N:\Drawing Storage\DRAWINGS\MHT1242-H-TK

Doc: MML265

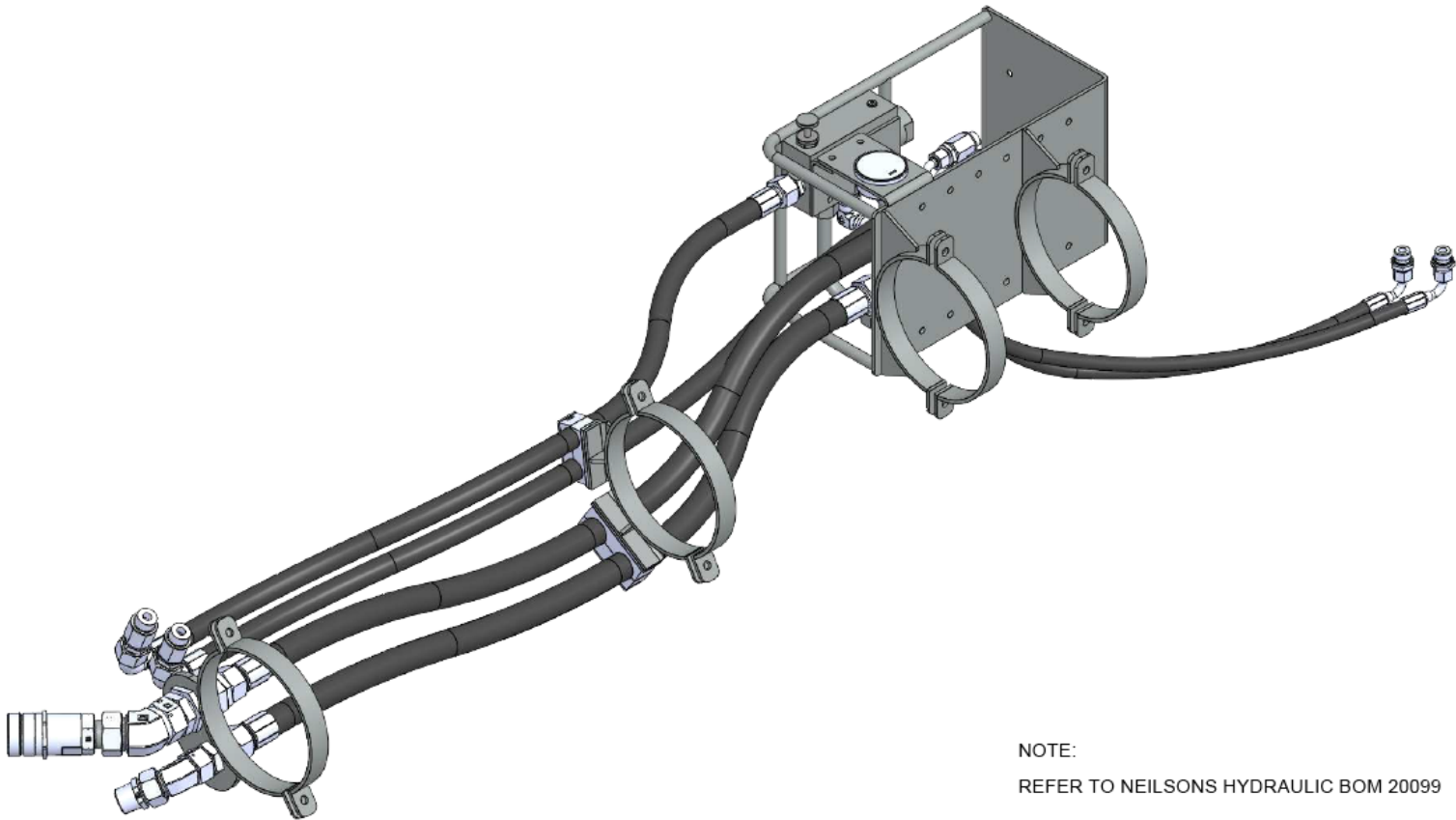
Issue: 004

Issue Date: 13.06.2013



Printed on 28/02/2020

DO NOT SCALE

IF IN DOUBT ASK



NOTE:
REFER TO NEILSONS HYDRAULIC BOM 20099

| | | | | | |
|--|--|--------------------------------|--|----------|---------------------------------------|
| 8 | N/A | LOADING OF PART INTO WINDCHILL | 27/02/2019 | EM | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  | | | THIRD ANGLE PROJECTION | | |
| © MIRAGE MACHINES LTD 2020 ALL RIGHTS RESERVED UNDER COPYRIGHT, DESIGN AND PATENT LAW NO COPY OF THIS DOCUMENT OR THE ARTICLE SHOWN MAY BE MADE WITHOUT PRIOR WRITTEN PERMISSION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
|  | | | AN ENERPAC BRAND | | |
| WEIGHT | 4.780kg | | 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BS | | |
| DRAWN BY | EM | | 27/02/2020 | | TEL (01332) 291767 FAX (01332) 370356 |
| CHECKED BY | DMS | | 27/02/2020 | | E MAIL info@mirage-machines.co.uk |
| APPROVED BY | -- | | DWG NO | | |
| TITLE | HYDRAULIC CONTROL PANEL-CYLINDER MOUNT | | MHT824-HDCP-CM | | A3 |
| SCALE: 1:50 | | | SHEET 1 OF 1 | | |



10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

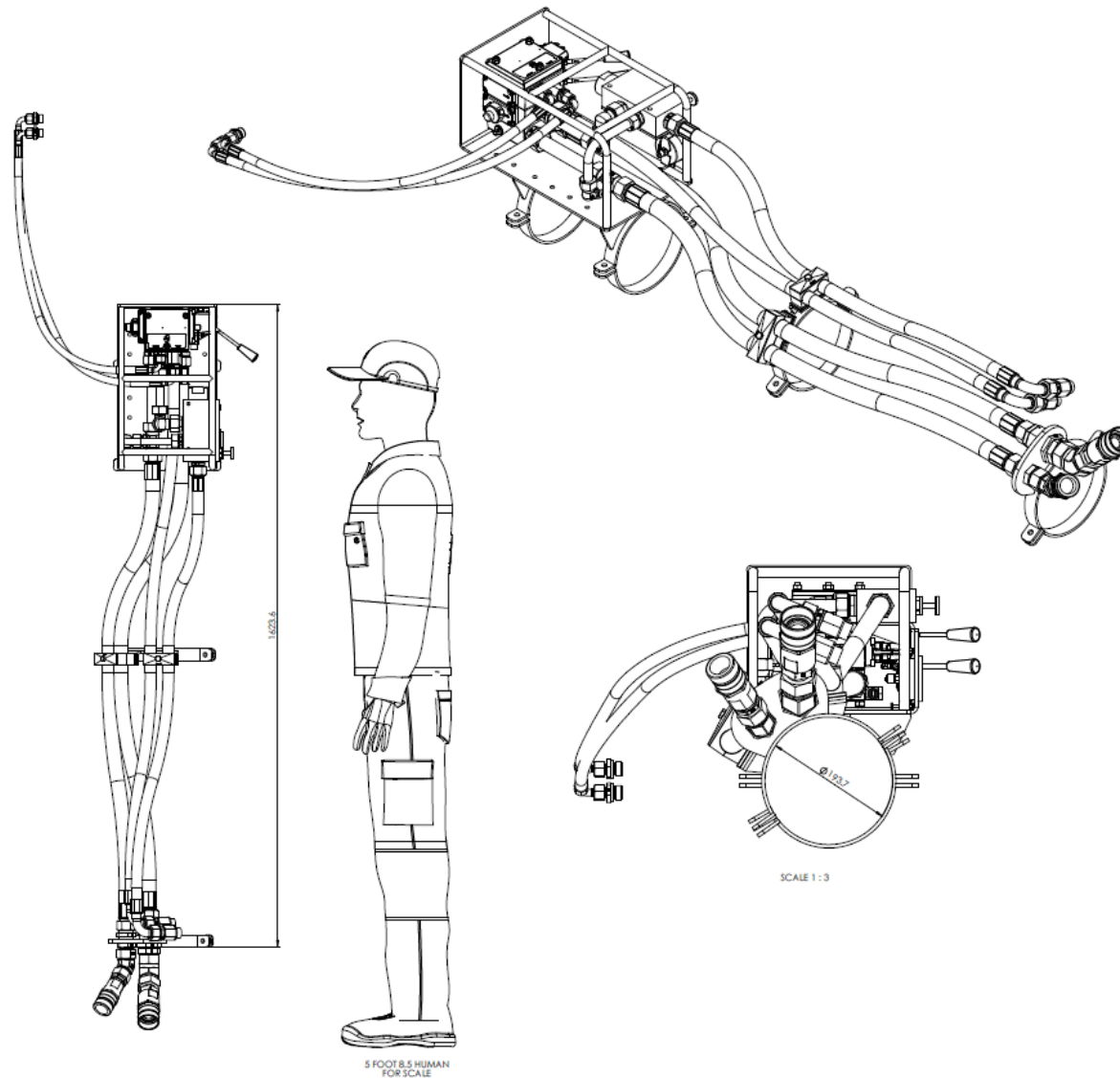
MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT8-24\Neilsons Hose Kit\MHT842-HDCP-CM

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|-------------------------------|---|------|
| 1 | 19990 | BOTTOM CLAMP | 4 |
| 2 | 19991 | PIPE CLAMP BRACKET | 1 |
| 3 | 19992 | BULKHEAD BRACKET | 1 |
| 4 | 19993 | MHT824 PVG HOUSING | 1 |
| 5 | 19994 | FLOW CONTROL VALVE BRACKET | 1 |
| 6 | A2028V-B01 | PYLOS CONTROL VALVE | 1 |
| 7 | V1080 | FLOW CONTROL VALVE - VP83 3/4" | 1 |
| 8 | S100-S3-148 | 1" S100 SERIES MALE PROBE | 1 |
| 9 | S100-S2-208 | 1-1/4" S100 SERIES MALE PROBE | 1 |
| 10 | SP-635-9/26.9-PFH-GDLAS-M-W10 | PRESSURE GAUGE | 1 |
| 11 | SP-635-9/26.9-PFH-GDLAS-M-W10 | GP 4 TWIN PIPE CLAMP | 1 |
| 12 | SP-635-9/26.9-PFH-GDLAS-M-W10 | GP 5 TWIN PIPE CLAMP | 1 |
| 13 | FLGE-18L-W3-W3 | BAND JO ELBOW W/D TYPE BODY ONLY | 1 |
| 14 | FLGE-12L1/2-W3-W3-M3 | MALE STUD COUPLING W/D TYPE (BODY ONLY) | 4 |
| 15 | FLGE-18LW3/4-W3-W3 | MALE STUD COUPLING (BODY ONLY) W/D TYPE | 1 |
| 16 | FLGE-18L-W3-DK0 | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 17 | FLGE-22L1/2-W3-W3 | MALE STUD COUPLING W/D TYPE (BODY ONLY) | 2 |
| 18 | FLGE-22L-W3-W3 | MALE STUD COUPLING R/P (W/D TYPE) BODY ONLY | 3 |
| 19 | FLGED-22L-W3-W3-DK0 | STRAIGHT MALE STUD CONNECTOR | 1 |
| 20 | FLGE-22L-W3-DK0 | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 21 | FLW-22L-W3 | TUBE ELBOW (BODY ONLY) | 1 |
| 22 | FLGS-28L-W3-3EM | STRAIGHT BULKHEAD FITTING (BODY + LOCKWHEEL ONLY) | 1 |
| 23 | FLVED-28L-W3-DK0 | ADJUSTABLE ELBOW 45 (BODY ONLY) | 1 |
| 24 | FLS-28L1/2-W3 | UNEQUAL TUBE TEE (BODY ONLY) | 1 |
| 25 | FLGE-28LW3/4-W3-W3 | MALE STUD COUPLING W/D TYPE (BODY ONLY) | 2 |
| 26 | FLGED-28L1/2-W3-DK0 | STUD STANDOFF (R/P) | 1 |
| 27 | FLRED-32L-W3-W3-DK0 | STRAIGHT REDUCER (BODY ONLY) | 1 |
| 28 | FLGS-32L-W3-3EM | STRAIGHT BULKHEAD FITTING (BODY ONLY) | 1 |
| 29 | FLVED-32L-W3-DK0 | ADJUSTABLE ELBOW (45) BODY ONLY | 1 |
| 30 | FLGED-32L1/2-W3-W3-DK0 | STUD STANDOFF (R/P) | 1 |
| 31 | 1/2" R/P 4 1/2" R/P M/F FRED | FIXED STRAIGHT BUSH | 2 |
| 32 | 3/4" R/P 4 1/2" | 1/2" BONDED WASHER | 2 |
| 33 | ADP-G-G12-MFY-W66A | FIXED STRAIGHT BUSH | 2 |
| 34 | 3/4" R/P 4 1/2" | 3/4" BONDED WASHER | 2 |
| 35 | 20099-H01 | 3/4" 255K 22L 90 22L STR 1240mm LONG | 2 |
| 36 | 20099-H02 | 3/4" 255K 28L 90 22L STR 1455mm LONG | 1 |
| 37 | 20099-H03 | 1" 255K 28L STR 28L STR 1455mm LONG | 1 |
| 38 | 20099-H04 | 1" 255K 28L STR 28L STR 1240mm LONG | 1 |
| 39 | 20099-H05 | 3/8" 255K 12L 90 12L 90 BOTH D DEGREES 875mm LONG | 1 |
| 40 | 20099-H06 | 3/8" 255K 12L 90 12L 90 BOTH D DEGREES 950mm LONG | 1 |
| 41 | 20099-H07 | SMS-F10L/M1/4-CU-300-B-W3 | 1 |
| 42 | 20099-P01 | 28x2 C/F 180mm LONG | 1 |
| 43 | 20099-P02 | 22x2 C/F 107 44mm LONG | 1 |
| 44 | 20099-P03 | 18x1.5 C/F 211 35mm LONG | 1 |

NOTES:

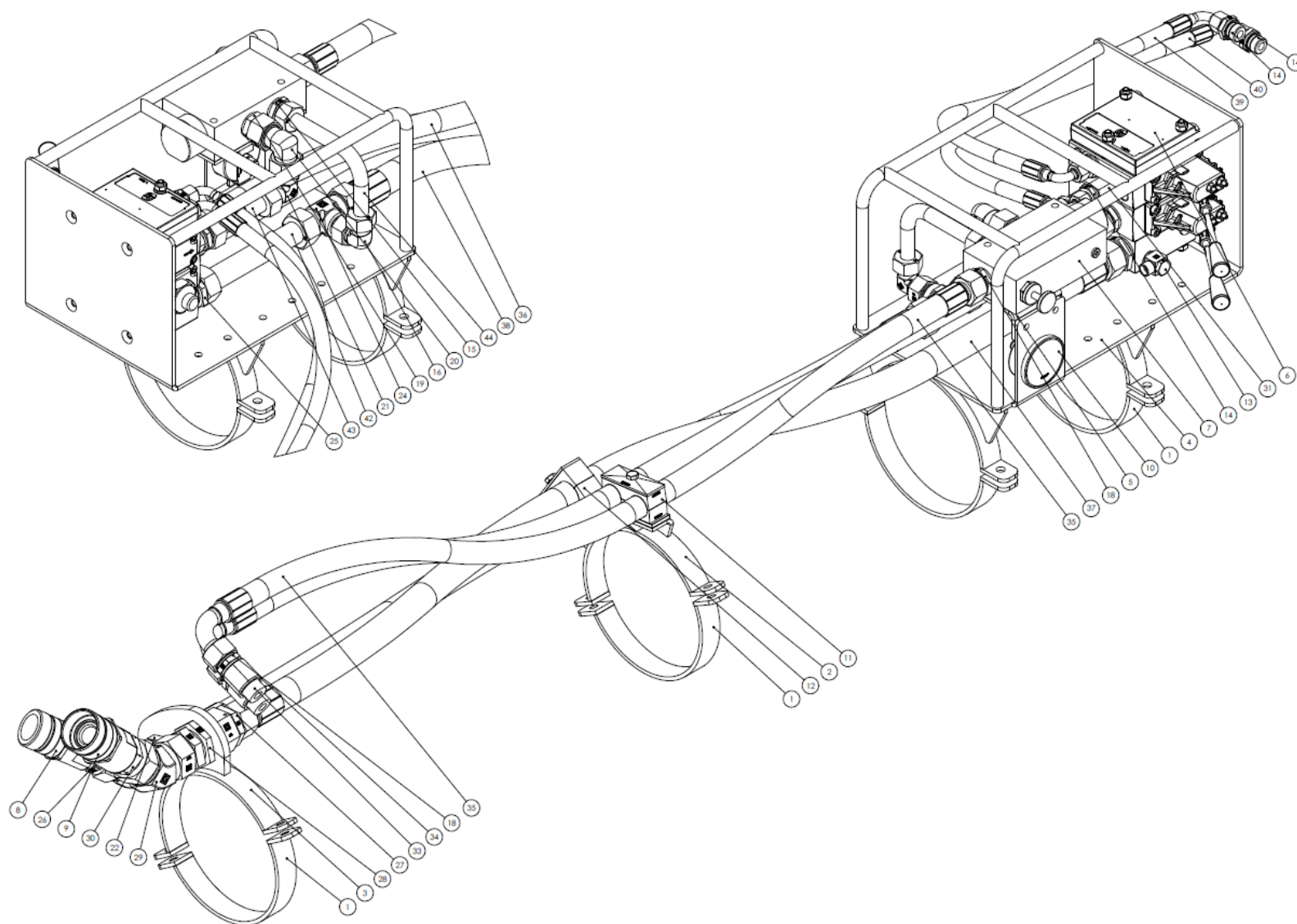
- FRAME + CLAMPS PAINTED TO RAL 9005.
- HYDRAULIC KIT FOR MHT824-H.



Doc: MML265

Issue: 004

Issue Date: 13.06.2013



Doc: MML265

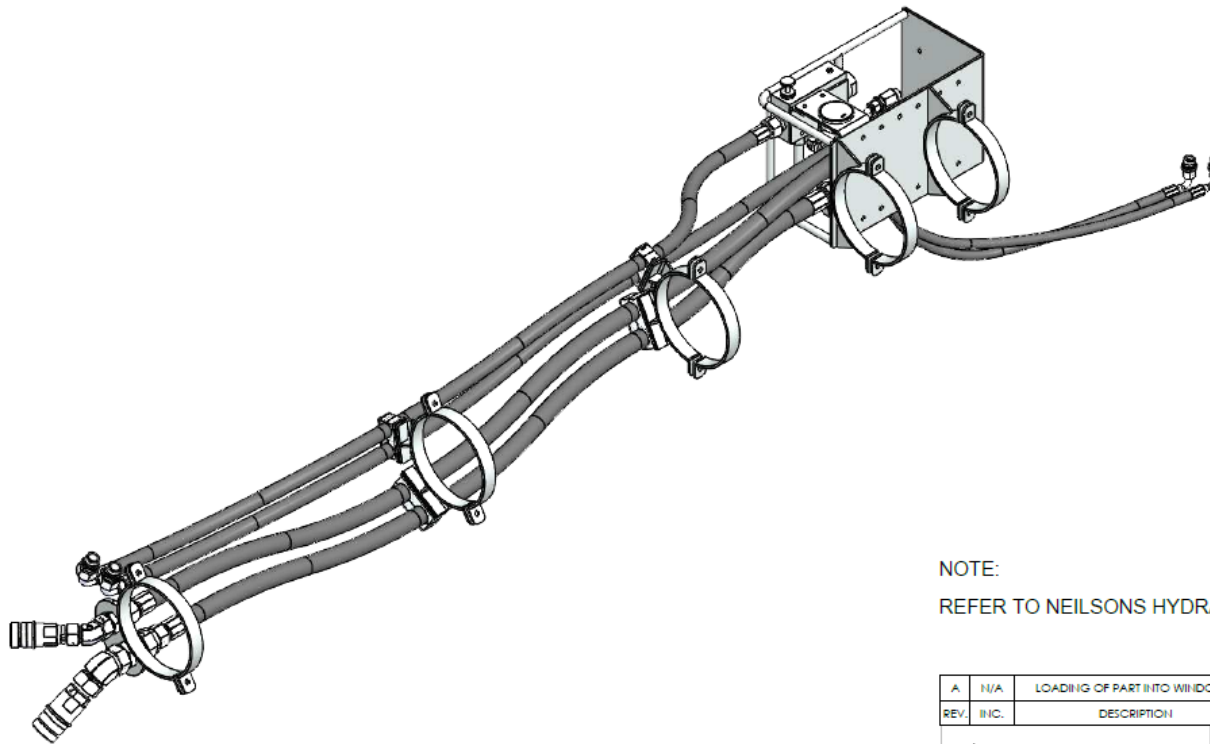
Issue: 004

Issue Date: 13.06.2013

Printed on 28/02/2020



DO NOT SCALE

IF IN DOUBT ASK



NOTE:

REFER TO NEILSONS HYDRAULIC BOM 20100

| | | | | | |
|--|--|--------------------------------|---|--|------------|
| A | N/A | LOADING OF PART INTO WINDCHILL | 27/02/2020 | EM | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  THIRD ANGLE PROJECTION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
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| | | | | | |
| WEIGHT | 6.169kg | | | 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291707 FAX (01332) 370356 E MAIL info@mirage-machines.co.uk | |
| DRAWN BY | EM | 27/02/2020 | | DWG NO MHT1236-HDCP-CM | |
| CHECKED BY | DMS | 27/02/2020 | | | |
| APPROVED BY | | | | SHEET 1 OF 1 | |
| TITLE | HYDRAULIC CONTROL PANEL-CYLINDER MOUNT | | | | |
| | SCALE: 1:50 | | | | |

MIRAGE MACHINES
APPROVED FOR
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N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-36\Neilsons Hose Kit\MHT1236-HDCP-CM

Doc: MML265

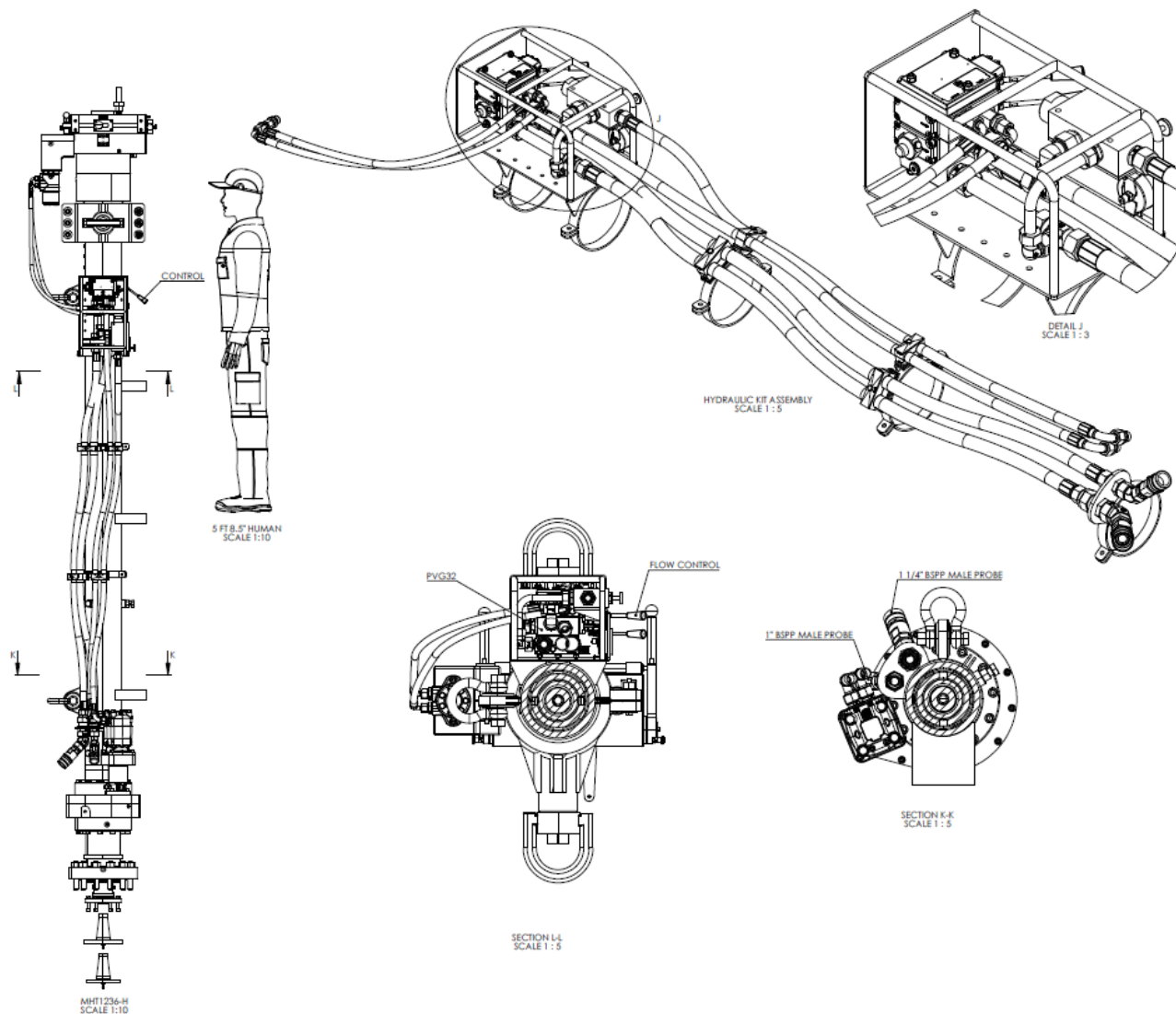
Issue: 004

Issue Date: 13.06.2013

| ITEM NO. | PART NUMBER | DESCRIPTION | QTY. |
|----------|------------------------------|---|------|
| 1 | 19990 | BOTTOM CLAMP | 5 |
| 2 | 19991 | PIPE CLAMP BRACKET | 2 |
| 3 | 19992 | BULKHEAD BRACKET | 1 |
| 4 | 19993 | PVG BASE FRAME | 1 |
| 5 | 19994 | FLOW CONTROL VALVE BRACKET | 1 |
| 6 | A202BV01 | PVG32 CONTROL VALVE | 1 |
| 7 | V1080 | FLOW CONTROL VALVE - VP83 3/4" | 1 |
| 8 | 5100-S2-148 | 1" 5100 SERIES MALE PROBE | 1 |
| 9 | 5100-S2-208 | 1-1/4" 5100 SERIES MALE PROBE | 1 |
| 10 | SPG-063-00160-01-F-004-J | PRESSURE GAUGE | 1 |
| 11 | GP-42L9/2L9-PFH-GD-AS-M-W10 | GP 4 TWIN PIPE CLAMP | 2 |
| 12 | GP-535/35-PFH-GD-AS-M-W10 | GP 5 TWIN PIPE CLAMP | 2 |
| 13 | FLBW-10LR-WD-8-W3 | BANJO ELBOW (WD TYPE) BODY ONLY | 1 |
| 14 | FLGE-12LR1/2-WD-8-W3-M6 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 4 |
| 15 | FLGE-18LR3/4-WD-8-W3 | MALE STUD COUPLING (BODY ONLY) WD TYPE | 1 |
| 16 | FLWD-18LR-8-W3-DK0 | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 17 | FLGE-22LR1/2-WD-8-W3 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 18 | FLGE-22LR-WD-8-W3 | MALE STUD COUPLING NPT (WD TYPE) BODY ONLY | 3 |
| 19 | FLGED-22LR-WD-8-W3-DK0 | STRAIGHT MALE STUD CONNECTOR | 1 |
| 20 | FLWD-22LR-8-W3-DK0 | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 21 | FLW-22LR-W3 | TUBE ELBOW (BODY ONLY) | 1 |
| 22 | FLGS-28LR-W3-SKM | STRAIGHT BULKHEAD FITTING (BODY + LOCKWIT ONLY) | 1 |
| 23 | FLVD-28LR-8-W3-DK0 | ADJUSTABLE ELBOW 45 (BODY ONLY) | 1 |
| 24 | FLS-28LR/28LR-W3 | UNEQUAL TUBE TEE (BODY ONLY) | 1 |
| 25 | FLGE-28LR3/4-WD-8-W3 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 26 | FLGED-28LR-8-W3-DK0 | STUD STANDPIPE (NPT) | 1 |
| 27 | FLREDSD-35/28LR-8-W3-DK0 | STRAIGHT REDUCER (BODY ONLY) | 1 |
| 28 | FLGS-35LR-W3-SKM | STRAIGHT BULKHEAD FITTING (BODY ONLY) | 1 |
| 29 | FLVD-35LR-8-W3-DK0 | ADJUSTABLE ELBOW (45) BODY ONLY | 1 |
| 30 | FLGED-35LR-1/4N-8-W3-DK0 | STUD STANDPIPE (NPT) | 1 |
| 31 | 1/2" BSP X 1/2" BSP M/F FRED | FIXED STRAIGHT BUSH | 2 |
| 32 | 56-PP-45-D | 1-2" BONDED WASHER | 2 |
| 33 | 20100-H01 | 3/4" 25SK 22L 90 22L STR 1965mm LONG | 1 |
| 34 | 20100-H02 | 3/4" 25SK 22L 90 22L STR 2175mm LONG | 1 |
| 35 | 20100-H03 | 1" 25SK 28L STR 28L STR 1930mm LONG | 1 |
| 36 | 20100-H04 | 1" 25SK 28L STR 28L STR 2215mm LONG | 1 |
| 37 | 20100-H05 | 3/8" 25SK 12L 90 12L 90 BOTH 0 DEGREES 990mm LONG | 1 |
| 38 | 20100-H06 | 3/8" 25SK 12L 90 12L 90 BOTH 0 DEGREES 930mm LONG | 1 |
| 39 | 20100-H07 | 5MS-K10L/M1/4-CU-300-8-W3 | 1 |
| 40 | 20100-P01 | 28x2 Cnf 180mm LONG | 1 |
| 41 | 20100-P02 | 22x2 Cnf 107.66mm LONG | 1 |
| 42 | 20100-P03 | 18x1.5 Cnf 211.55mm LONG | 1 |

NOTES:

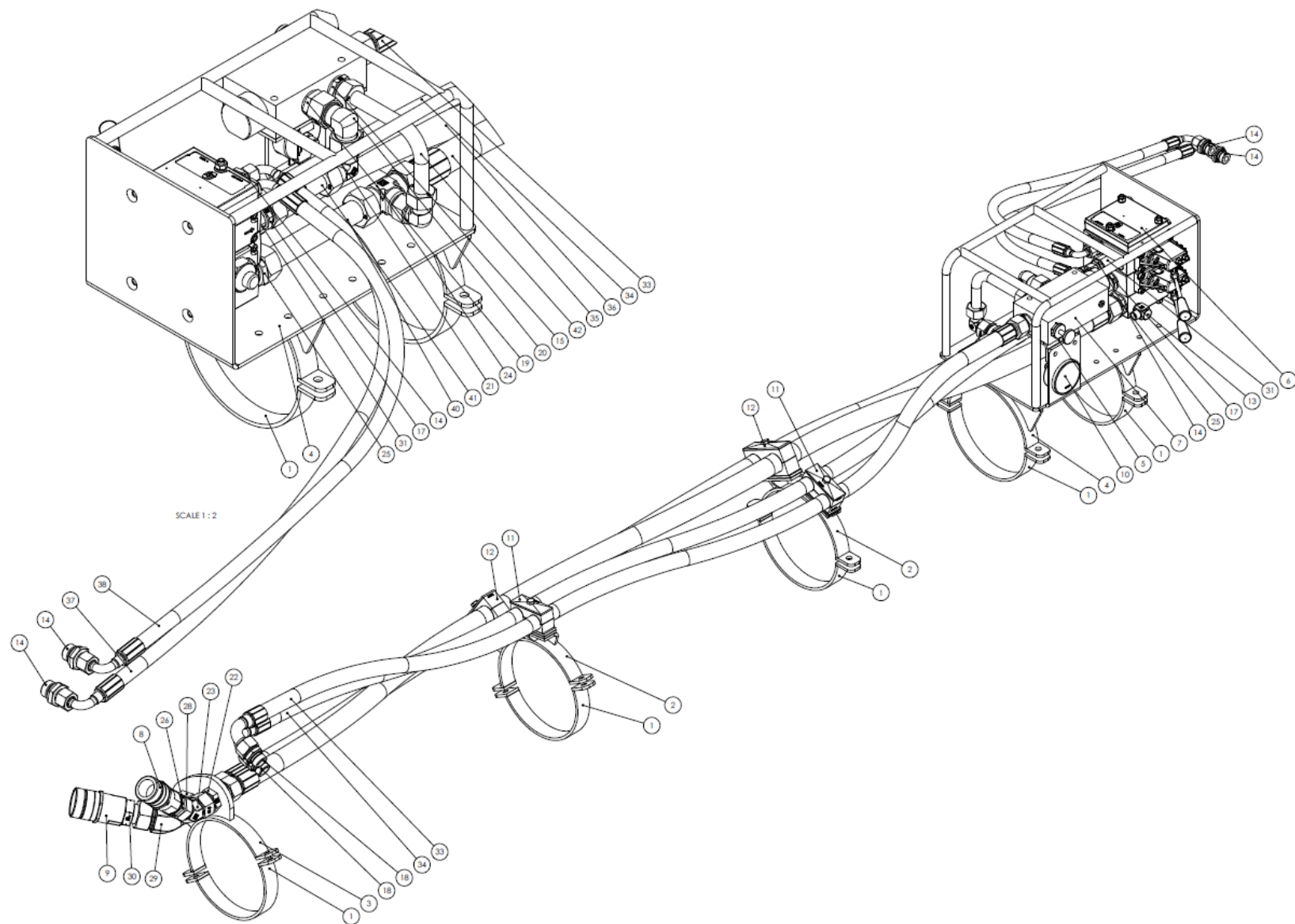
- FRAME + CLAMPS PAINTED TO RAL 9005.
- HYDRAULIC KIT FOR MHT1236-H.



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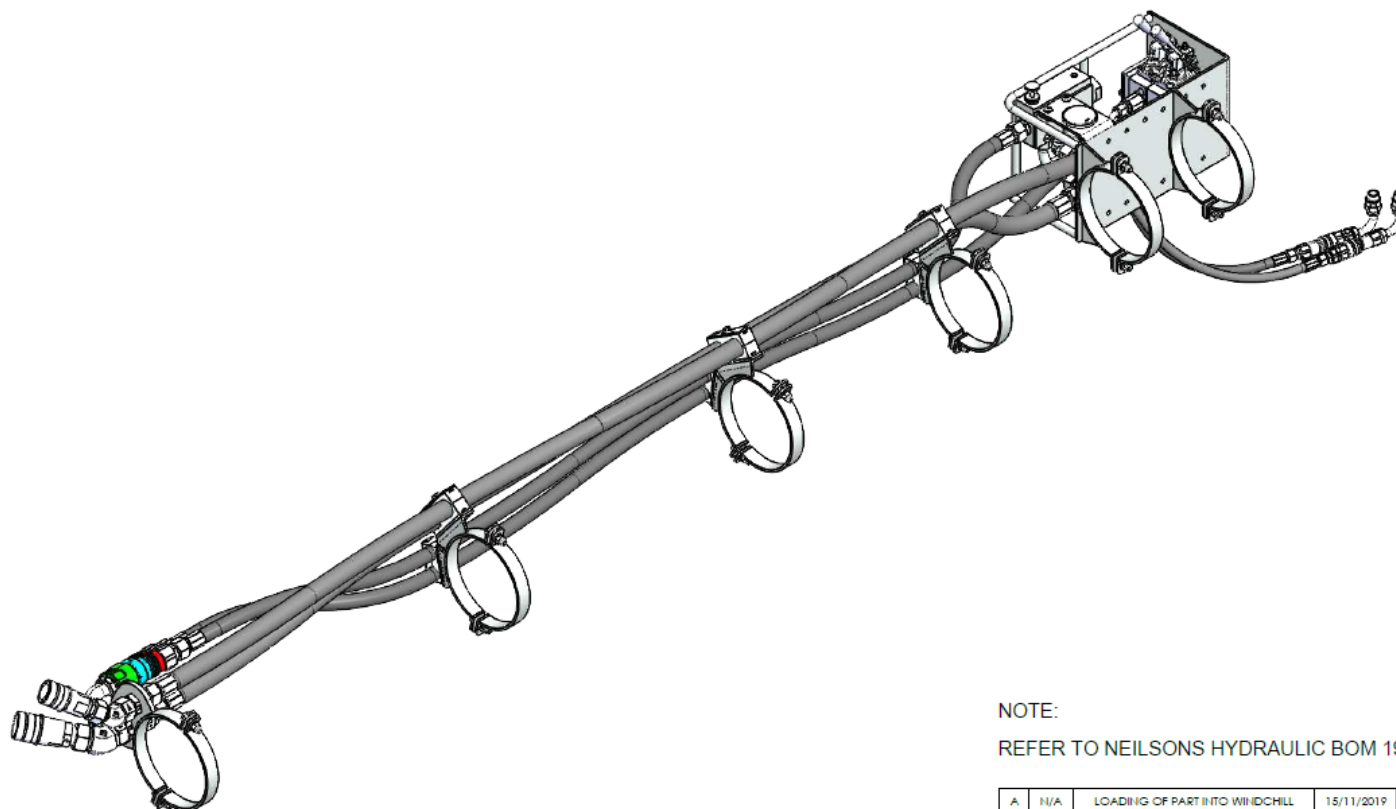
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Printed on 15/11/2019

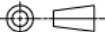

DO NOT SCALE

IF IN DOUBT ASK



NOTE:

REFER TO NEILSONS HYDRAULIC BOM 19984

| | | | | | |
|--|--|--------------------------------|---|-----------------|------------|
| A | N/A | LOADING OF PART INTO WINDCHILL | 15/11/2019 | EM | DMS |
| REV. | INC. | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
|  THIRD ANGLE PROJECTION | | | BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS | | |
| <p>© MIRAGE MACHINES LTD 2019 ALL RIGHTS RESERVED UNDER COPYRIGHT, DESIGN AND PATENT LAWS NO COPY OF THIS DOCUMENT OR THE ARTICLE SHOWN MAY BE MADE WITHOUT PRIOR WRITTEN PERMISSION</p> | | |  AN ENERPAC BRAND | | |
| WEIGHT | 0.671kg | | | | |
| DRAWN BY | EM | 08/10/2019 | | | |
| CHECKED BY | DMS | 15/11/2019 | | | |
| APPROVED BY | | | | | |
| TITLE | HYDRAULIC CONTROL PANEL-CYLINDER MOUNT | | DWG NO | MHT1242-HDCP-CM | |
| SCALE: 1:50 | | SHEET 1 OF 1 | | A3 | |

MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

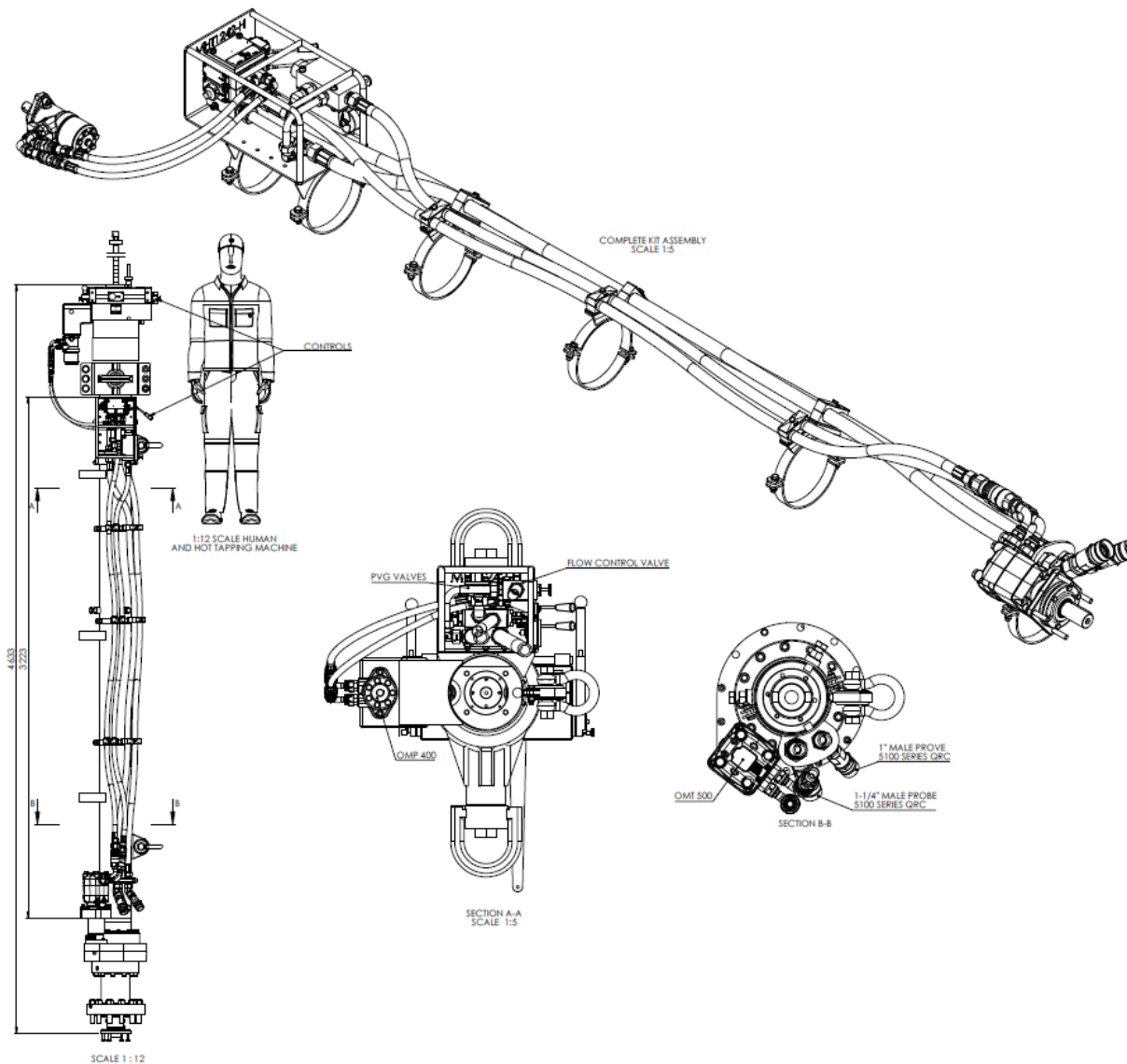
N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\Neilsons Hose Kit\MHT1242-HDCP-CM
ASSEMBLY DRAWING ENERPAC 14.03.2019

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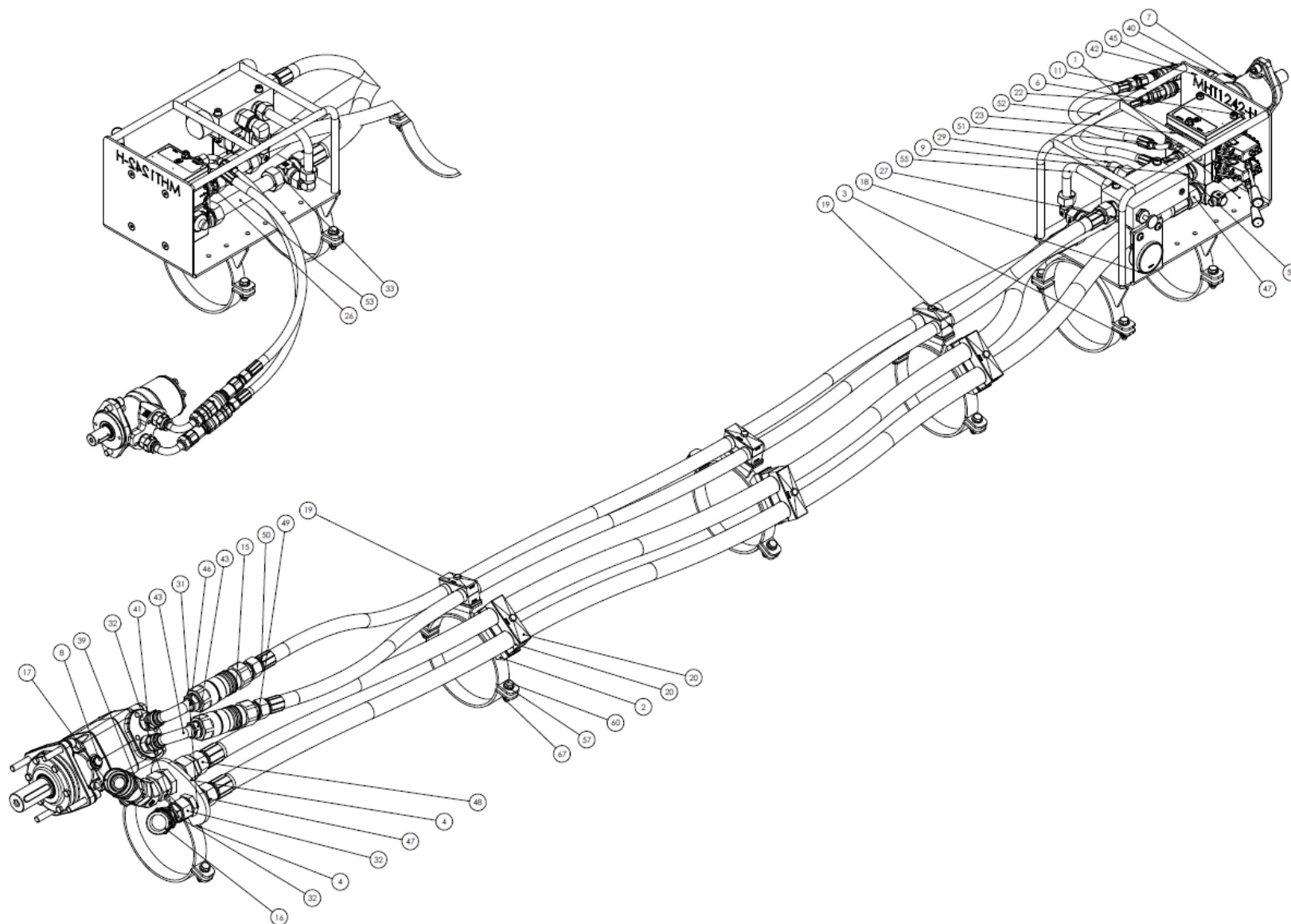
| ITEM NO. | PART NUMBER | DESCRIPTION | |
|----------|-------------------------------|---|----|
| 1 | 19983 (1) | PVG FRAME | 1 |
| 2 | 19983 (2) | CLAMP | 3 |
| 3 | 19983 (3) | CLAMP (2) | 6 |
| 4 | 19983 (4) | BRACKET (3) | 1 |
| 5 | 19994 | FLOW CONTROL VALVE BRACKET | 1 |
| 6 | A1726V801 | AUX FEED PVG VALVE | 1 |
| 7 | 11186714 | OMP 400 | 1 |
| 8 | 15180005 | OMT 500 | 1 |
| 9 | V1080 | FLOW CONTROL VALVE - VPR3 1/2" | 1 |
| 10 | 801300005 | A9 3/8" BSP QRC | 1 |
| 11 | 801300006 | A9 3/8" BSP QRC | 1 |
| 12 | 801300007 | A9 1/2" BSP QRC | 1 |
| 13 | 801300008 | A9 1/2" BSP QRC | 1 |
| 14 | 801300040 | FA17 3/4" BSP | 2 |
| 15 | 801300041 | A17 3/4" BSP QRC | 2 |
| 16 | 5100-S2-148 | 1" 5100 SERIES MALE PROBE | 1 |
| 17 | 5100-S2-208 | 1-1/4" 5100 SERIES MALE PROBE | 1 |
| 18 | SPG-063-001-60-D1-P-804-U | PRESSURE GAUGE | 1 |
| 19 | SP-426-9/26-9-PPH-GD-AS-M-W10 | GP.4 TWIN PPE CLAMP | 3 |
| 20 | SP-535-35-PPH-GD-AS-M-W10 | GP.5 TWIN PPE CLAMP | 3 |
| 21 | FL-GE-10LR-WD-B-W3 | BANJO ELBOW (WD TYPE) BODY ONLY | 1 |
| 22 | FL-GE-12LR-WD-B-W3 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 23 | FL-GE-12LR1/2-WD-B-W3-MS | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 24 | FL-GE-18LR-WD-B-W3 | MALE STUD COUPLING (WD TYPE) BODY ONLY | 1 |
| 25 | FL-ED-18L-B-W3-DKO | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 26 | FL-GE-22LR1/2-WD-B-W3 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 27 | FL-GE-22LR-WD-B-W3 | MALE STUD COUPLING BSP (WD TYPE) BODY ONLY | 3 |
| 28 | FL-EGED-22LR-WD-B-W3-DKO | STRAIGHT MALE STUD CONNECTOR | 1 |
| 29 | FL-ED-22L-B-W3-DKO | ADJUSTABLE ELBOW (BODY ONLY) | 1 |
| 30 | FL-W-22L-W3 | TUBE ELBOW (BODY ONLY) | 1 |
| 31 | FL-GS-28L-W3-SKM | STRAIGHT BULKHEAD FITTING (BODY + LOCKNUT ONLY) | 1 |
| 32 | FL-ED-28L-B-W3-DKO | ADJUSTABLE ELBOW 45 (BODY ONLY) | 1 |
| 33 | FL-T-28/18/28L-W3 | UNEQUAL TUBE TEE (BODY ONLY) | 1 |
| 34 | FL-GE-28LR3/4-WD-B-W3 | MALE STUD COUPLING WD TYPE (BODY ONLY) | 2 |
| 35 | FL-EGED-28LR1/4-W3-DKO | STUD STANDPIPE (NPT) | 1 |
| 36 | FL-ED-35/28L-B-W3-DKO | STRAIGHT REDUCER (BODY ONLY) | 1 |
| 37 | FL-GS-35L-W3-SKM | STRAIGHT BULKHEAD FITTING (BODY ONLY) | 1 |
| 38 | FL-ED-35L-B-W3-DKO | ADJUSTABLE ELBOW (45) BODY ONLY | 1 |
| 39 | FL-EGED-35L-1/4IN-B-W3-DKO | STUD STANDPIPE (NPT) | 1 |
| 40 | ADP-C-G08-MM-W66A | 1/2" BSP X 1/2" BSP MALE/MALE | 2 |
| 41 | ADP-C-G12-MM-W66A | 3/4" BSP TO 1/2" BSP MALE/MALE | 2 |
| 42 | ADP-SEP0-G08-MF-W66A | 90 DEGREE ADAPTOR | 2 |
| 43 | ADP-SEP0-G12-MF-W66A | 90 DEGREE ADAPTOR | 2 |
| 44 | 1/2" BSP X 1/2" BSP M/F FIXED | FIXED STRAIGHT BUSH | 2 |
| 45 | 56-PP-45-D | 1/2" BONDED WASHER | 4 |
| 46 | 56-PP-45-F | 3/4" BONDED WASHER | 4 |
| 47 | 19984-H01 | 1" 25X 285mm 28L STR 28L STR | 1 |
| 48 | 19984-H02 | 1" 25X 258mm 28L STR 28L STR | 1 |
| 49 | 19984-H03 | 3/4" 25X 240mm 22L STR 22L STR | 1 |
| 50 | 19984-H04 | 3/4" 25X 240mm 22L STR 22L STR | 1 |
| 51 | 19984-H05 | 3/8" 25X 610mm 12L STR 12L 90 | 1 |
| 52 | 19984-H06 | 3/8" 25X 610mm 12L 90 12L STR | 1 |
| 53 | 19984-P01 | 28x2 C&F 185L | 1 |
| 54 | 19984-P02 | 22x2 C&F 113L | 1 |
| 55 | 19984-P03 | 18x1.5 C&F 139 | 1 |
| 56 | W3HMPAD08C | M8 PLAIN WASHER FORM A | 8 |
| 57 | W3HMPAD10C | M10 PLAIN WASHER FORM A | 24 |
| 58 | W3HMPAD12C | M12 PLAIN WASHER FORM A | 4 |
| 59 | W3HMSQ012C | M12 SPRING WASHER | 4 |
| 60 | MICB-10040R | M10x40 HEX BOLT | 12 |
| 61 | MICSD08025R | M8x25 BUTTON HEAD SOCKET SCREW | 2 |
| 62 | MSCA08070R | M8x70 CAP HEAD | 2 |
| 63 | ISO 4762 M12 x 30 -- 30N | M4x20 CAP HEAD | 2 |
| 64 | MSCA12070R | M12x70 CAP HEAD | 4 |
| 65 | MICSD08020R | M8x20 COUNTERSUNK | 4 |
| 66 | NUTMCDN08T | M8 NYLOC | 4 |
| 67 | NUTMCDN10T | M10 NYLOC | 12 |



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11. Appendices

11.1. Hot Tapping Data Sheet

Customer Details.....Contact Number.....
Contact Details.....Date / Time.....

Tap Details.

Tap Size.....
Flange Rating.....
Orientation.....
Branch wall Thickness.....
Valve Type.....
Bore Details.....

Pipe Details.

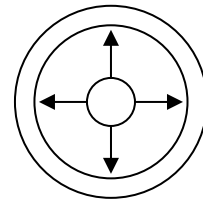
Pipe Size.....
Wall Thickness.....
Material.....
Product Type.....
Pipe Pressure.....
Temperature.....

Flow rate-.....Customer Signature.....
Recommended Flow rates, Gas 20mph; 30fps; 10m/s. Liquids 10mph; 15fps; 5m/s.

Tapping Machine Operational Checks.

Tapping adapter bolts secure.....Y/N
Cutter holder screws secure.....Y/N
Cutter retaining screws secure.....Y/N
Pilot drill / retaining screws secure....Y/N

Boring Bar Alignment Check.



Check Boring bar is central to Hot Tapping Adapter Y/N

Hot Tapping operation Dimensions.

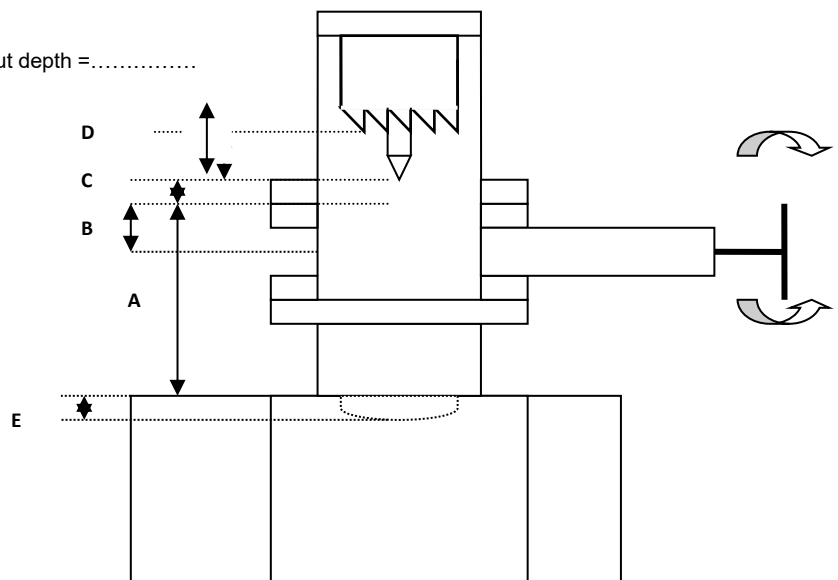
A, Flange to pipe =.....
B, Top valve to gate =.....
C, Pilot drill to flange =.....
D, Cutter to flange =.....E, Coupon cut depth =.....

Hot Tapping Cutting Distances.

Pilot Drill to pipe, $A+C$ =.....
Cutter to Pipe, $A+D$ =.....
Total Cut Distance, $A+D+E$ =.....
(E =Ref Coupon Distance Chart).

Valve Details.

Valve Flange to Gate B =.....
Number of turns to close / open



Technician Signature.....Customer Signature.....
Date.....Date.....

11.2. Recommended torque settings for fasteners

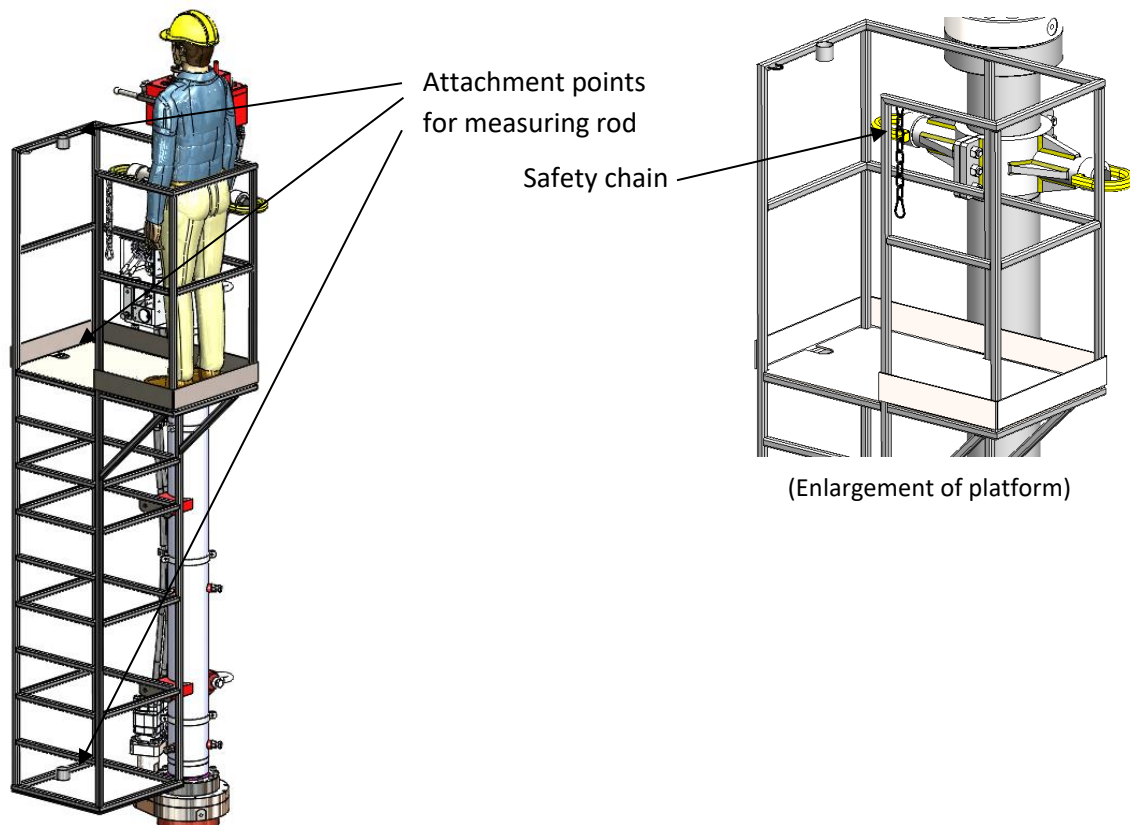
| Thread Ø | Tensile Strength | | Torque Setting | |
|-------------|------------------|--------|----------------|----------|
| | kN | lbs | Nm | in - lbs |
| M3 | 6.54 | 1470 | 2.1 | 19 |
| M4 | 11.4 | 2560 | 4.6 | 41 |
| M5 | 18.5 | 4160 | 9.5 | 85 |
| M6 | 26.1 | 5870 | 16 | 140 |
| M8 | 47.6 | 10700 | 39 | 350 |
| M10 | 75.4 | 17000 | 77 | 680 |
| M12 | 110 | 24700 | 135 | 1200 |
| M14 | 150 | 33700 | 215 | 1900 |
| M16 | 204 | 45900 | 330 | 2900 |
| M20 | 306 | 68800 | 650 | 5750 |
| M22 | 374 | 83950 | 875 | 7725 |
| M24 | 441 | 99100 | 1100 | 9700 |
| M30 | 701 | 158000 | 2250 | 19900 |
| M32 | 860 | 193500 | 3050 | 27000 |
| M36 | 1020 | 229000 | 3850 | 34100 |

11.3. Ladder (Optional Accessory)

(The images below are a representation only. The supplied assembly may vary)

The ladder assembly is not supplied as standard. It is available to be purchased as an optional accessory to the hot tapping machine if required.

The ladder assembly attaches to the machine and is used for access to the controls positioned at height. The ladder features attachments for the measuring rod which stores the bar whilst installing the machine and ladder assembly to the pipeline. Once the machine is in position to commence drilling, the measuring rod is easily accessed from the ladder platform and slotted into the machine.



DANGER

- When standing on the platform, the safety chain must be clipped-on to close the open area at all times.
- Wear suitable footwear to prevent slipping.
- Ensure all bolts connecting the ladder assembly to the machine are correctly tightened to allow a permanent and secure connection of the ladder.
- A suitable fall arrest / harness is recommended when operating the machinery at height.

WARNING

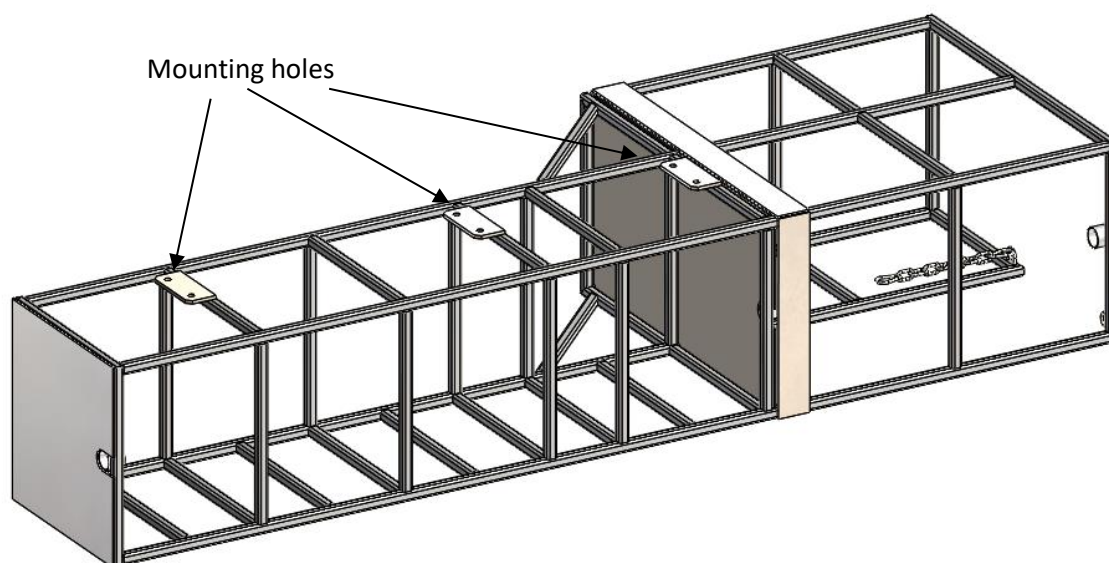
- Do not lean or stretch over the platform barriers.

CAUTION

- When attaching ladders to the machine, never rest the full weight of the machine on to the ladders. The ladder assembly is not designed to be a resting point for the machine.
- Do not carry loose hand tools when climbing the ladders.
- Do not use the ladders or platform to perform maintenance to the machine. The ladder assembly has been designed to provide access to the machine control areas only, and not for maintenance or repairs of the machine.

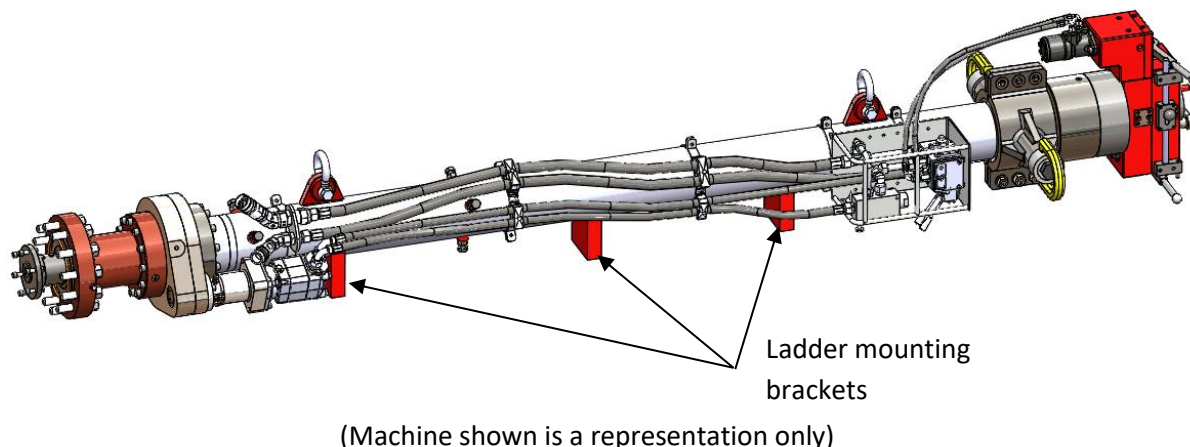
11.3.1. Installation

1. Carry out a visual inspection of the ladder assembly to ensure it is in a suitable condition for its duty.
2. Set down the ladder assembly onto firm level ground. The mounting holes must be facing upwards.

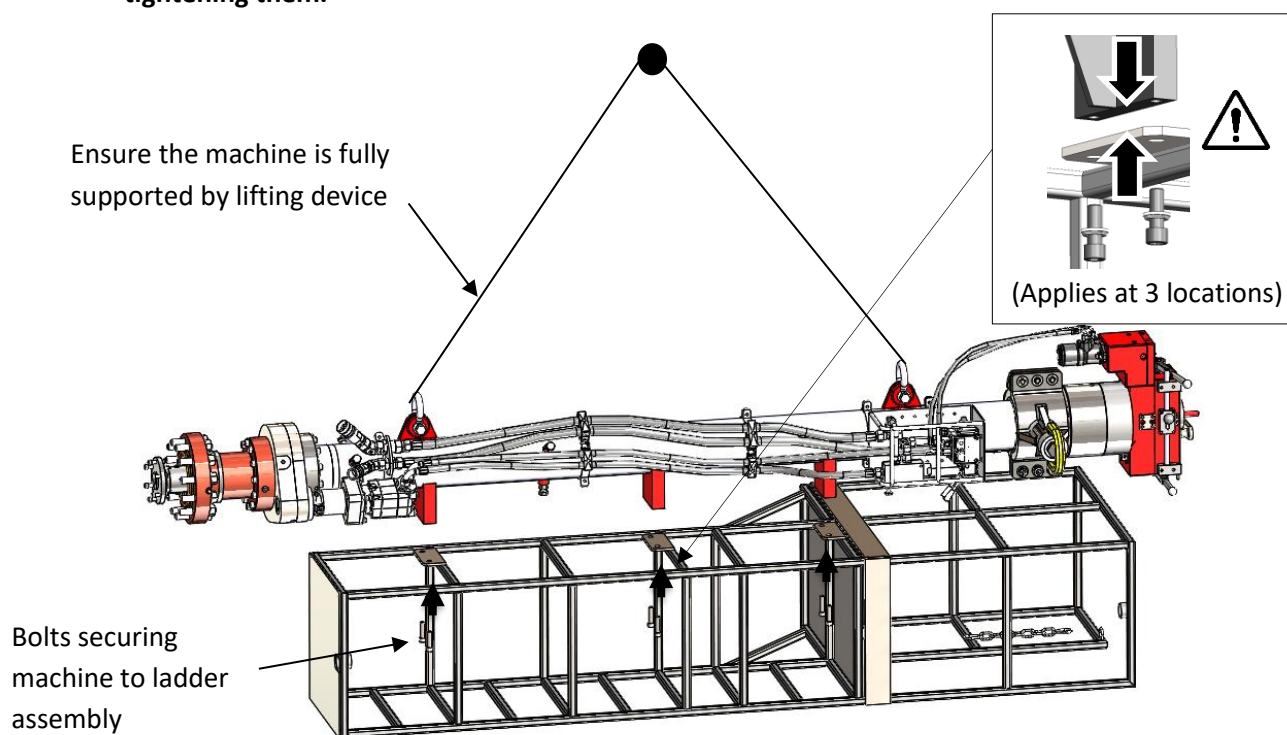


3. Introduce the machine to the ladder assembly. The machine should be suspended horizontally using a suitable lifting device (crane). At no time should the full weight of the machine be loaded onto the ladder assembly. Failure to adhere to this may cause structural damage to the ladder assembly. The ladder assembly is not designed to take the full weight of the machine.

4. If the ladder assembly is supplied with ladder mounting brackets (as shown below), then fit the brackets first to the machine. Follow the platform assembly drawing for the correct placement of the brackets.



5. Whilst the machine is suspended and touching the ladder, attach all the bolts and tighten them to firmly secure the ladder to the machine. Refer to section 11.2 for torque values.
Caution: Finger trap hazard – pay close attention when installing the mounting bolts and tightening them.



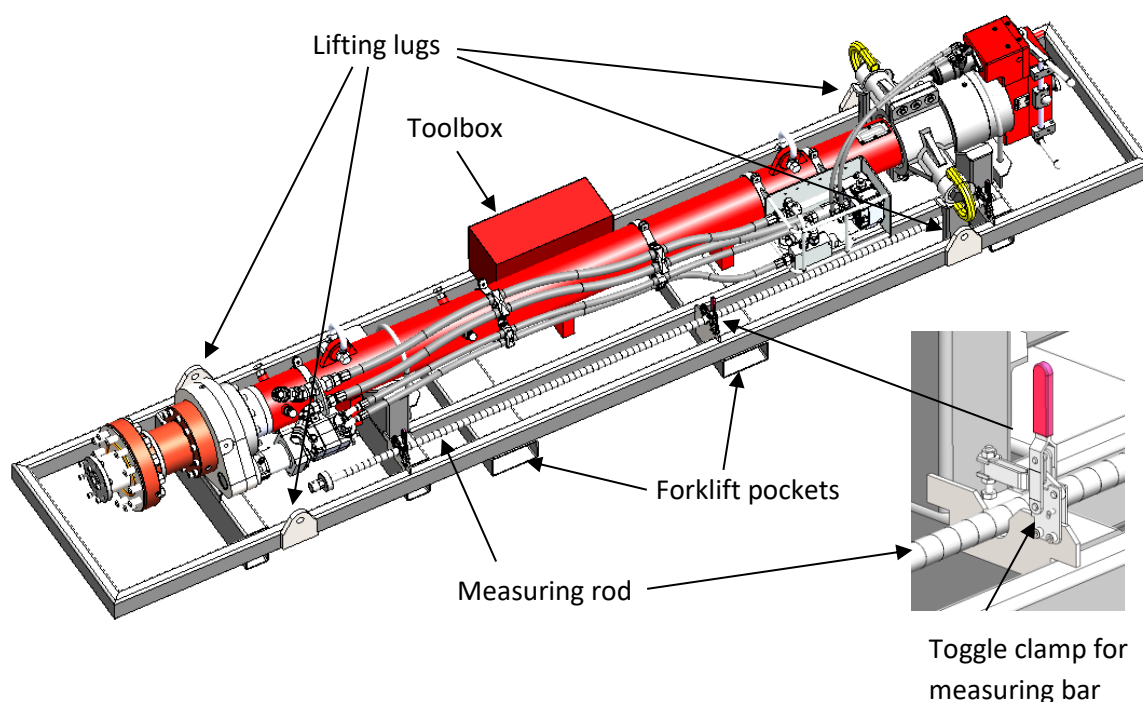
6. The machine is now ready to be lifted and installed on to the pipeline.
7. To disassemble the ladder assembly from the machine, follow the above procedure in reverse. Never store the machine on the ladder assembly.

11.4. Skid (Optional Accessory)

(The images below are a representation only. The supplied assembly may vary)

The skid is not supplied as standard. It is available to be purchased as an optional accessory to the hot tapping machine if required.

The skid provides the machine a heavy-duty storage and shipping platform and features a dedicated place to store and clamp the measuring rod. It also serves as a platform when mounting the cutter housing onto the machine. There is a bolted toolbox to store tools and other small parts. Forklift pockets and lifting lugs are supplied on the skid for easy manoeuvrability.



DANGER

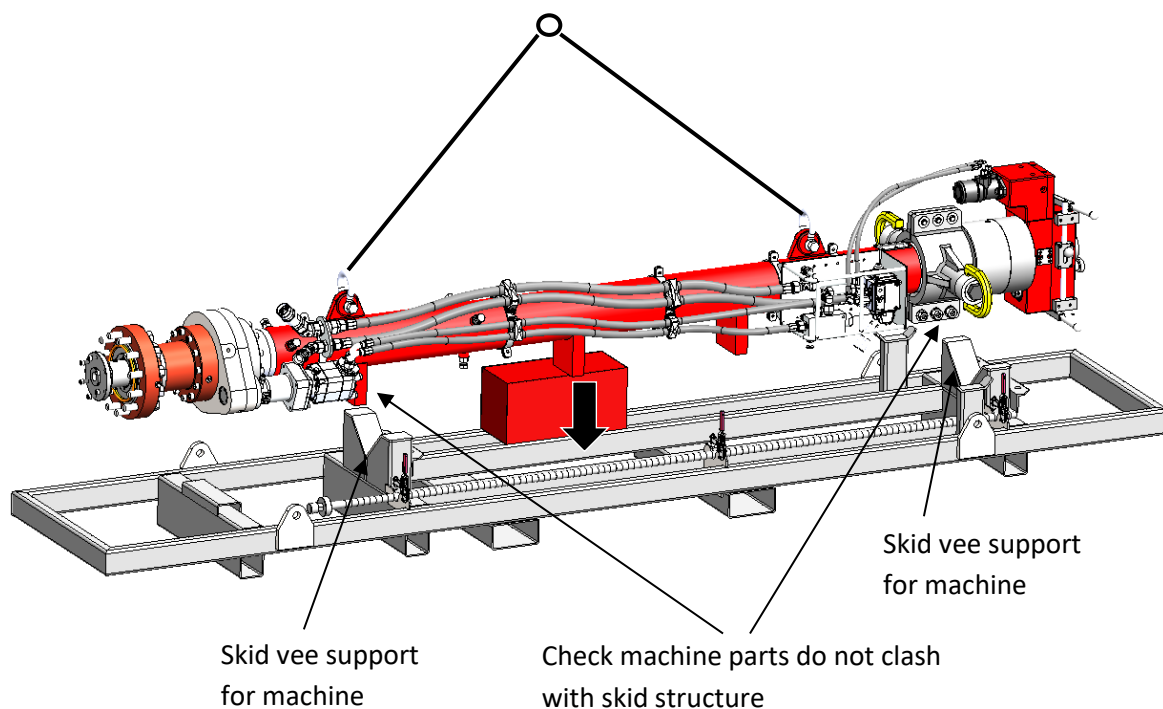
- Crushing/ trapping/ shearing hazard when lowering the machine into the skid vee. Stay clear from the machine when it is being lowered. Only approach the assembly once the machine is fully lowered and resting on the vees, to install the U-bolts to strap down the machine.

CAUTION

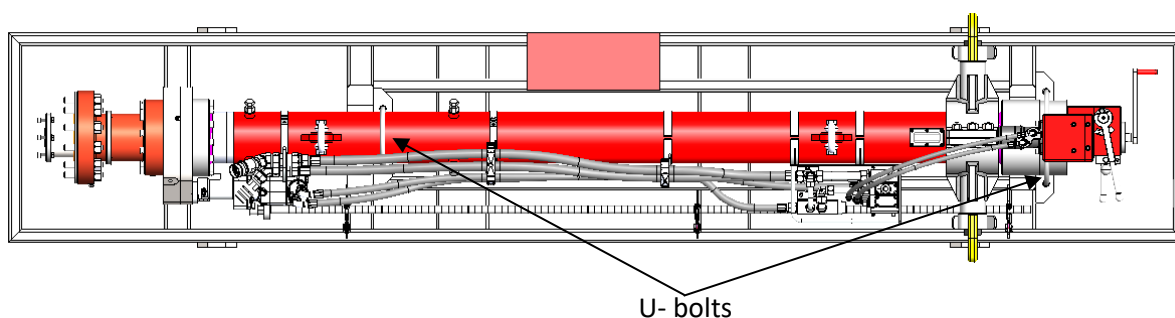
- Do not climb or stand on the skid. The skid surfaces have not been designed for such activity.
- When lowering the machine, make sure the machine is correctly aligned with the Vees to prevent any damage to the machine components.

11.4.1. Installation

1. Carry out a visual inspection of the skid to ensure it is in a suitable condition for its duty.
2. Set down the skid onto firm level ground.
3. Lower the machine in a horizontal orientation to the skid. Make sure the machine is aligned to the skid so that no machine parts will accidentally clash with the skid structure.

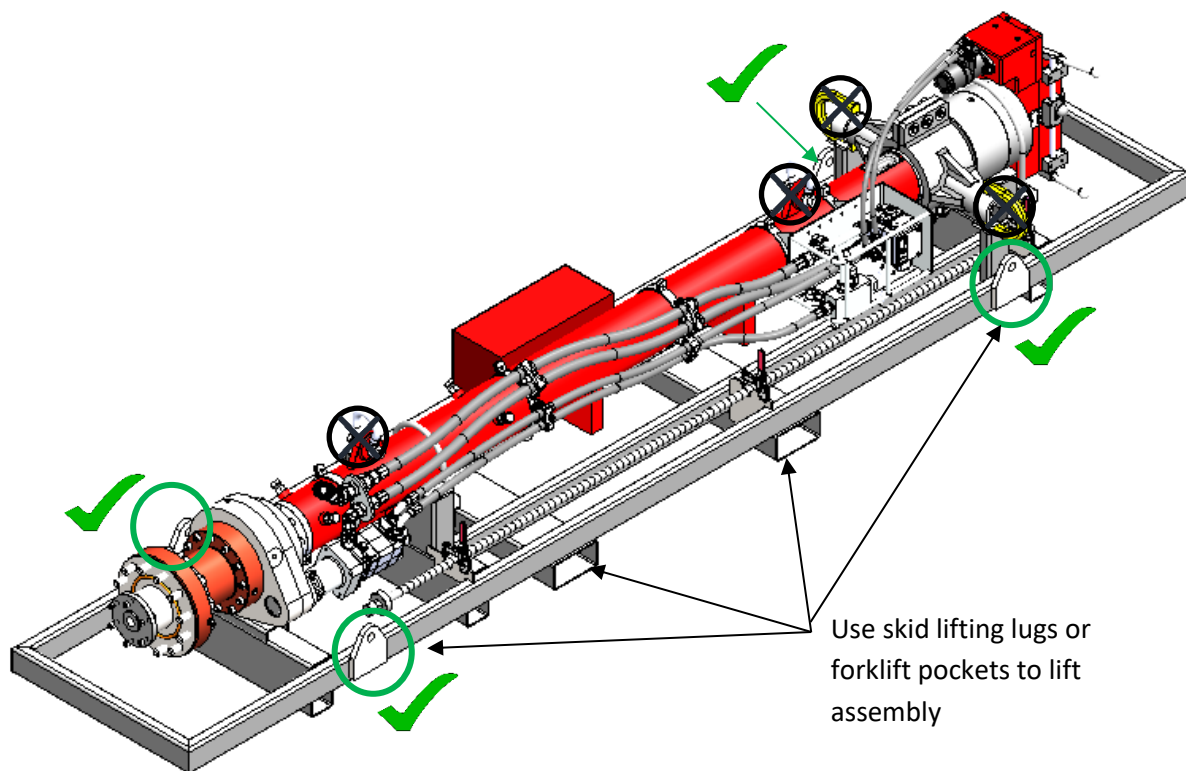


4. Place the machine onto the vees and fit the two U-Bolts over the machine to the skid. Ensure that the machine is rigidly secured to the skid.



5. Remove the lifting slings from the machine.
6. Place the measuring rod into its dedicated position within the skid and operate the toggle clamps to secure it in place.

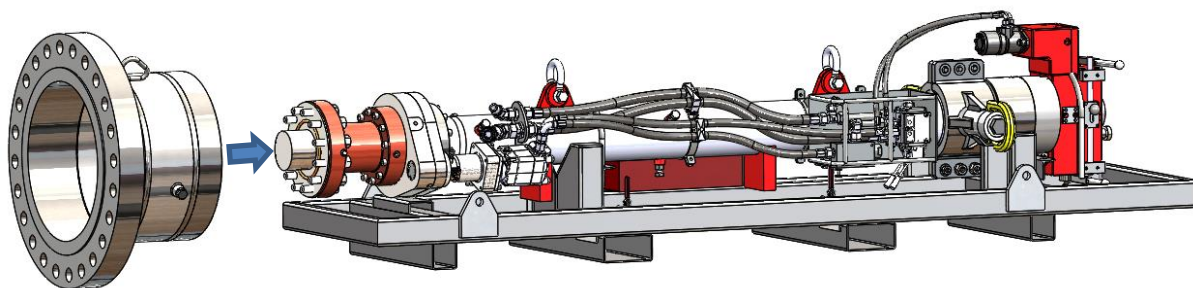
7. The machine and skid assembly are now ready to be transported or stored. Always use the skid lifting points or forklift pockets to move the unit. Do not use the machine lifting points to lift when the machine is attached to the skid.



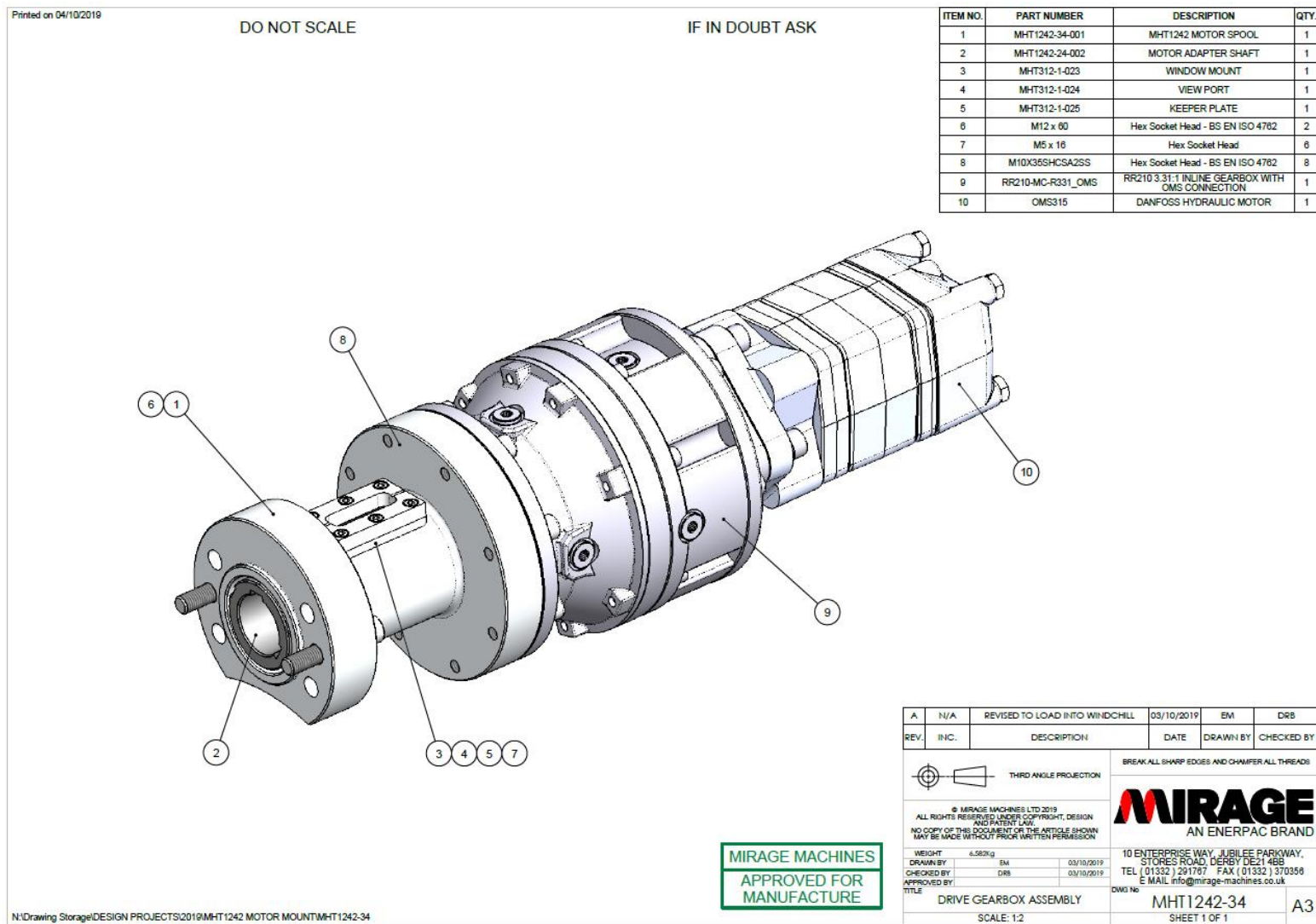
8. To disassemble the machine from the skid, follow the above procedure in reverse.

Using the skid to install the cutter housing / adapter flange

Before installing the cutter housing, ensure that the machine and skid assembly is situated on firm level ground. The machine should be secured to the skid and positioned at a height so that the flange adapter will not clash on the ground when it is being installed to the machine. Refer to section 5.1 for installation information.



11.5. Alternative Gearbox assembly (MHT1242-34)



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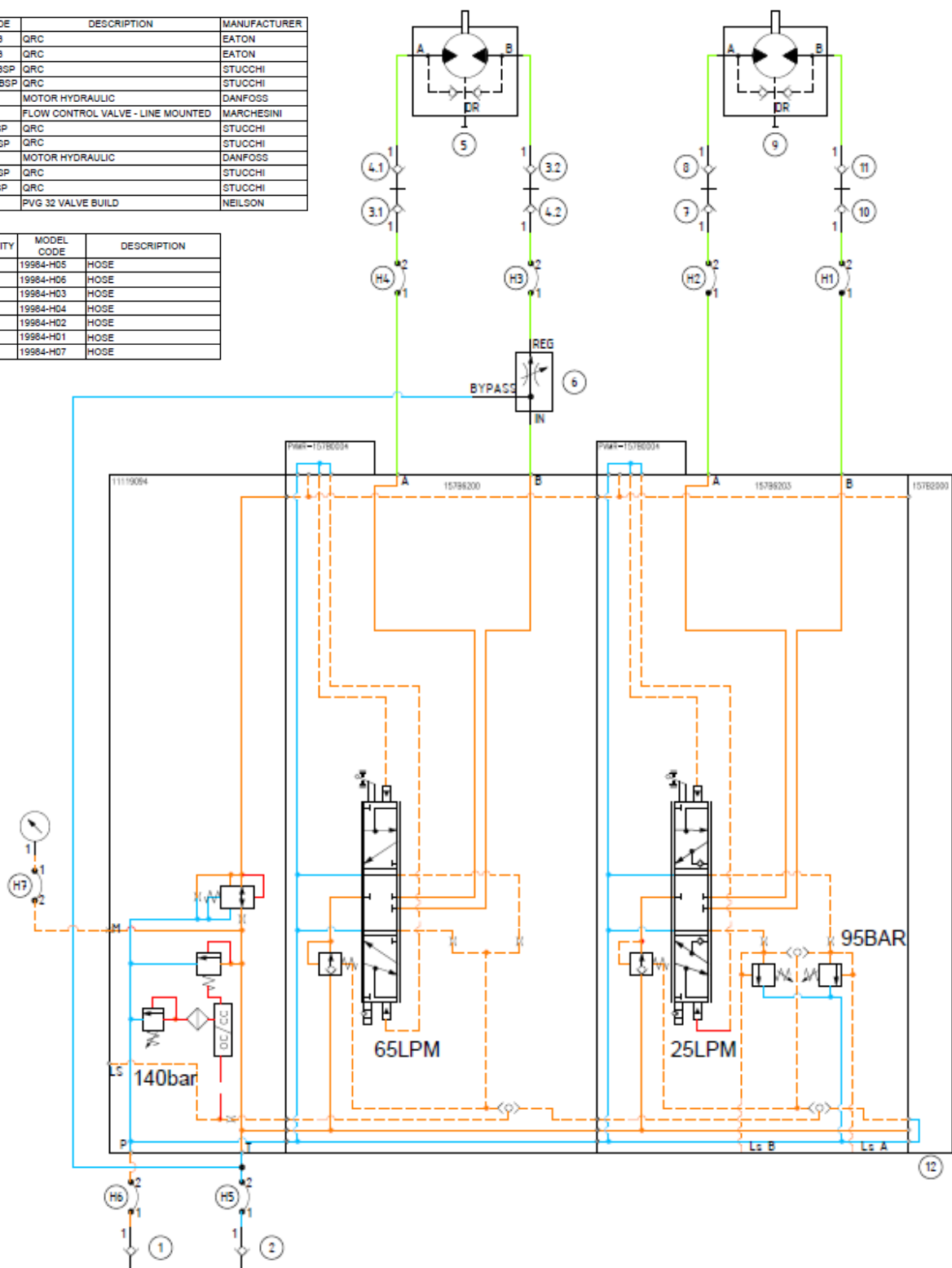
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Issue Date: 13.06.2013

11.6. Hydraulic schematic diagram

| ITEM ID | QUANTITY | MODEL CODE | DESCRIPTION | MANUFACTURER |
|---------|----------|----------------|-----------------------------------|--------------|
| 1 | 1 | 5100-S2-16B | QRC | EATON |
| 2 | 1 | 5100-S2-20B | QRC | EATON |
| 3 | 2 | F.A17 3/4" BSP | QRC | STUCCHI |
| 4 | 2 | M.A17 3/4" BSP | QRC | STUCCHI |
| 5 | 1 | OMT 500 | MOTOR HYDRAULIC | DANFOSS |
| 6 | 1 | VPR3 3/4" | FLOW CONTROL VALVE - LINE MOUNTED | MARCHESINI |
| 7 | 1 | F.A9 3/8" BSP | QRC | STUCCHI |
| 8 | 1 | M.A9 1/2" BSP | QRC | STUCCHI |
| 9 | 1 | OMP400 | MOTOR HYDRAULIC | DANFOSS |
| 10 | 1 | M.A9 3/8" BSP | QRC | STUCCHI |
| 11 | 1 | F.A9 1/2" BSP | QRC | STUCCHI |
| 12 | 1 | A2028VB01 | PVG 32 VALVE BUILD | NEILSON |

| HOSE ID | QUANTITY | MODEL CODE | DESCRIPTION |
|---------|----------|------------|-------------|
| H1 | 1 | 19984-H05 | HOSE |
| H2 | 1 | 19984-H06 | HOSE |
| H3 | 1 | 19984-H03 | HOSE |
| H4 | 1 | 19984-H04 | HOSE |
| H5 | 1 | 19984-H02 | HOSE |
| H6 | 1 | 19984-H01 | HOSE |
| H7 | 1 | 19984-H07 | HOSE |



11.7. General Notes

[illegible]