
OPERATION & MAINTENANCE MANUAL

Enerpac MHT-H MHT824-H, MHT1236-H, MHT1242-H HOT TAPPING MACHINE

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To reduce the risk of injury, user must read and understand the document before use.

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
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
A	SVO	20/04/2023			New doc no. assigned

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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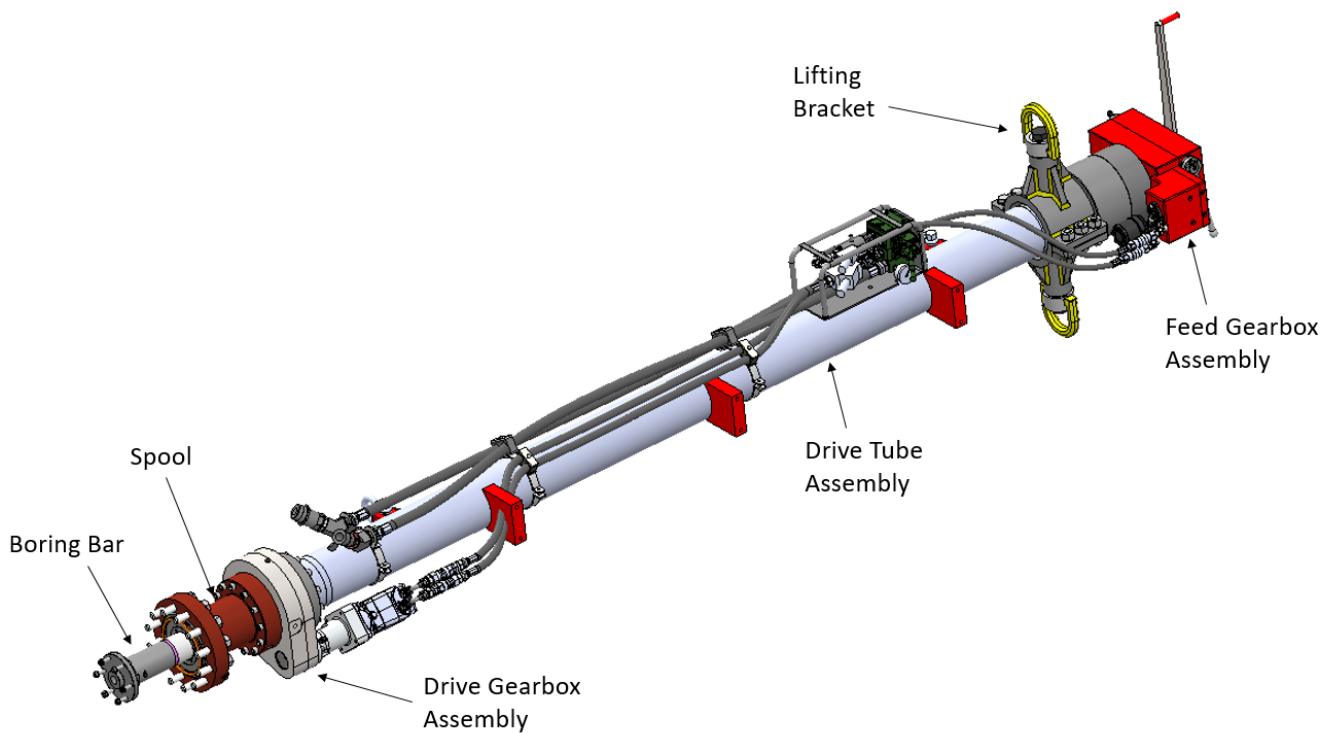
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1. Introduction

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

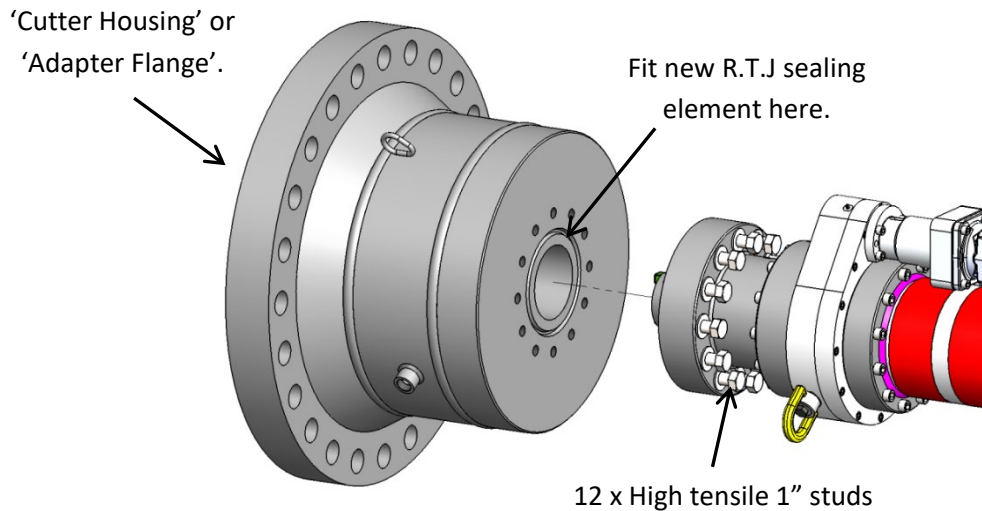
The MHT1236-H comes with two different cutter adapters, the MHT1242TD-21-001 for cutter diameters of between 24 & 36 inches or the MHT1242TD-21-002 for cutter diameters of between 12 & 22 inches. Depending on which cutter is being used, select the appropriate cutter adapter (see above).

Cutters for the MHT1242-H machine

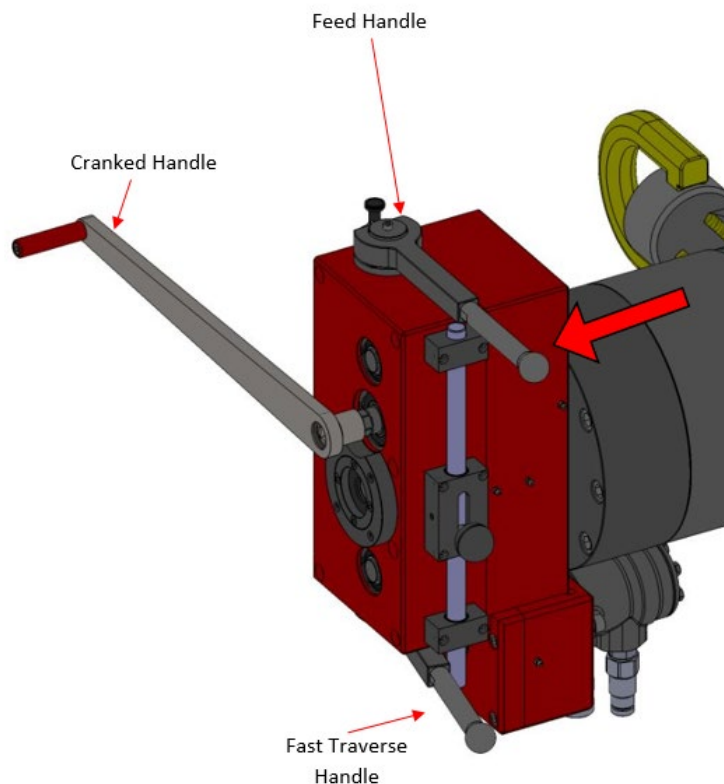
MHT1242-H Standard, Hot Tapping Cutter Data										
Cutter Adapters/ holder	Nominal Cutter Size		Actual Cutter Size		Standard Hot Tap Cutters			Standard Hot Tap Pilot Drills		
Part No	In	DN	In	MM	Lbs	Kgs	Part No	Part No	Lbs	Kgs
MHT1242TD- 21-001	12	300	11	292	35	16	HTC12	SHTPD12	5	2.2
	14	350	12	324	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.

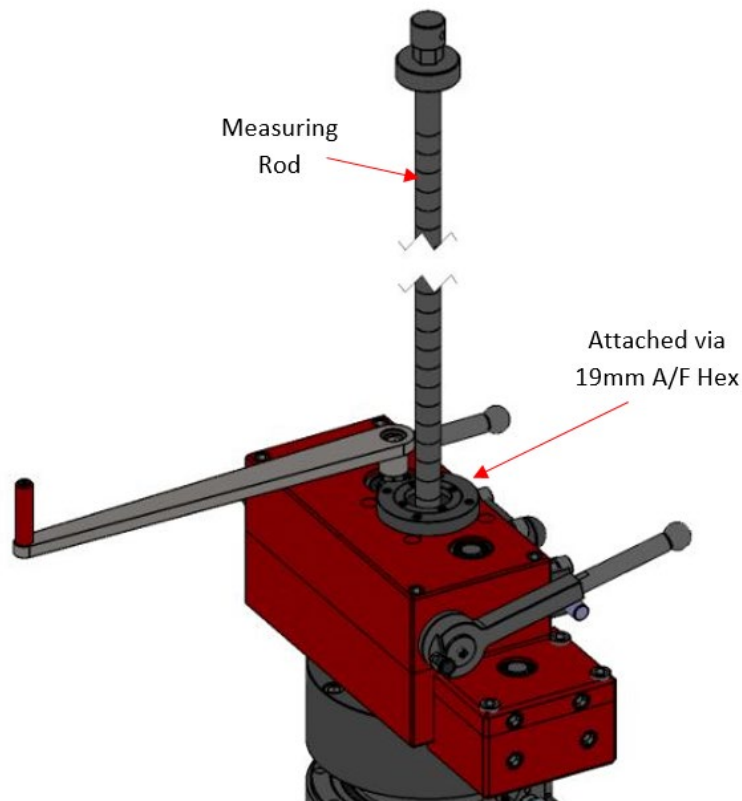
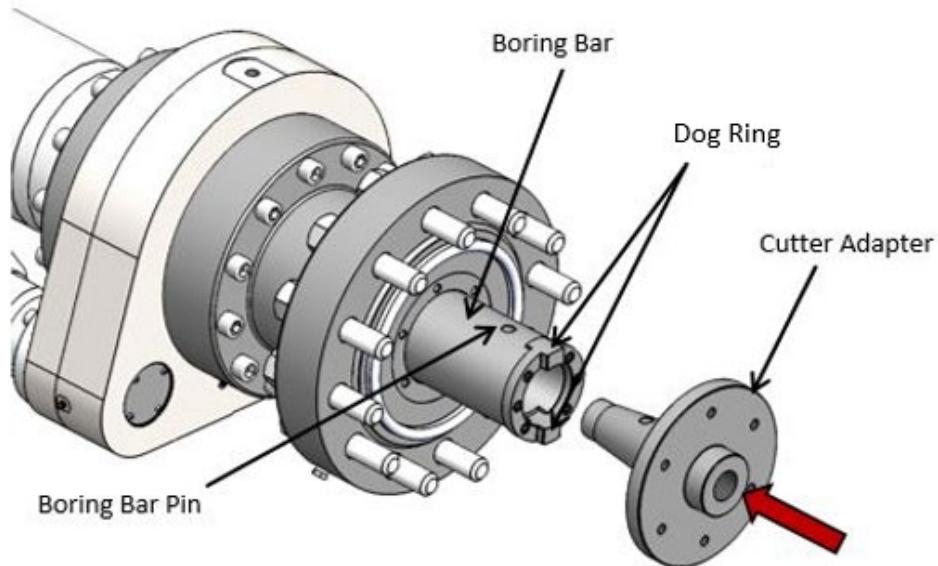


Extend the boring bar by positioning the feed handle in the backwards, neutral position & turning the 'Cranked Handle' anti-clockwise until it protrudes from the 'Cutter Housing', this will allow the cutter adapter to be fitted easily. Alternatively, use the fast traversal method to advance the boring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

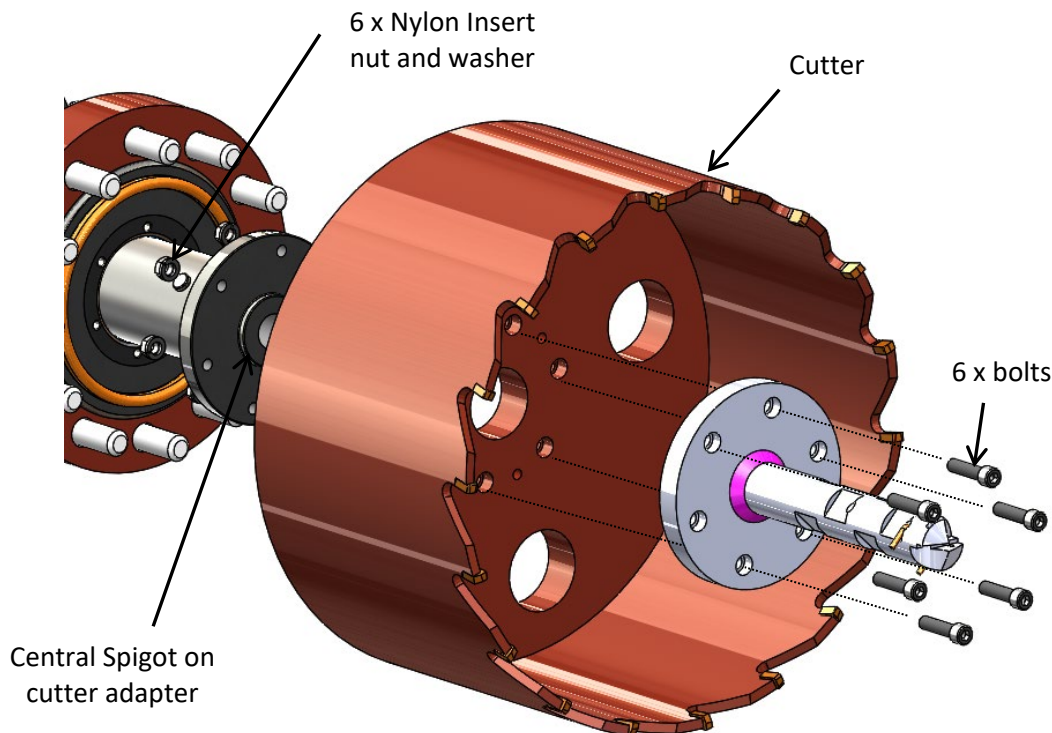
Installing the Cutter and pilot drill.

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.

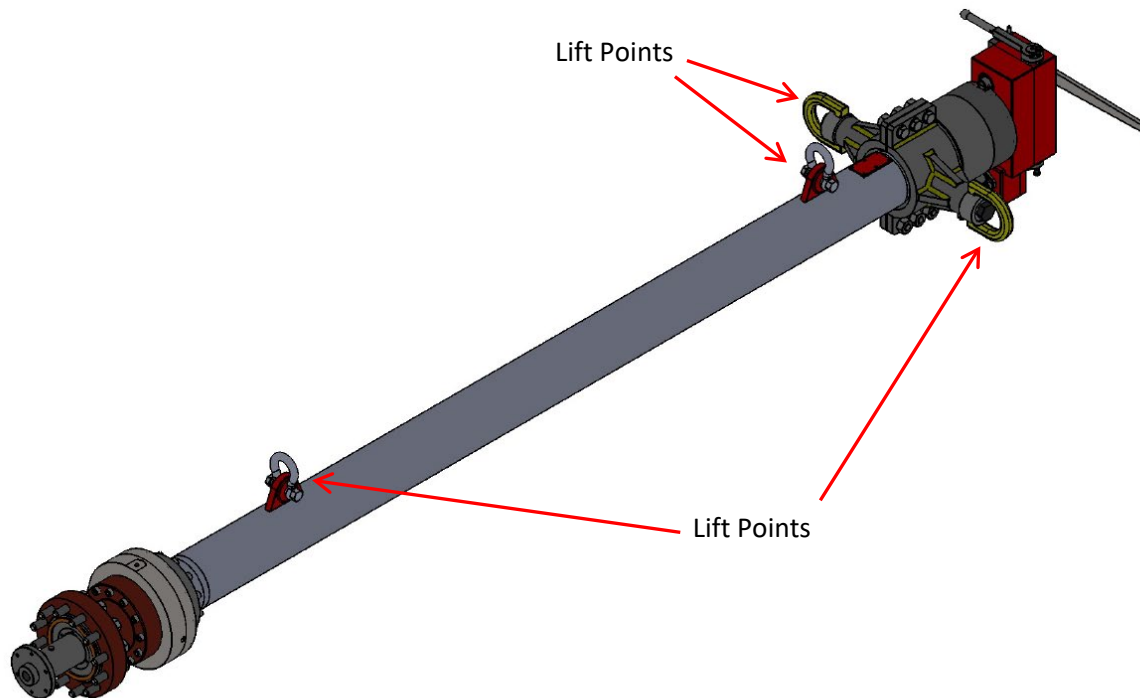
If the pilot drill does not have a flanged end, the drill is directly screwed into the cutter adapter. The cutter should be secured to the cutter adapter using all six bolts.

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

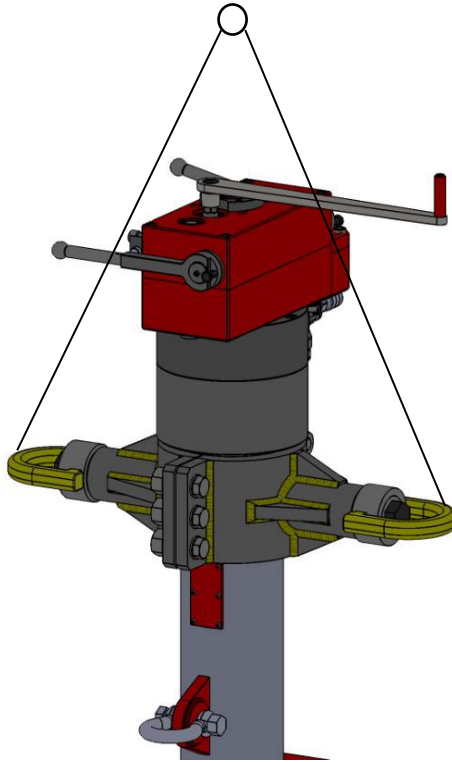


5.2. Lifting

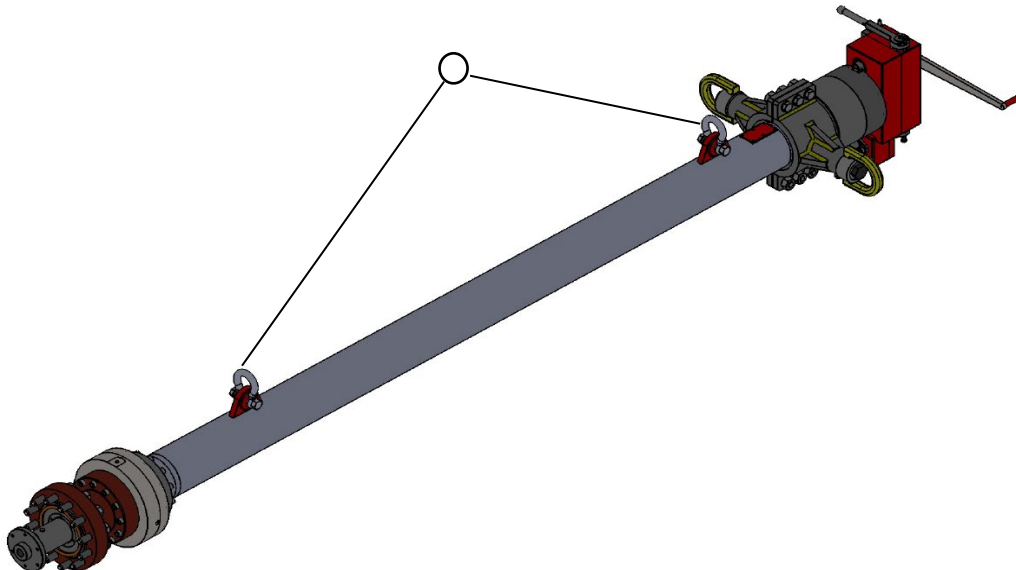
The MHT hot tapping machine is lifted & installed using a combination of four Lift Points mounted along the body of the machine as can be seen below.



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:

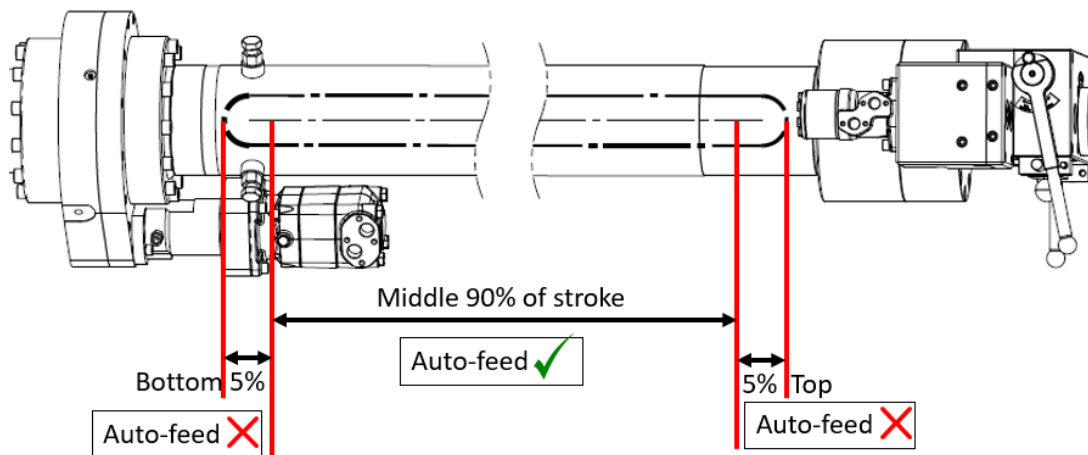
- The operator must be trained and conversant with the Enerpac MHT machines.
- The operator to be able to identify the correct and incorrect use of static or portable machines
- Comply with all local and internationally recognised safe use of powered machines

6. Machine Operation

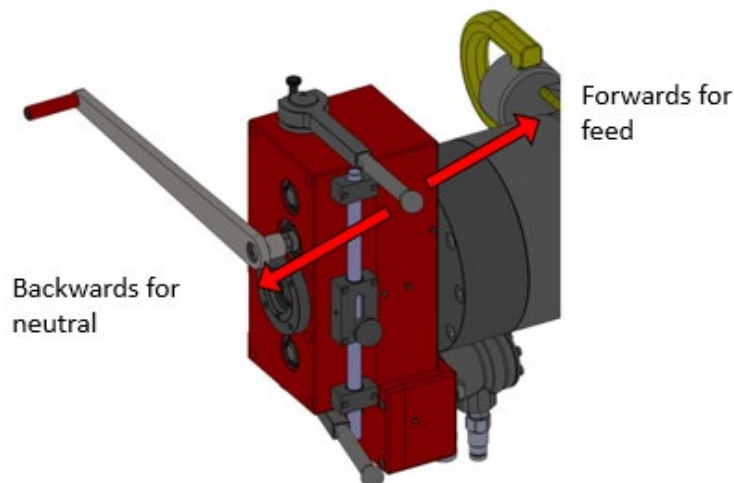


Note: Before turning the hydraulic motor on ensure the 'Crank Handle' is removed or the gear lever is in the neutral position otherwise this will rotate when the motor is turned on.

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.

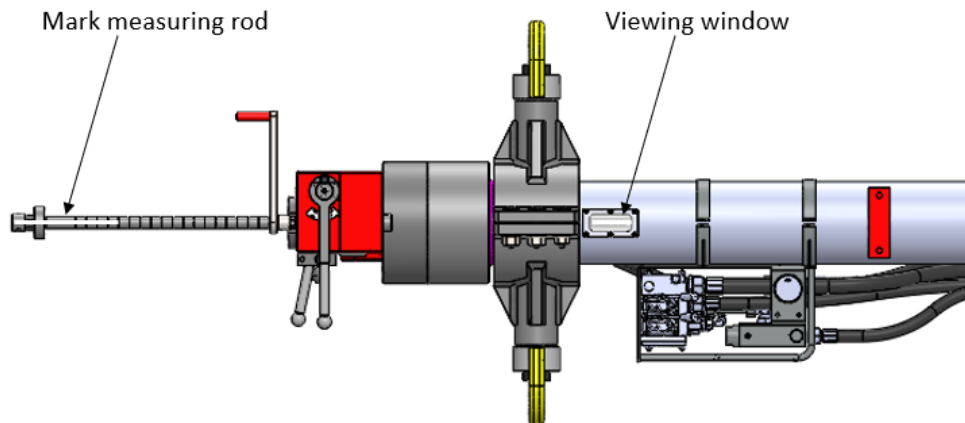


1. To position the cutter & pilot drill assembly prior to cutting, turn the 'Crank Handle' anti-clockwise with the gear lever pushed backwards, the motor turned off & the 'Gate Valve' open until the pilot drill stops when it hits the pipe. Turn the 'Crank Handle' the opposite direction for half a turn 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.**



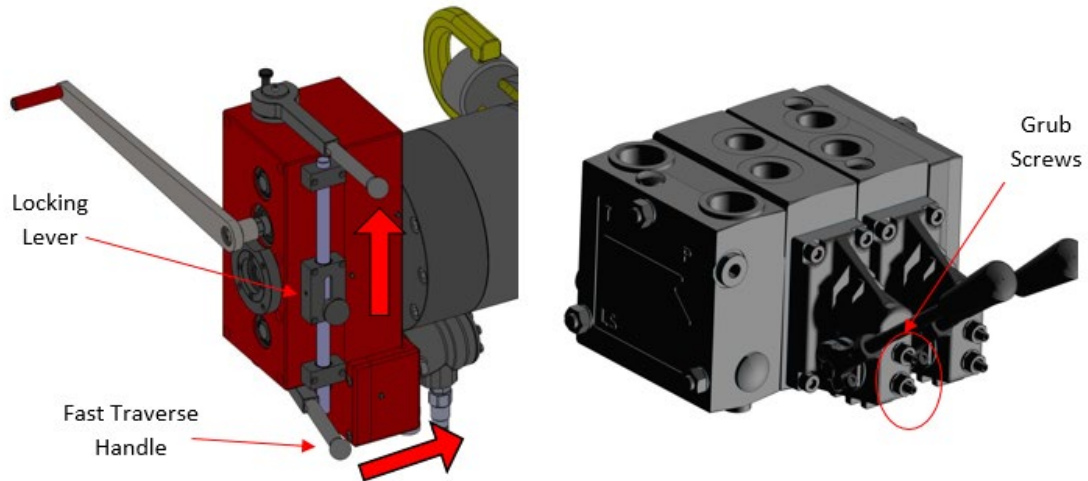
3. Start the cutter rotation by engaging the hydraulic motor, the cutter will now be rotating but not feeding towards the pipe.

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.

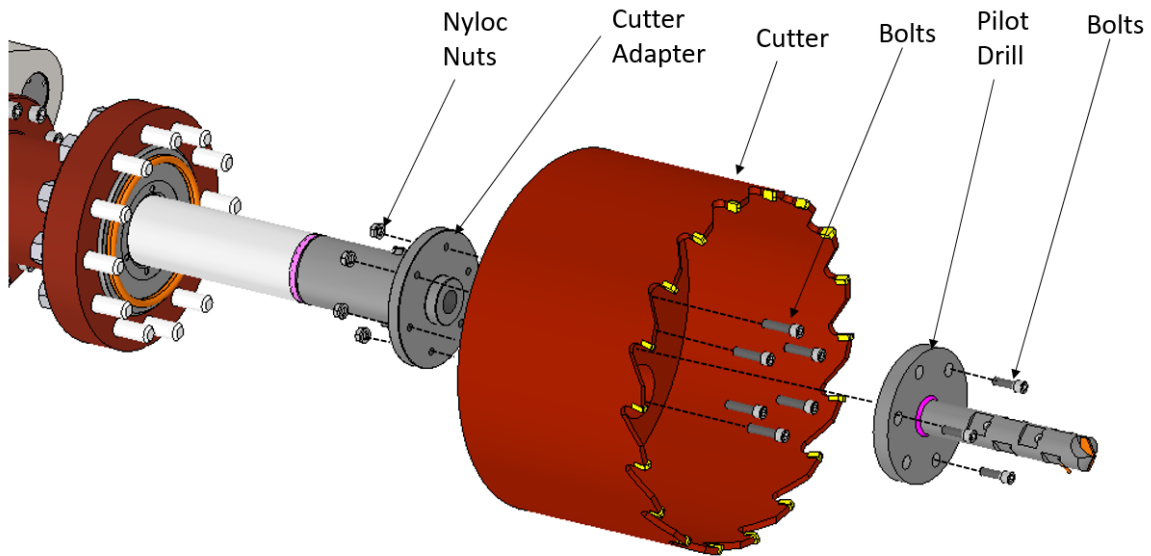


7. Completion Plug Installation Guidance

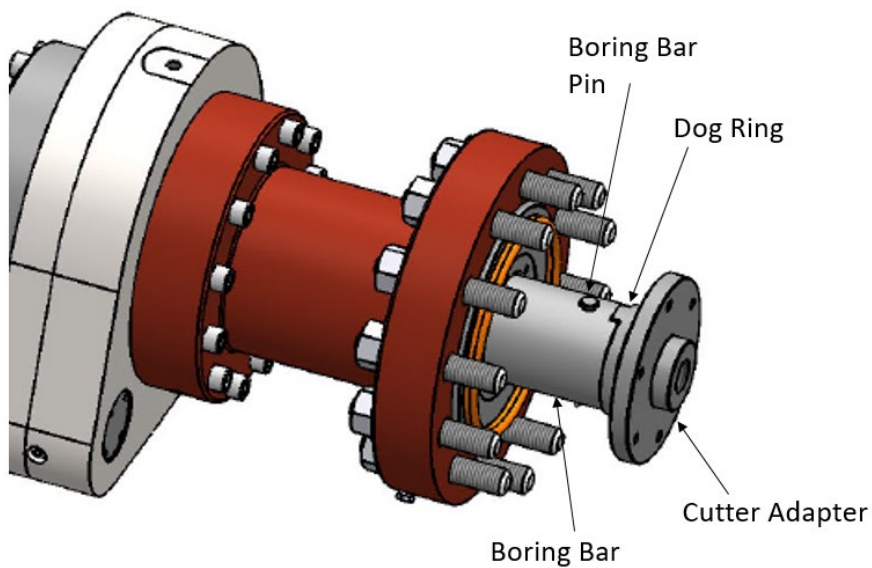
The hot tapping machine can be used to install a completion plug which is used to seal the opening branch in the pipeline used by the cutting operation of the hot tapping machine.

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

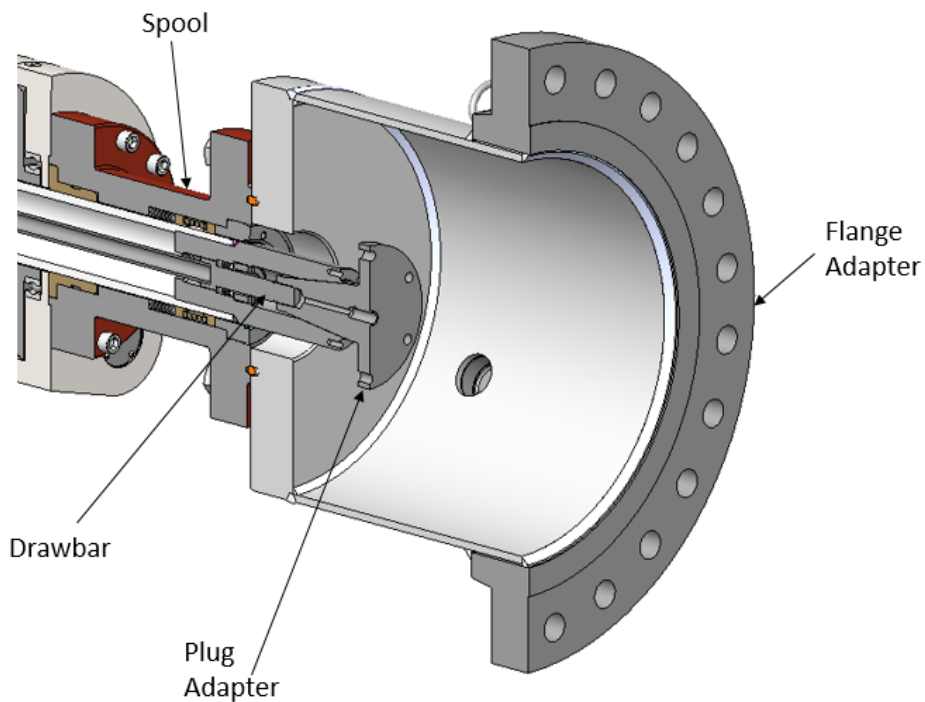
The Cutter and pilot drill is removed from the cutter adapter by unscrewing the bolts and Nyloc nuts.



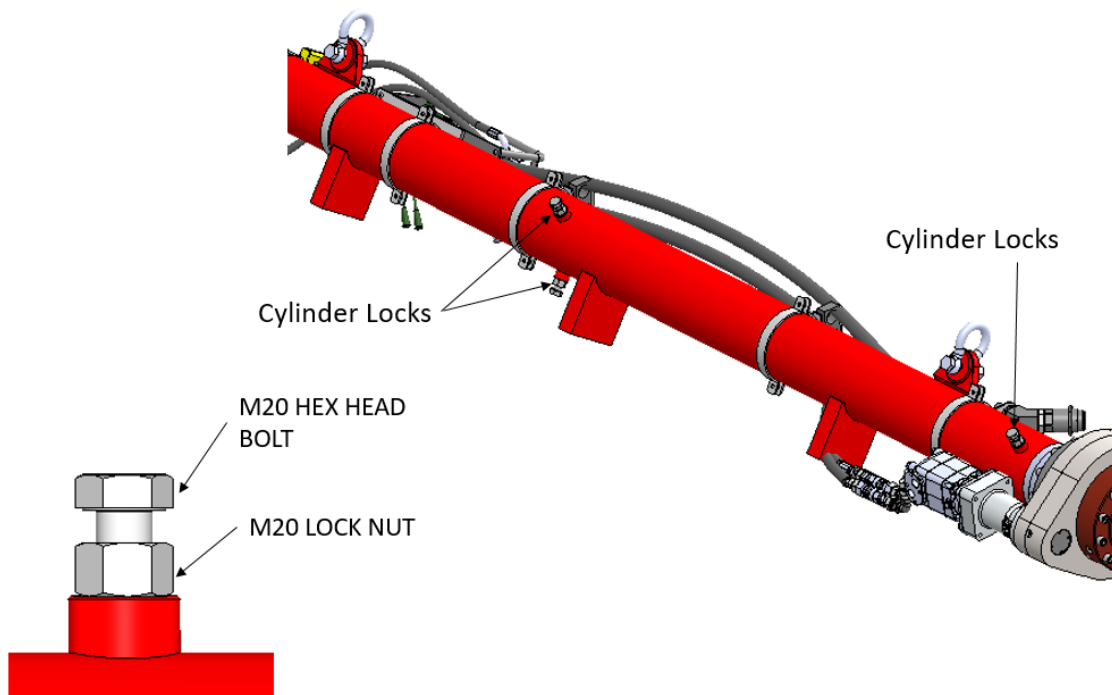
The cutter adapter should then be detached by removing the boring bar pin and then unscrewing the cutter adapter from the drawbar. The dog ring should also be removed.



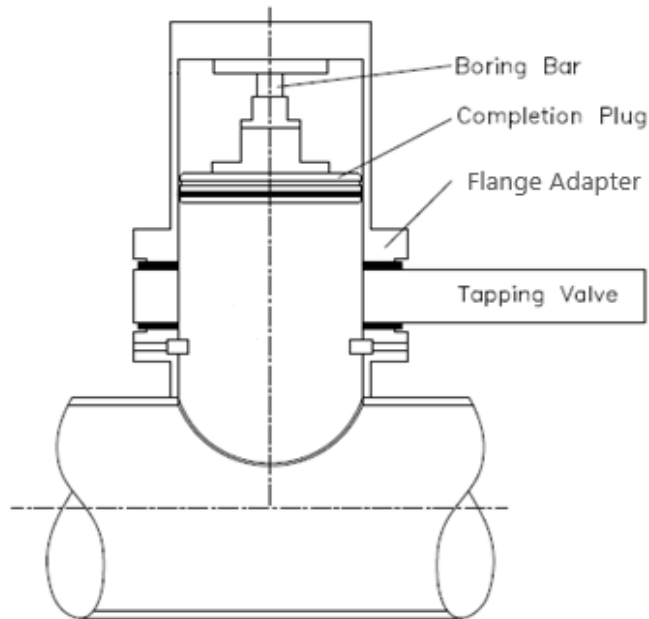
Fit the required size flange adapter to the spool end. The plug adapter can now be installed. Use the measuring rod to rotate the drawbar into the plug adapter. Do not overtighten.



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.

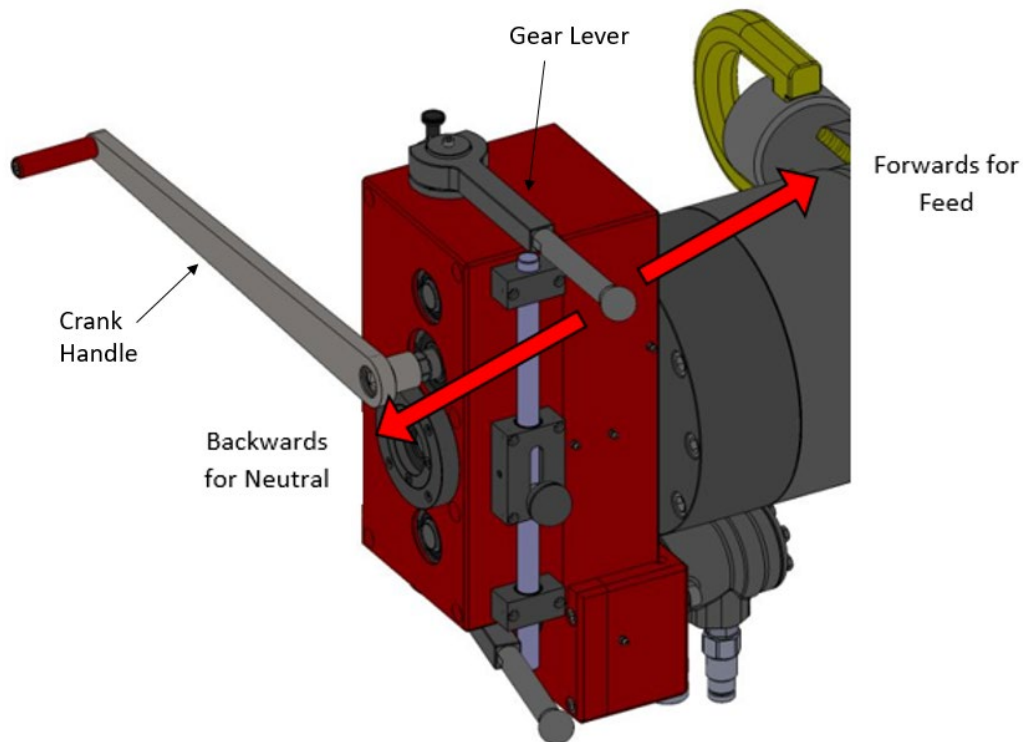


Fit the completion plug to the plug adapter, and securely remount machine to the gate valve.

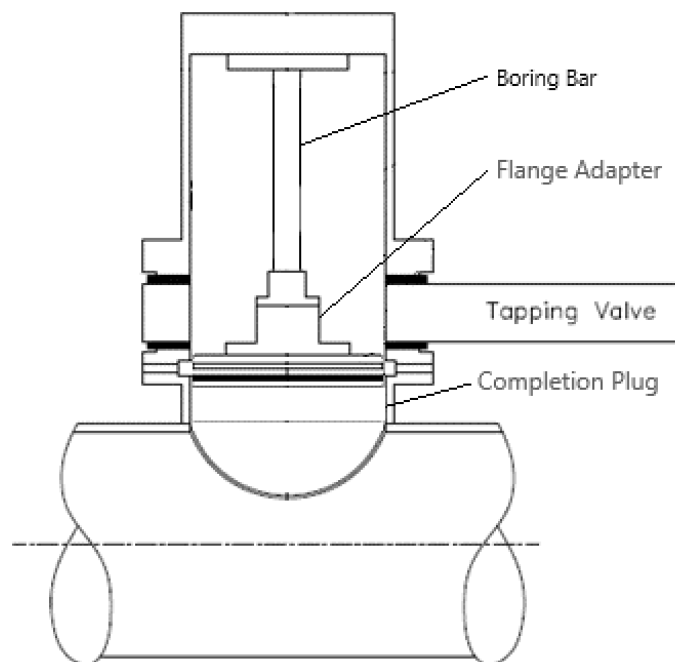


If available, the fast traverse can be used to position the plug into the gate valve branch for 95% of the distance – refer to section 6, machine operation – on guidance of using the fast traverse.

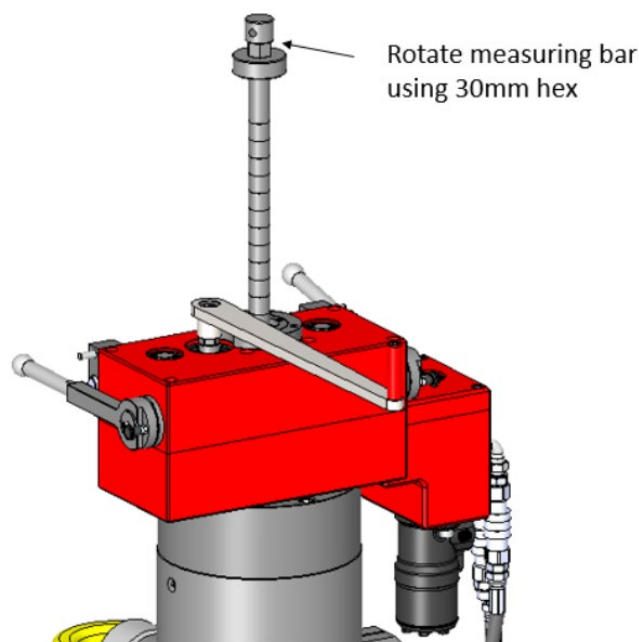
For the final 5%, use the 'Crank Handle', turning it anti-clockwise with the gear lever pushed in the neutral position and the motor turned off.



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



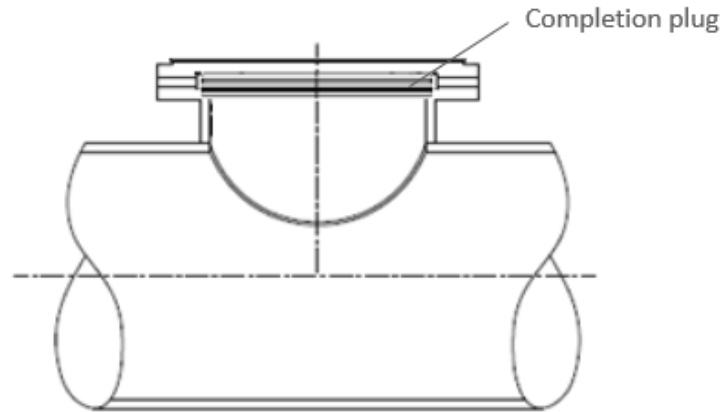
Once the plug is secured satisfactorily, the plug and plug adapter are separated from the hot tapping machine by using the measuring bar to unscrew the drawbar from the plug adapter. Continue to rotate the measuring bar until the plug is detached.



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.

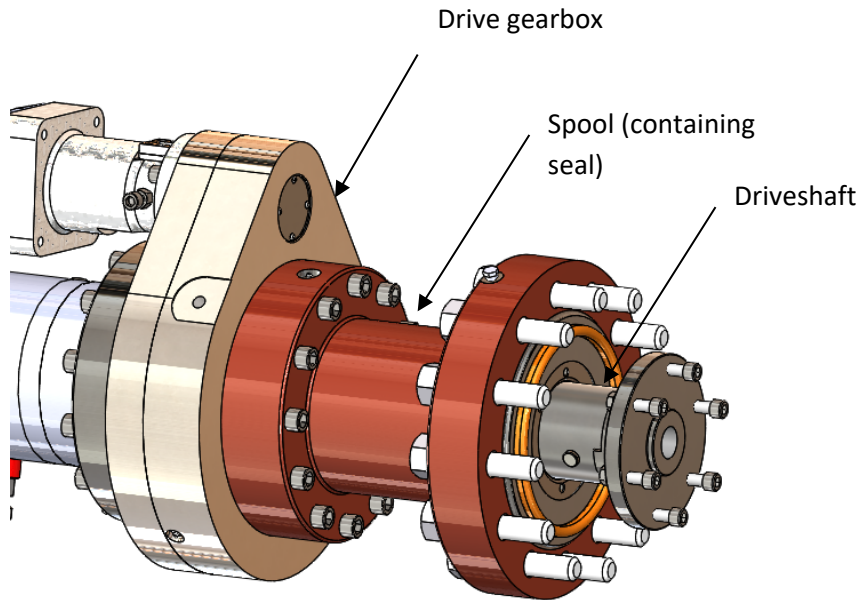
8.1. Maintenance

- 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

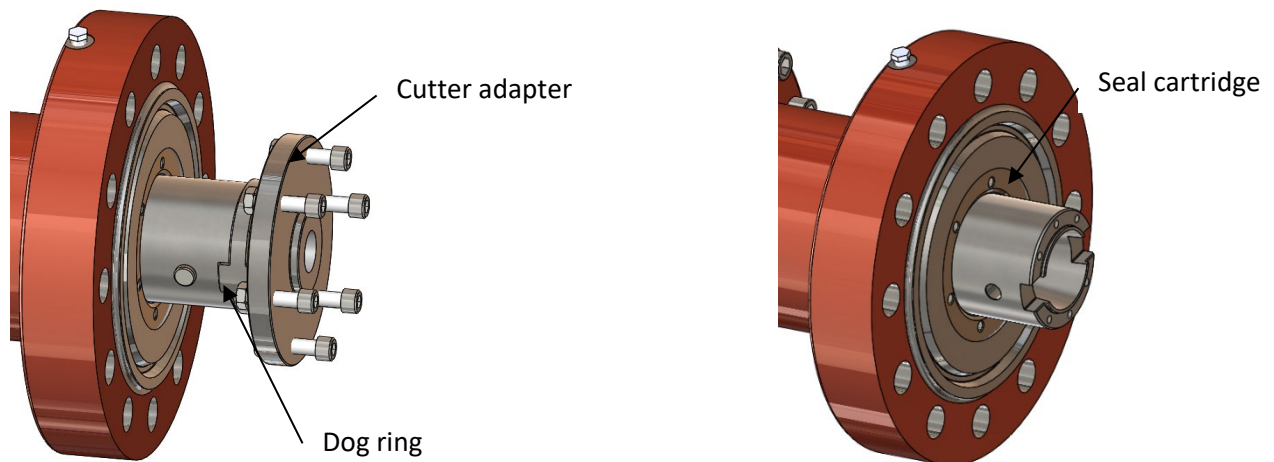
8.2. Seal Replacement Procedure

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.

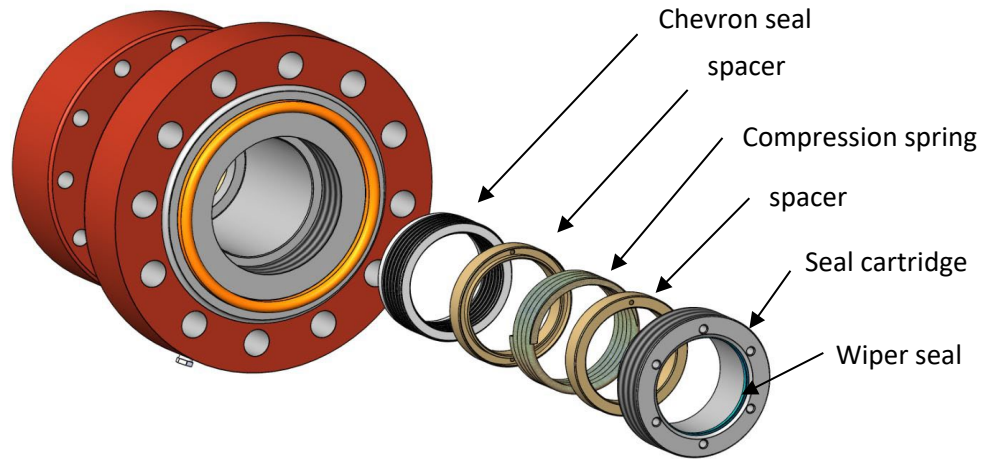


1. Before removing the spool from the drive gearbox, ensure that the cutter holder and dog ring have been removed from the driveshaft.

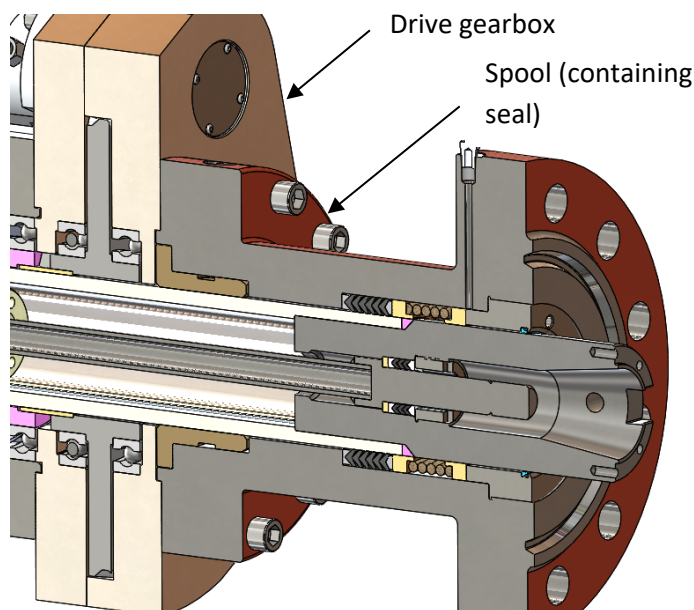


2. Then slightly loosen the seal cartridge using a face spanner (p/n 95350.W0201). Note that this is a left-hand thread.
3. Unbolt the spool assembly from the drive gearbox, and carefully remove the spool from the drive shaft.

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.

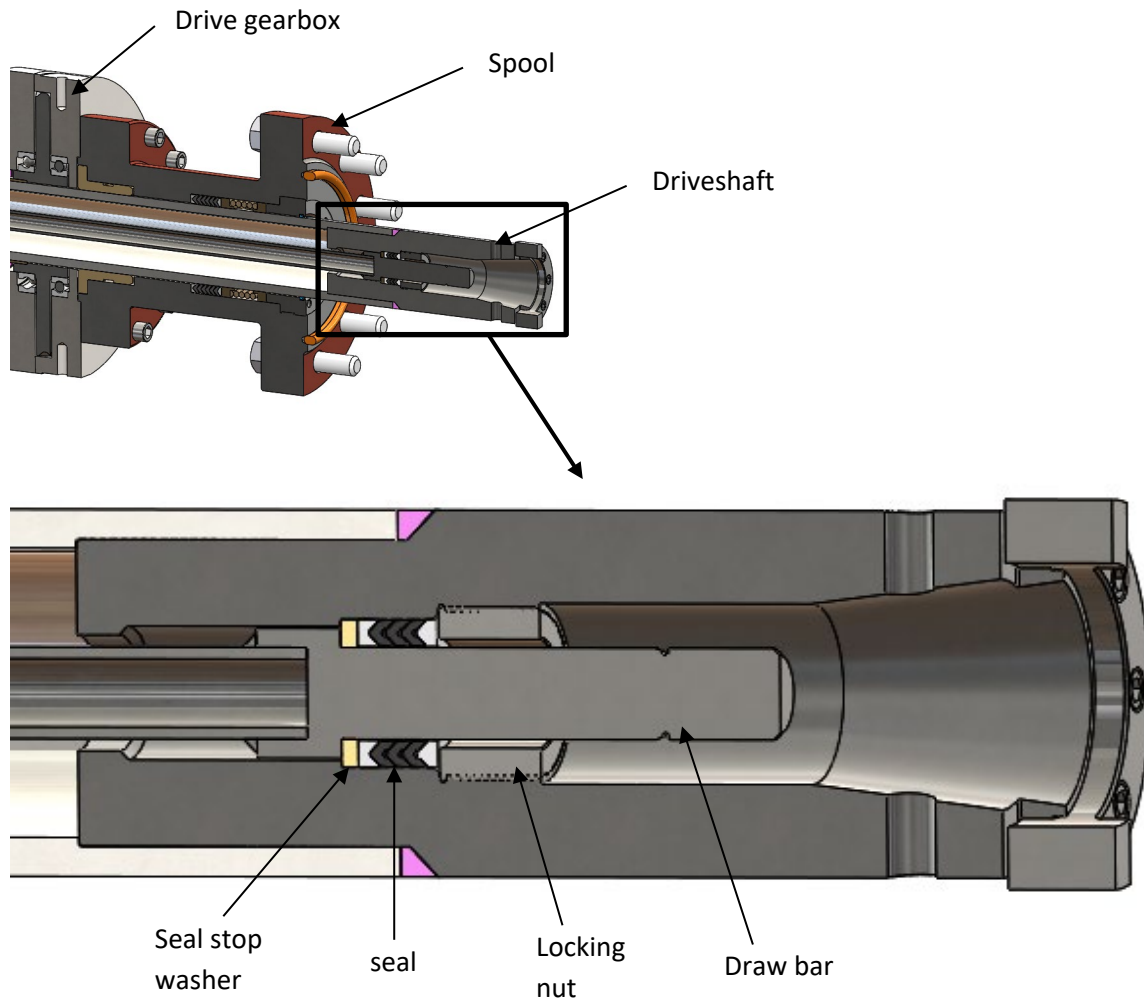


7. As the new seal is positioned in the spool, oil the individual components and ensure the chevrons are facing the same direction as shown on the machine general assembly drawing.
8. Replace wiper seal within the seal cartridge (SWAN2204000-FLN2V).
9. Then replace the remaining components as shown above.
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.

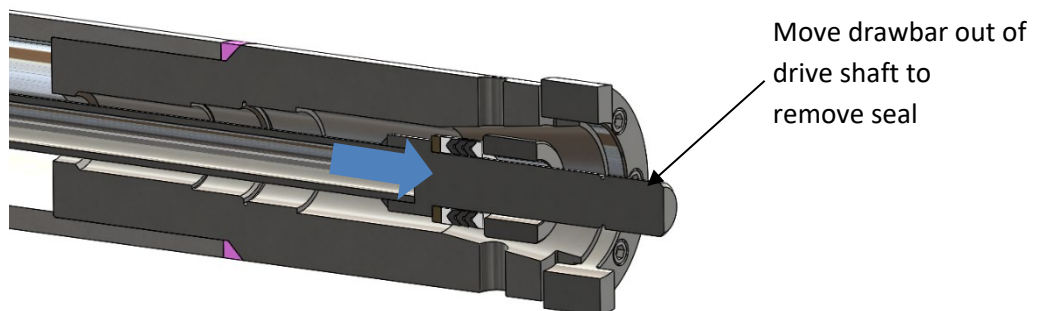


8.2.2. Replacing the drawbar seal

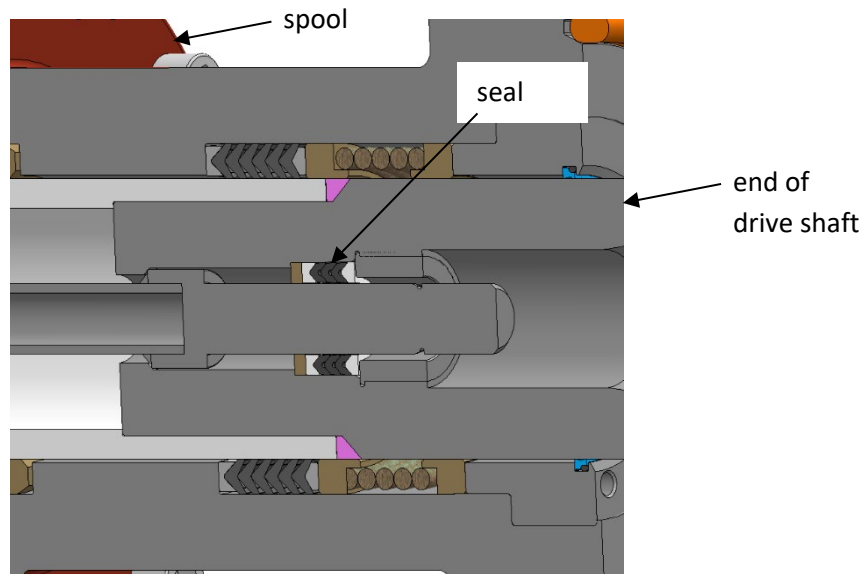
The drawbar seal can be found in the drive shaft as shown below.



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;

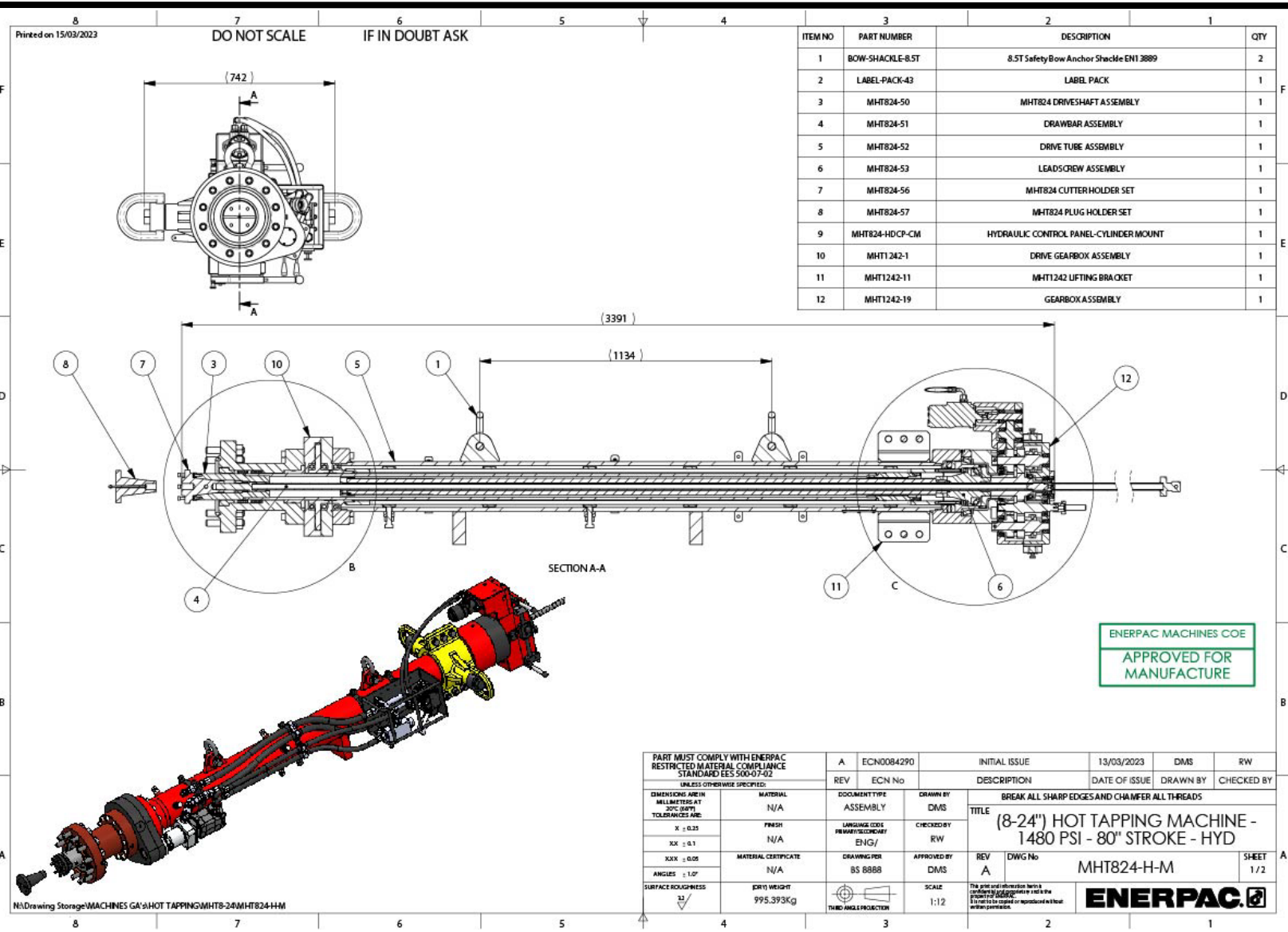
The hydraulic controls for the drive motor have grub screws which prevent the use of the drive motor to reverse the cutter out – this is to stop the cutter tips from being stripped from the cutter. If all other methods have been exhausted, then adjust those grub screws to allow the drive motor to reverse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

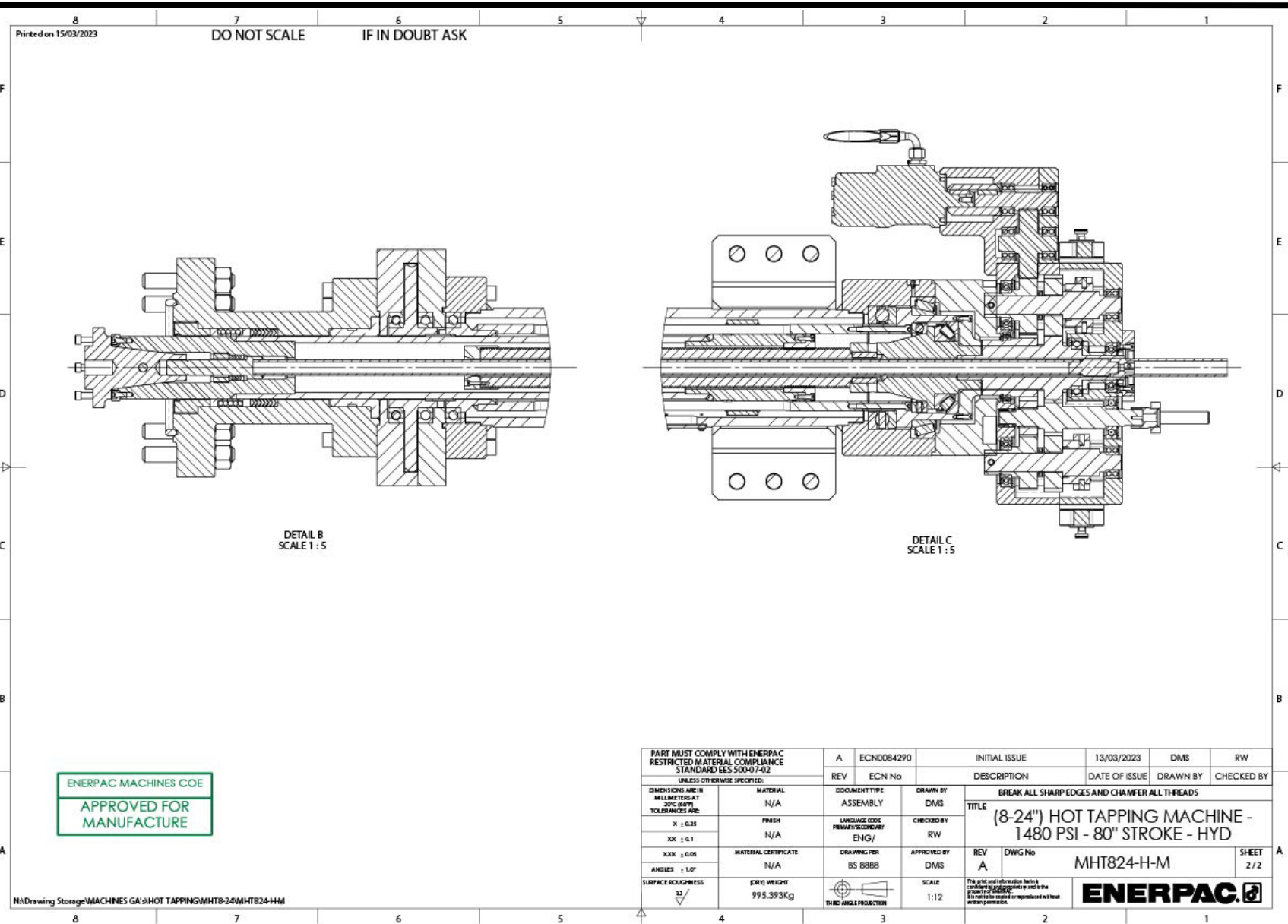
10. General Assembly Drawings

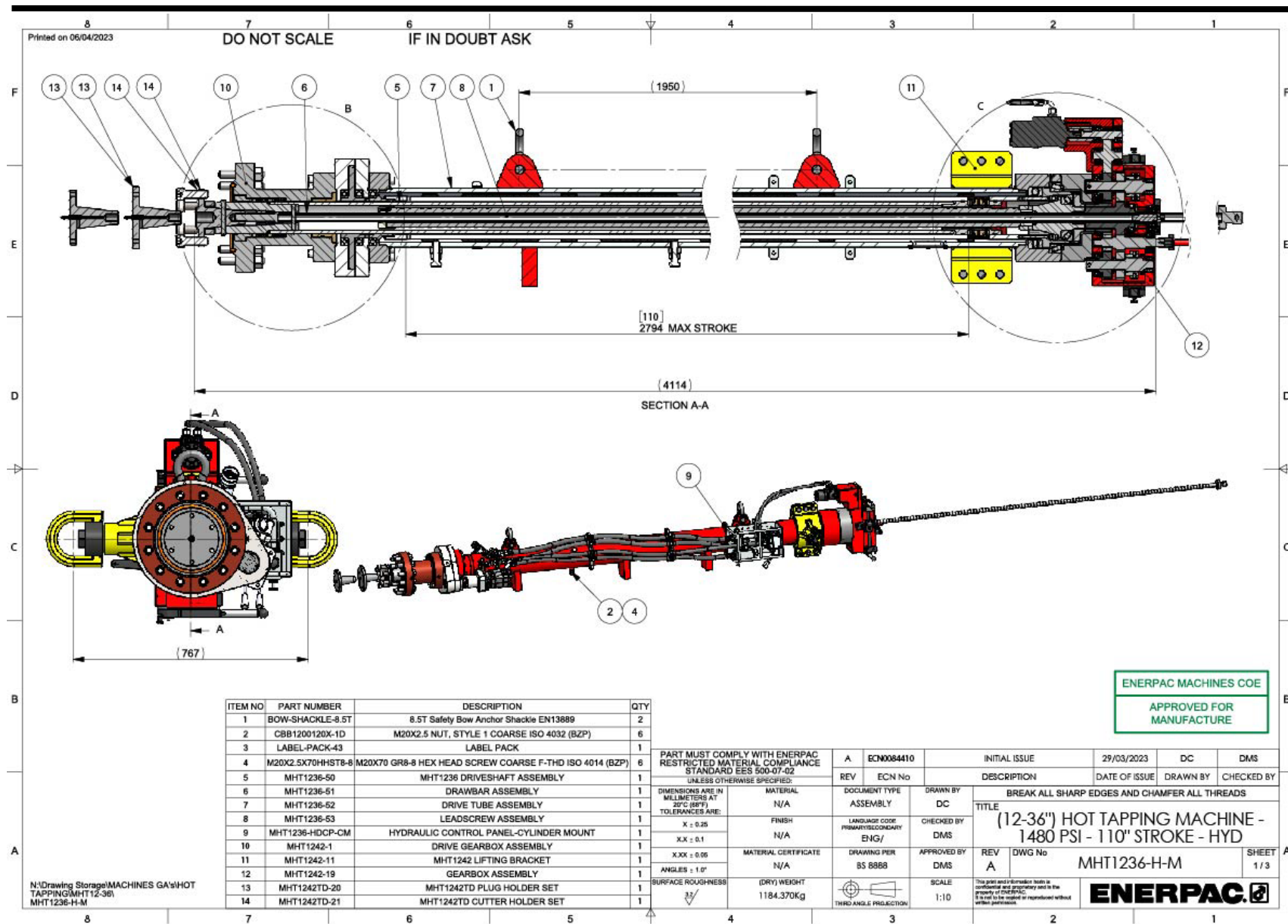
The table below can be used as a quick reference to the drawings provided in this section.

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



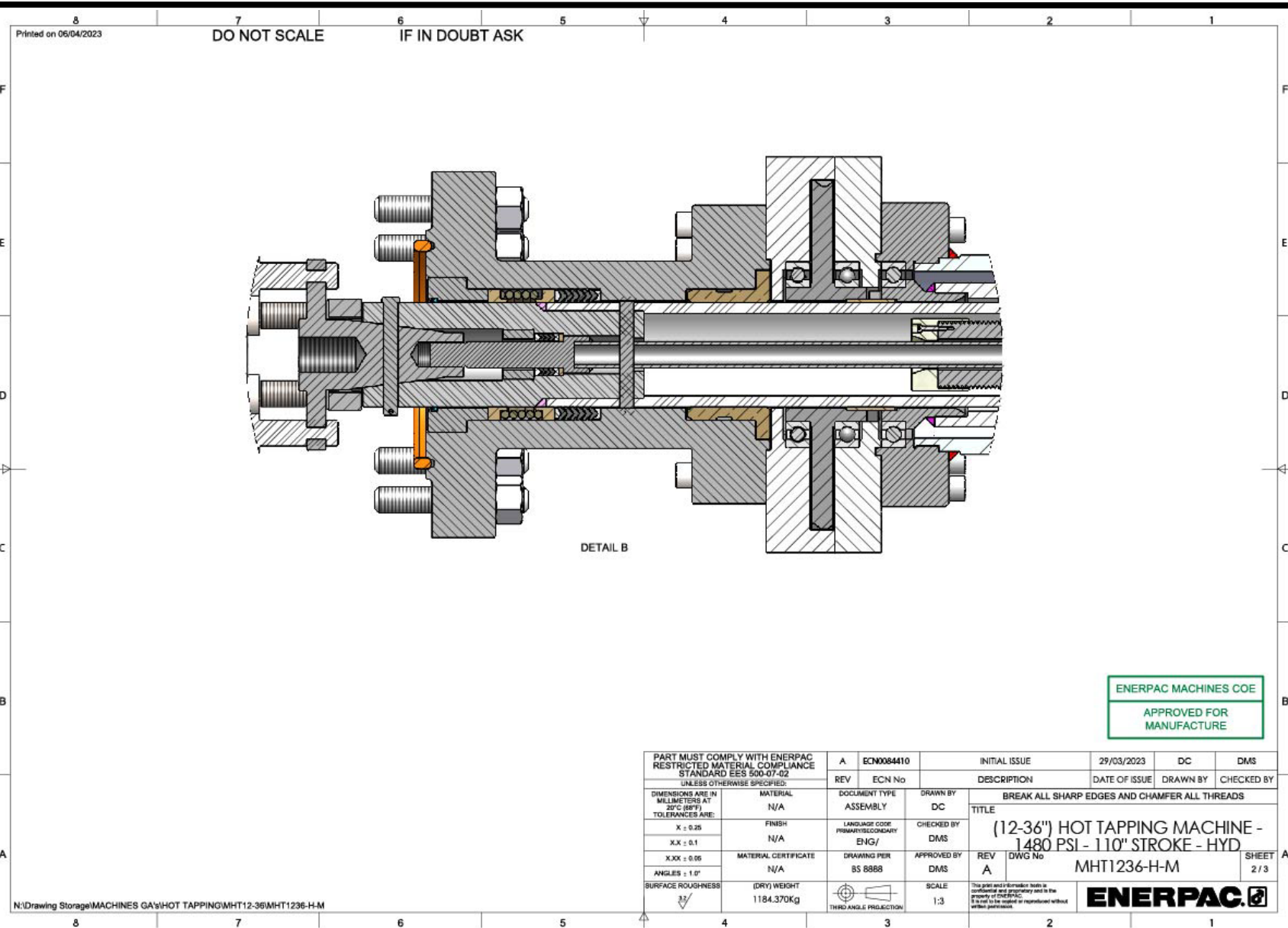


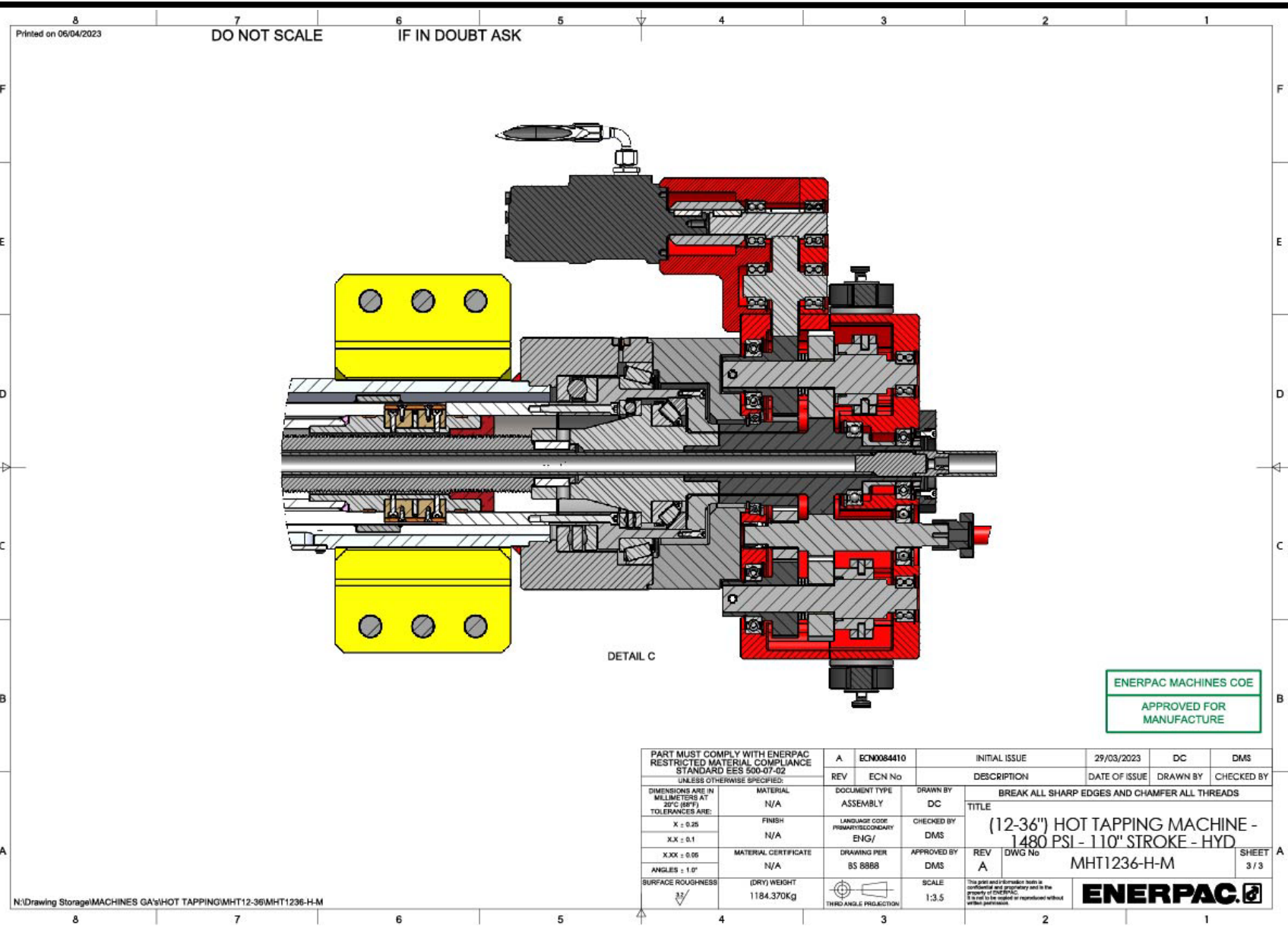


Doc: MML265

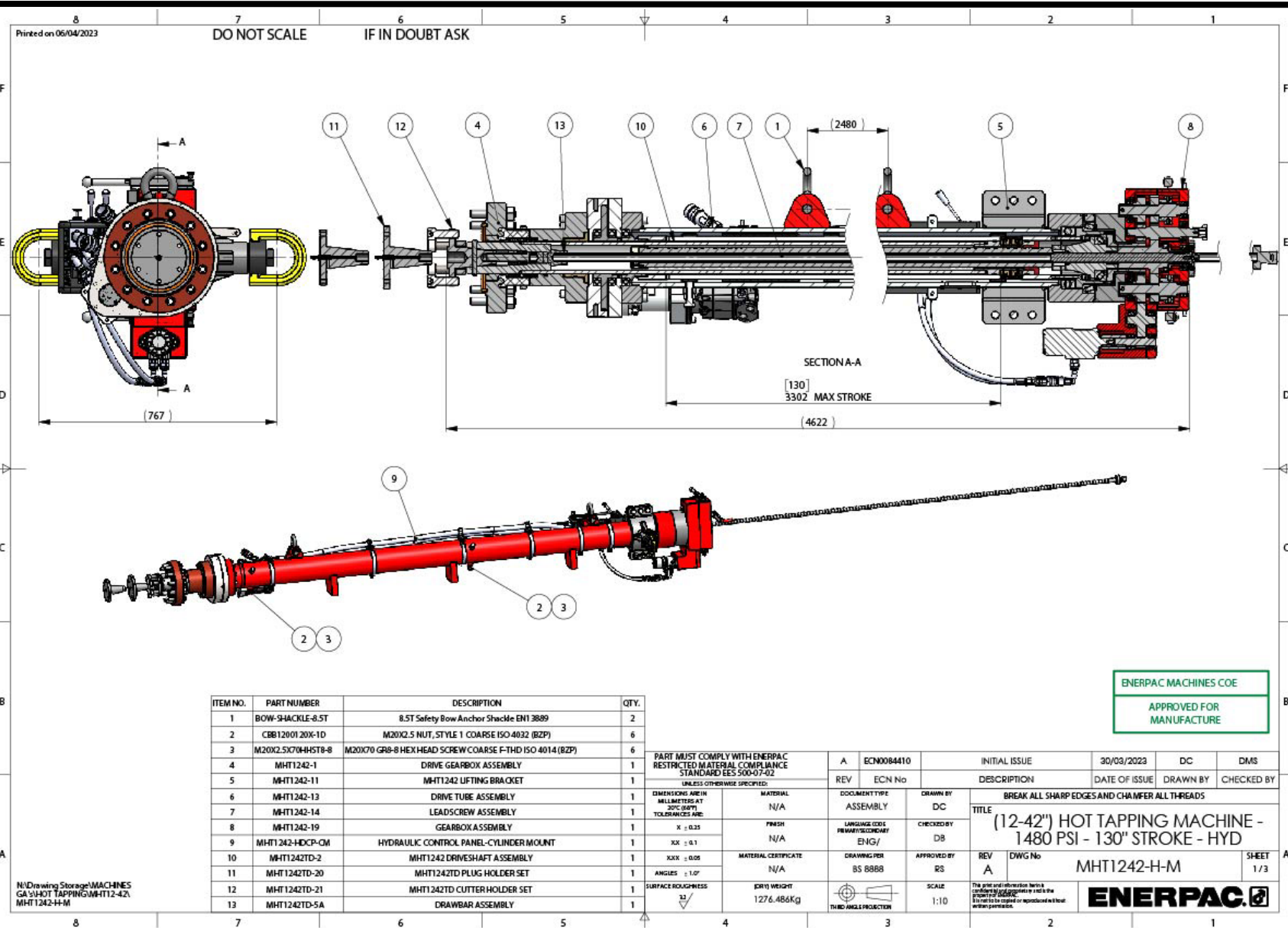
Issue: 004

Issue Date: 13.06.2013





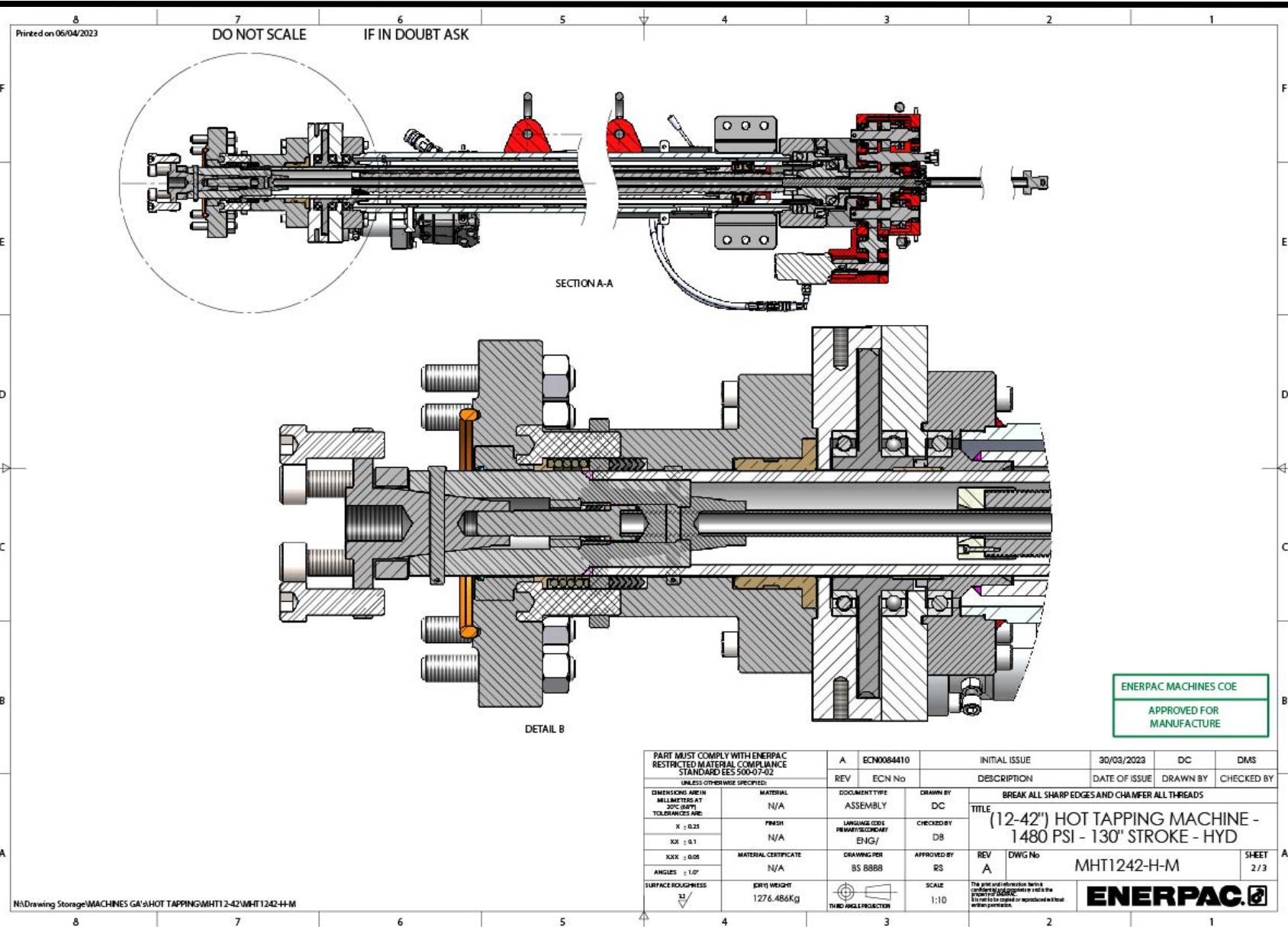
Doc: MML265 Issue: 004 Issue Date: 13.06.2013



Doc: MML265

Issue: 004

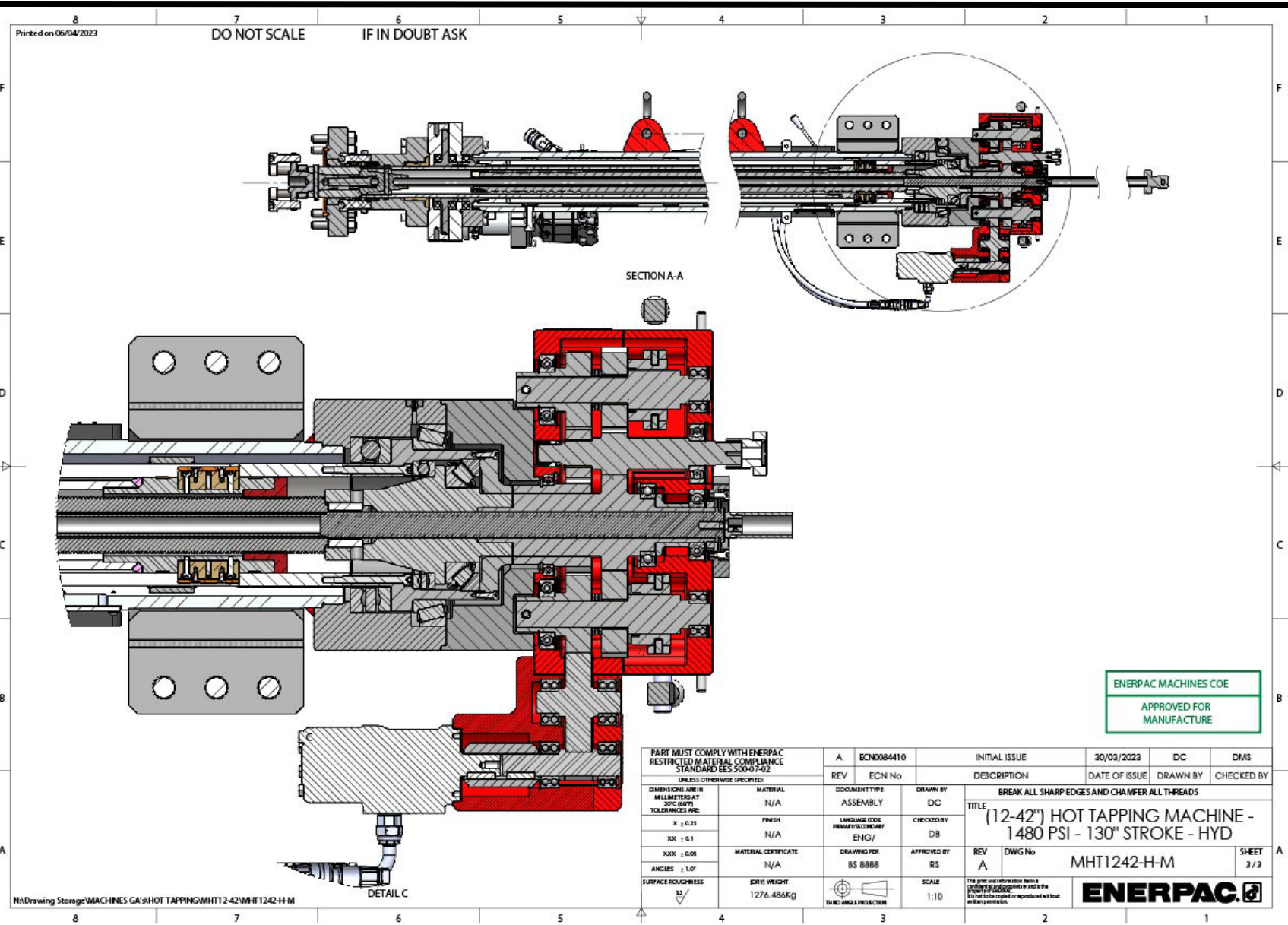
Issue Date: 13.06.2013



Doc: MML265

Issue: 004

Issue Date: 13.06.2013

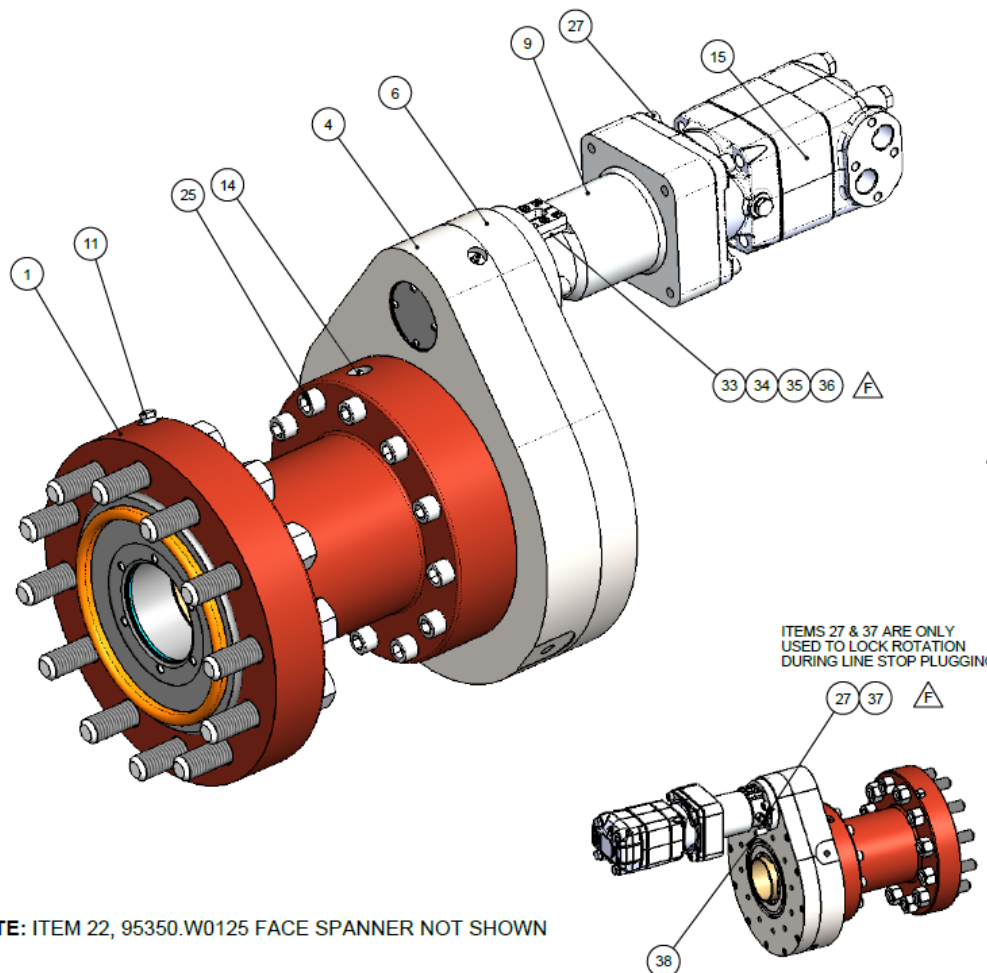


Doc: MML265 Issue: 004 Issue Date: 13.06.2013

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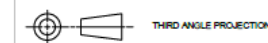


NOTE: ITEM 22, 95350.W0125 FACE SPANNER NOT SHOWN

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	CHRRS17-SWAN-200UG-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 01/04/2016
CHECKED BY BC 21/01/2016
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

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Doc: MML265

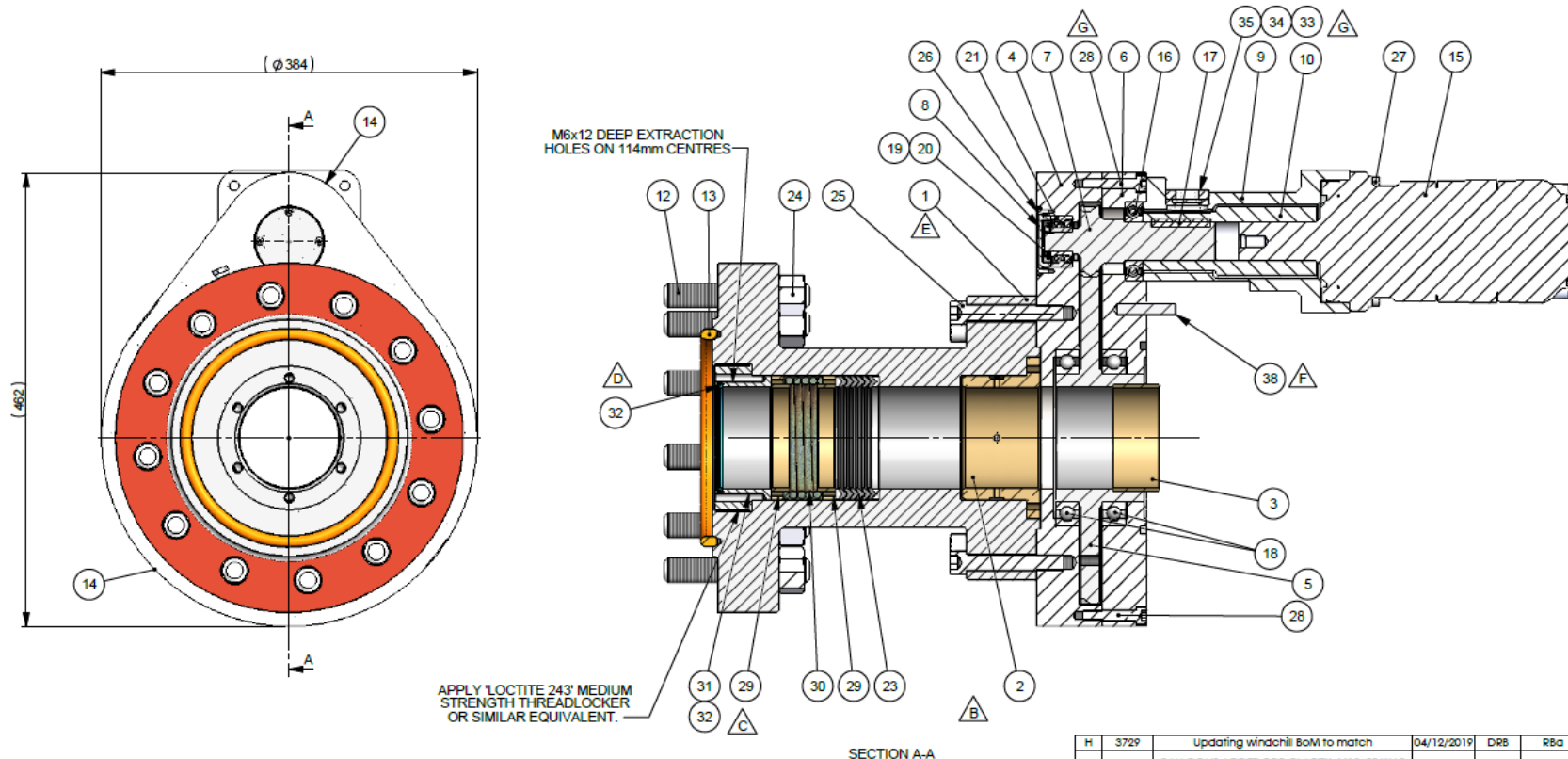
Issue: 004

Issue Date: 13.06.2013

Printed on 04/12/2019

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SECTION A-A

MIRAGE MACHINES
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MANUFACTURE

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
REV.	INC.	DESCRIPTION	DATE	DRAWN BY	APPROVED



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WEIGHT 235.699kg
DRAWN BY BC 01/06/2016
CHECKED BY BC 21/01/2016
APPROVED BY

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PORTABLE PERFORMANCE

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E MAIL info@mirage-machines.co.uk

DRIVE GEARBOX ASSEMBLY
SCALE: 1:4

DWG NO MHT1242-1
SHEET 2 OF 2

A3

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Doc: MML265

Issue: 004

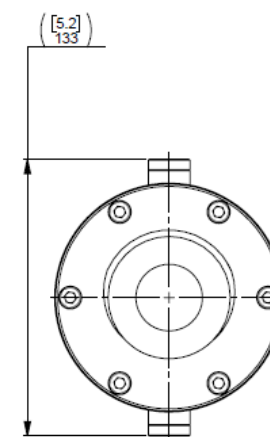
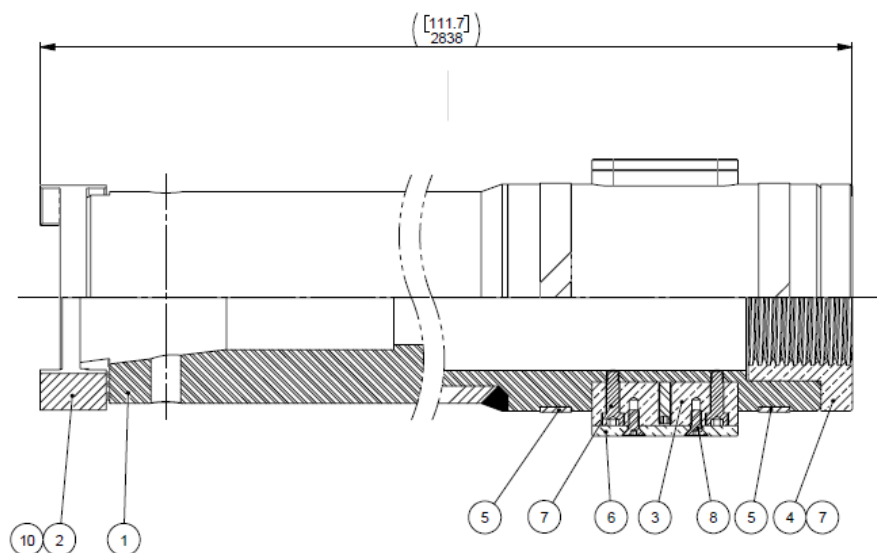
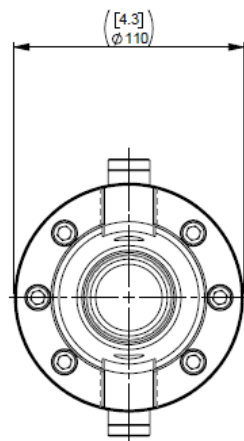
Issue Date: 13.06.2013

Printed on 17/02/2020

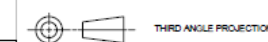
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MANUFACTURE



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	

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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

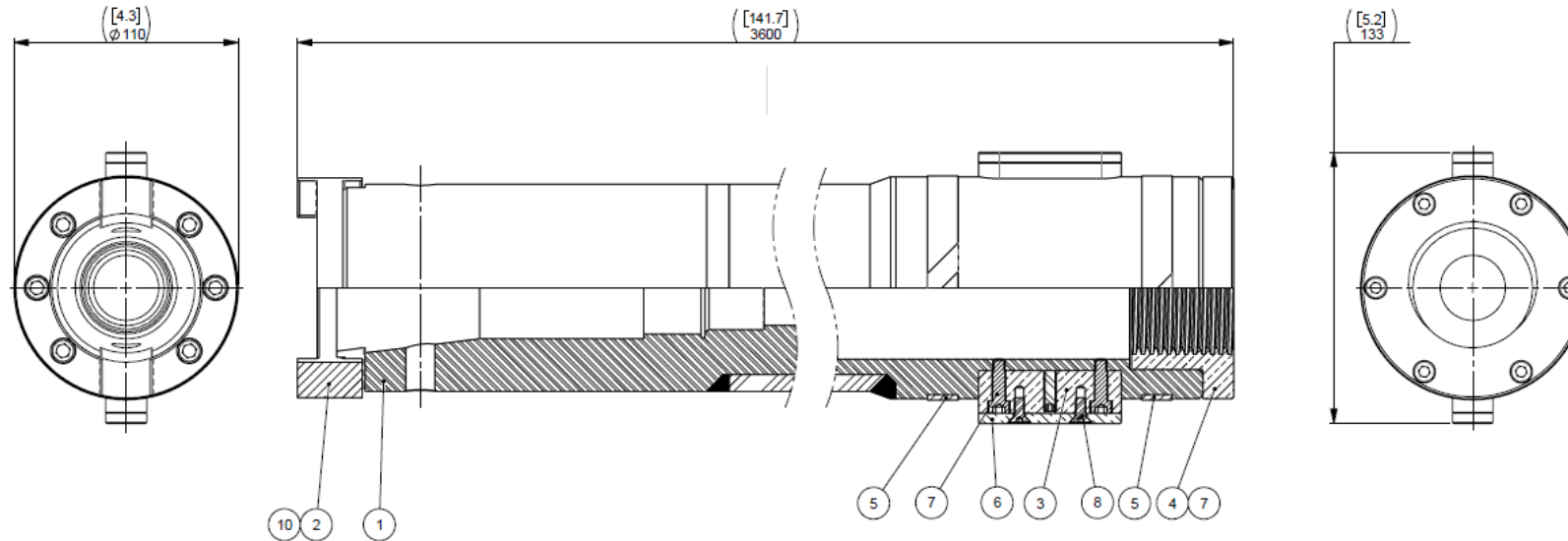
Issue: 004

Issue Date: 13.06.2013

Printed on 17/02/2020

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LAYOUT\MHT1236-1\MHT1236-50

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	CREATED 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

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

DWG No: MHT1236-50
SHEET 1 OF 1

A3

Doc: MML265

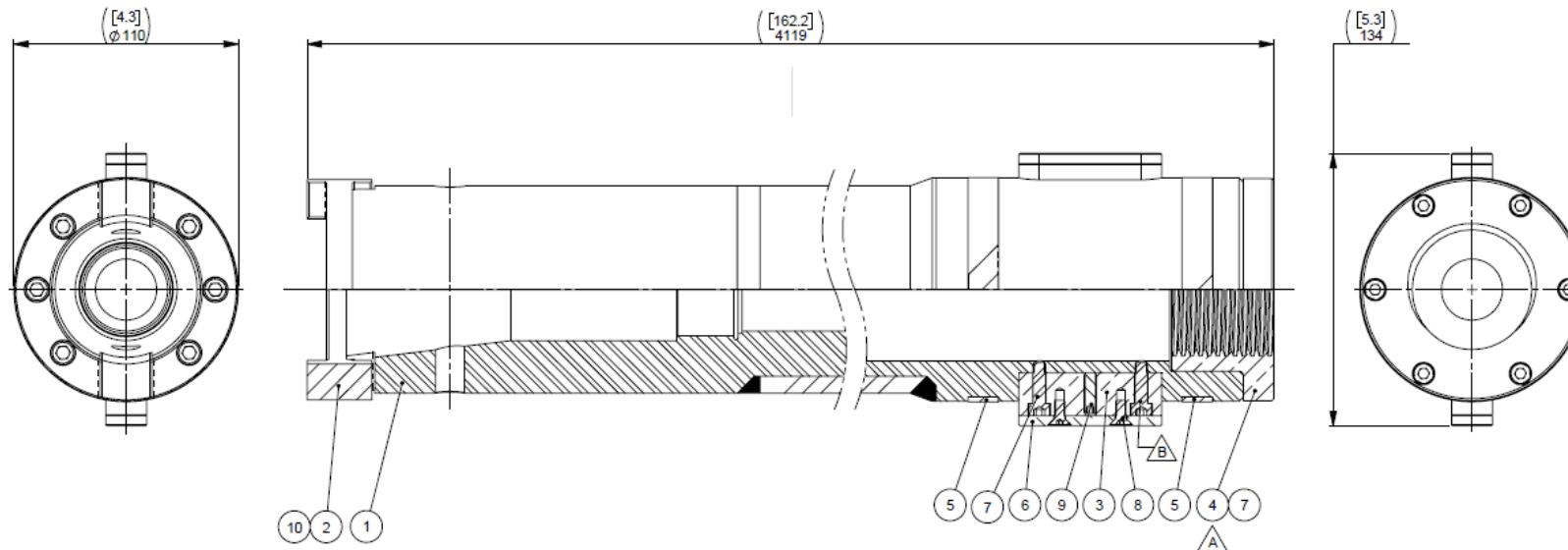
Issue: 004

Issue Date: 13.06.2013

Printed on 04-Apr-16

DO NOT SCALE

IF IN DOUBT ASK

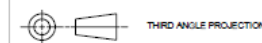


ITEM NO.	REV.	PART NUMBER	DESCRIPTION	QTY.
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2		MHT1242TD-2-004	DOG RING	1
3	B	MHT1242-2-006	DRIVE KEY	2
4		MHT1242-2-009	LEADSCREW NUT	1
5		14.90 x 2.5 x 1000	PISTON WEAR BAND	2
6		MHT824-2-010	TUFNOL CAP	2
7		M6 x 20	Hex Socket Head - BS EN ISO 4762	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
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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



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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

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: MHT1242TD-2
SHEET 1 OF 1

A3

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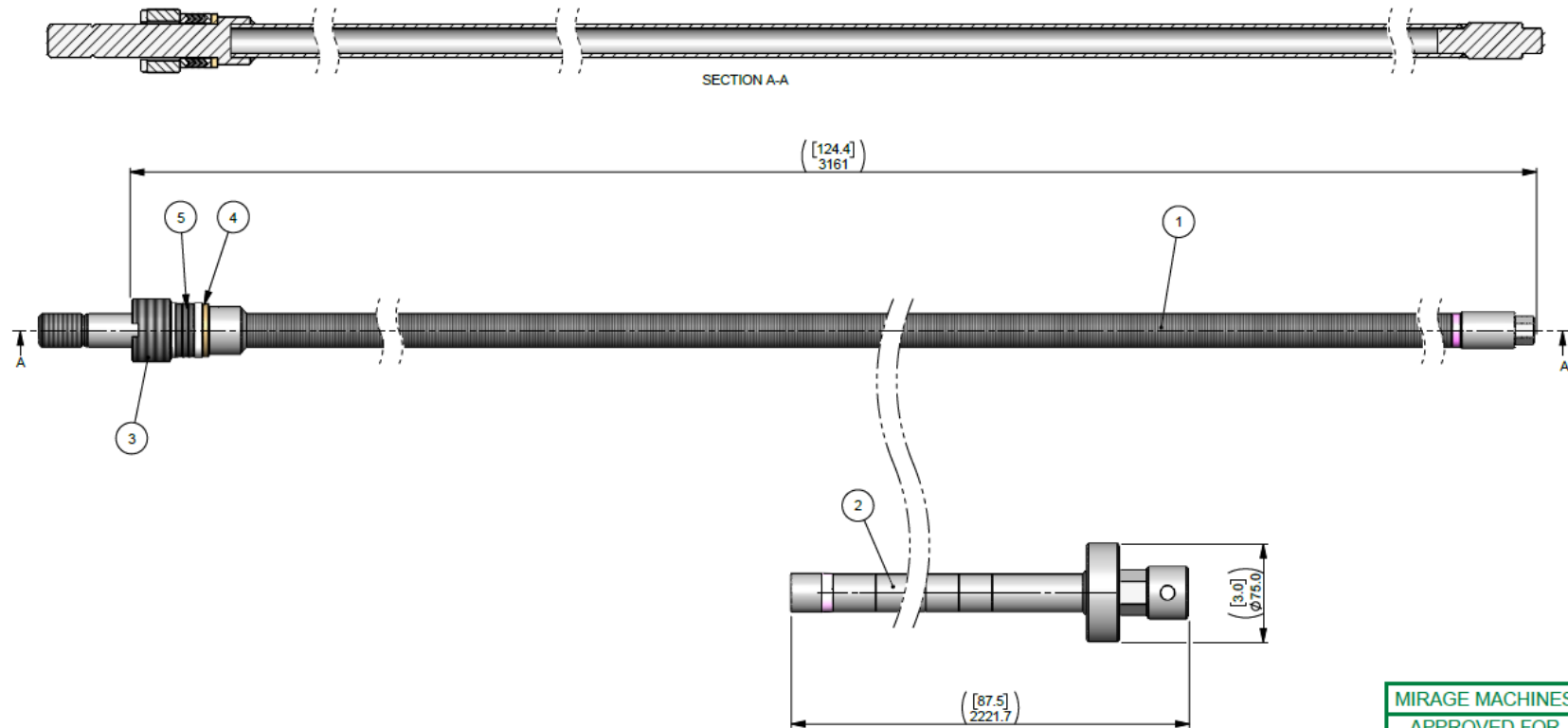
Issue: 004

Issue Date: 13.06.2013

Printed on 10/01/2020

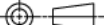
DO NOT SCALE

IF IN DOUBT ASK



MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

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		12.371kg				
DRAWN BY		DC	19/12/2019			
CHECKED BY		DMS	10/01/2020			
APPROVED BY		DMS	10/01/2020			
TITLE		DRAWBAR ASSEMBLY			MHT824-51	
		SCALE: 1:3		SHEET 1 OF 1		A3

N:\Drawing Storage\DESIGN PROJECTS\FY20\F20MP100271C5 - MHT824_MHT1236\Design\CAD
10/01/2020 10:00:00 MHT824-51

Doc: MML265

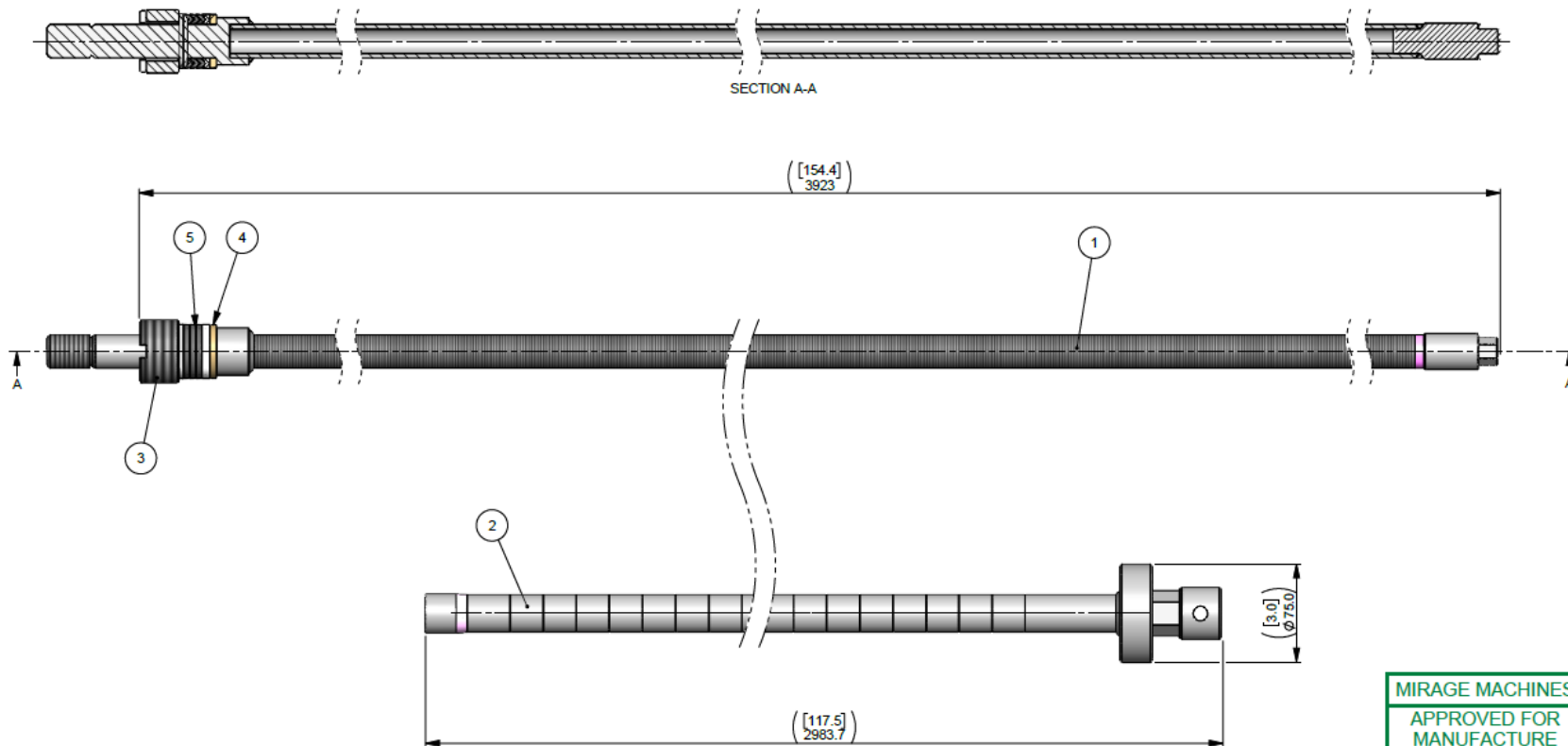
Issue: 004

Issue Date: 13.06.2013

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 25.4-40.7-23.5mm VITON / PTFE (2000degC)		1

A		INITIAL ISSUE		14/01/2020	DC	DMS
REV.	INC.	DESCRIPTION		DATE	DRAWN BY	CHECKED BY
		THIRD ANGLE PROJECTION				
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WEIGHT		15.289kg				
DRAWN BY		DC				
CHECKED BY		DMS				
APPROVED BY		17/01/2020				
TITLE		DRAWBAR ASSEMBLY				
SCALE		1:3				
DWG NO		MHT1236-51				
SHEET		1 OF 1				

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MHT1236-51.dwg

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 11/10/2019

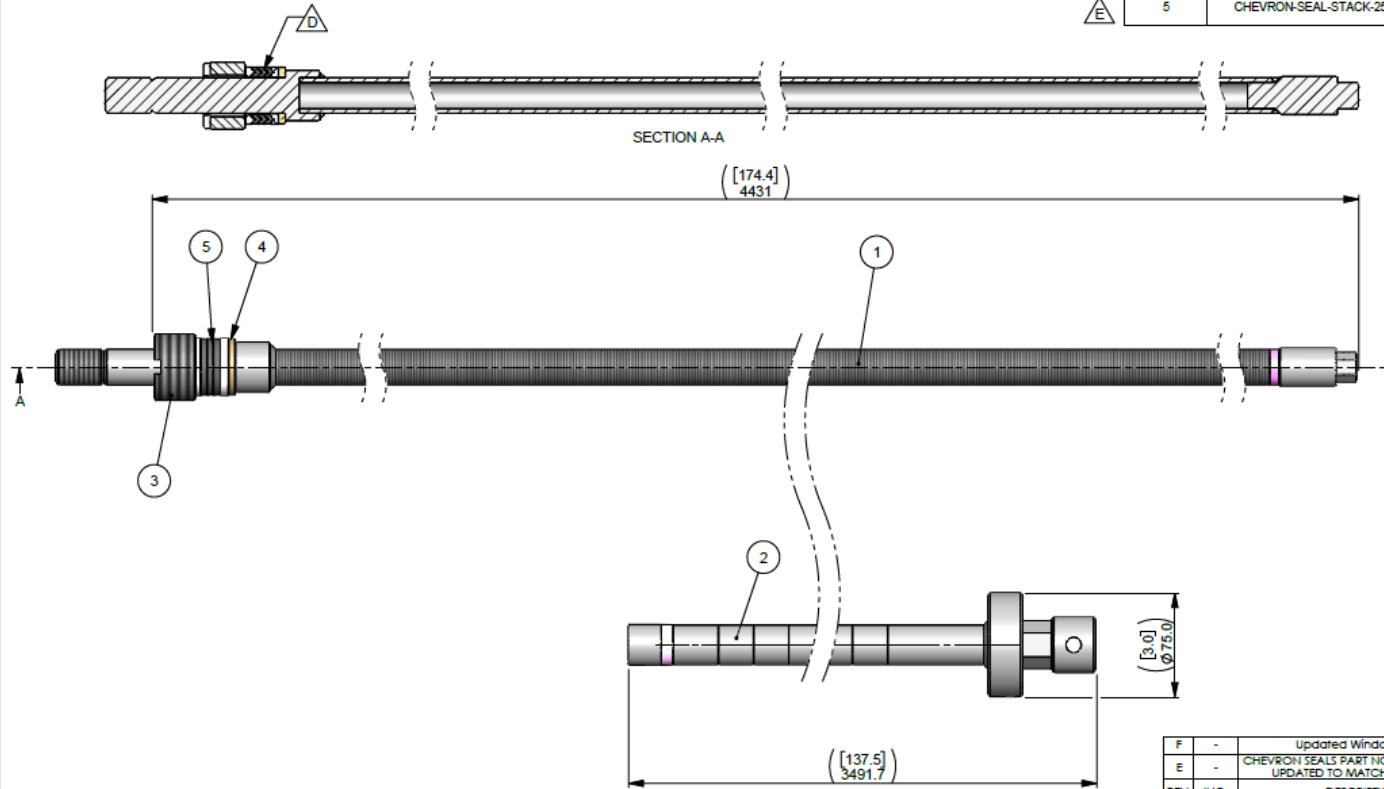
DO NOT SCALE

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 08/05/2018
APPROVED BY

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

TITLE
DRAWBAR ASSEMBLY
SCALE: 1:3

DWG No: MHT1242TD-5A
SHEET 1 OF 1

A3

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Doc: MML265

Issue: 004

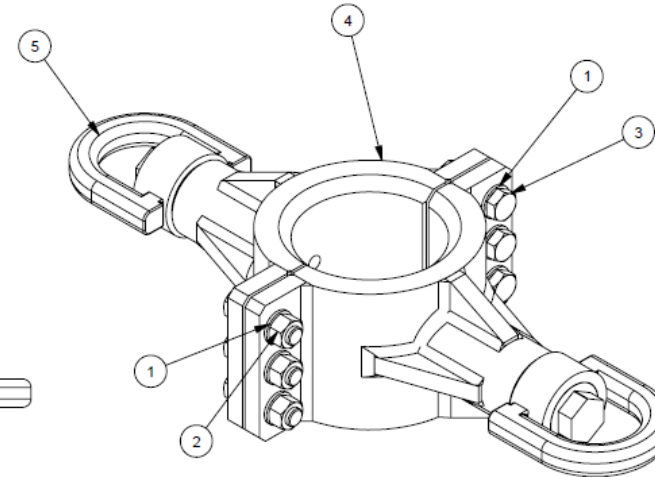
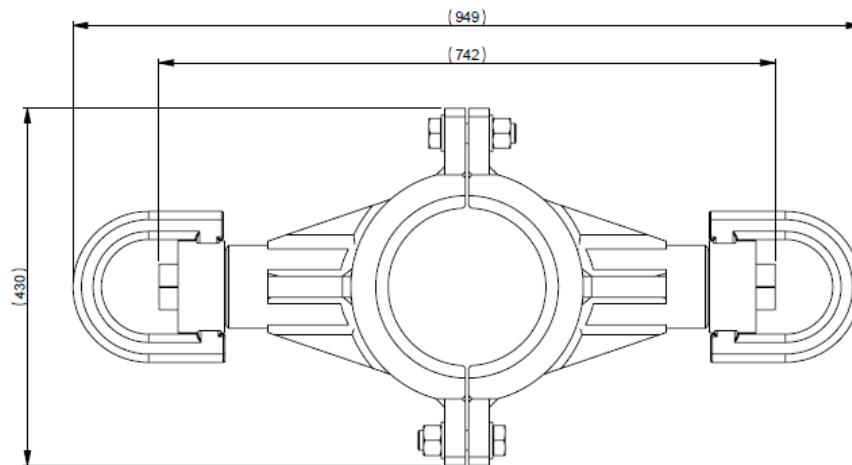
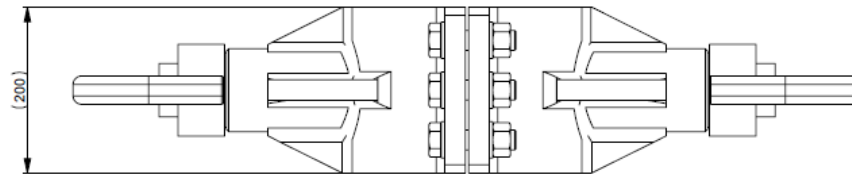
Issue Date: 13.06.2013

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



MIRAGE MACHINES
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MANUFACTURE

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

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

DO NOT SCALE

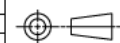
IF IN DOUBT ASK



APPROVED FOR
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	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

B		Window moved 185deg	20/03/2020	RBA	
A	-	Windchill release	14/01/2020	DC	
REV.	INC.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY



THIRD ANGLE PROJECTION

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WEIGHT	370.742Kg		
DRAWN BY	DC		25/04/2011
CHECKED BY	--		
APPROVED BY	--		

DRIVE TUBE ASSEMBLY
SCALE: 1:5

BREAK ALL SHARP EDGES AND CHAMFER ALL THREAD



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

MHT824-52
SHEET 1 OF 1

N:\Drawing Storage\DESIGN PROJECTS\FY20F20MP100271C5 - MHT824_MHT1236\Design\CAD Layouts\MHT824-Final\MHT824-52

Doc: MML265

Issue: 004

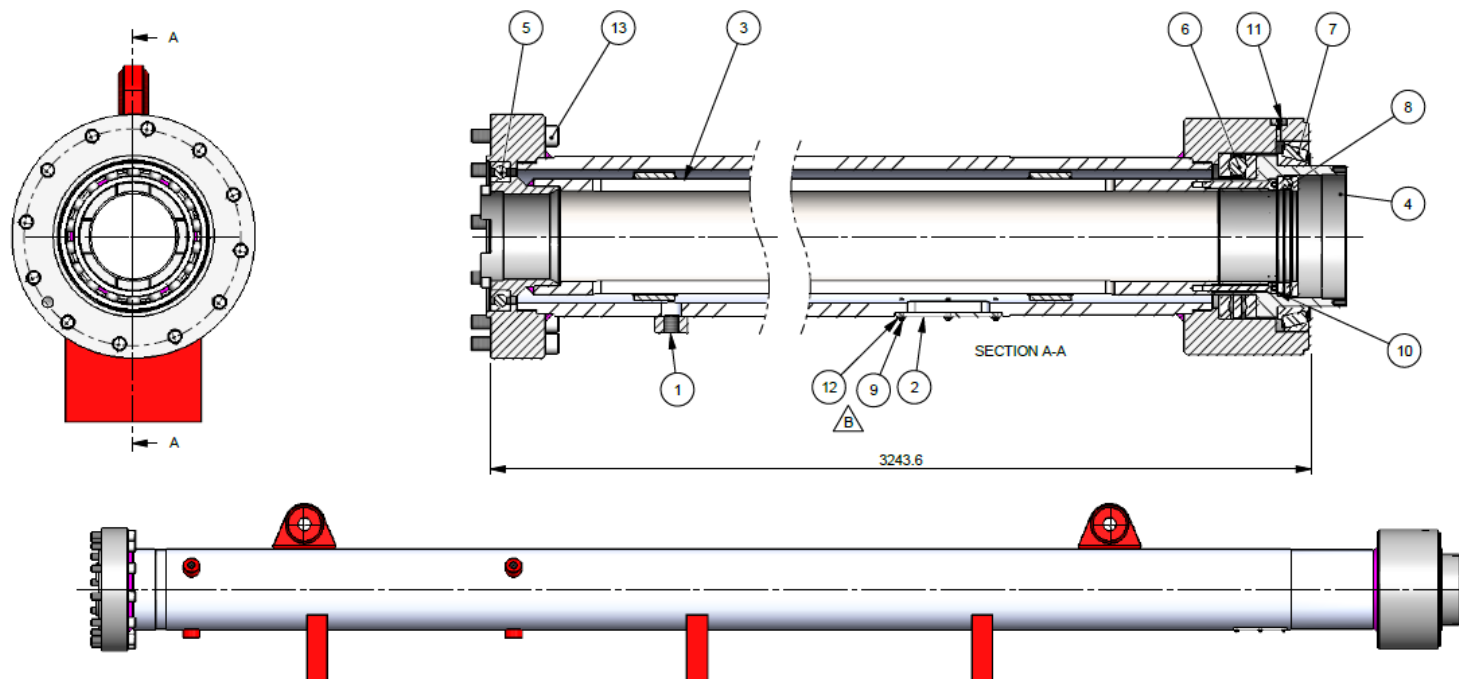
Issue Date: 13.06.2013

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

B	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			
DWG No	MHT1236-52			
	SHEET 1 OF 1			

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13.06.2013

Doc: MML265

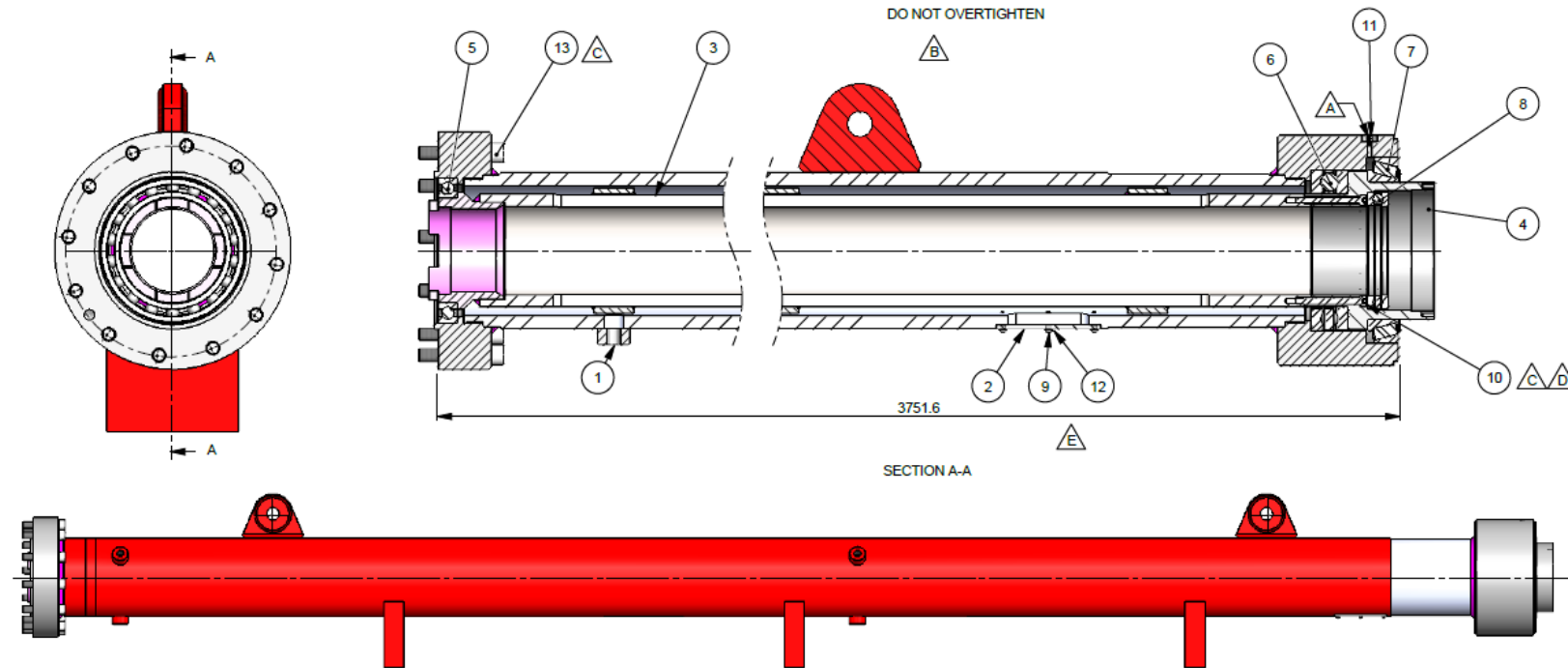
Issue: 004

Issue Date: 13.06.2013

Printed on 20/03/2020

DO NOT SCALE

IF IN DOUBT ASK



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

THIRD ANGLE PROJECTION		BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS	
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WEIGHT	523.573kg	DATE	25/04/2018
DRAWN BY	DC	CHECKED BY	DB
APPROVED BY		DATE	03/05/2018
DRIVE TUBE ASSEMBLY		DWG No: MHT1242-13	
SCALE: 1:5		SHEET 1 OF 1	

MIRAGE MACHINES

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

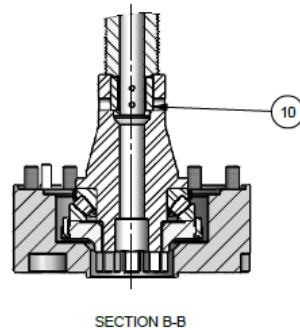
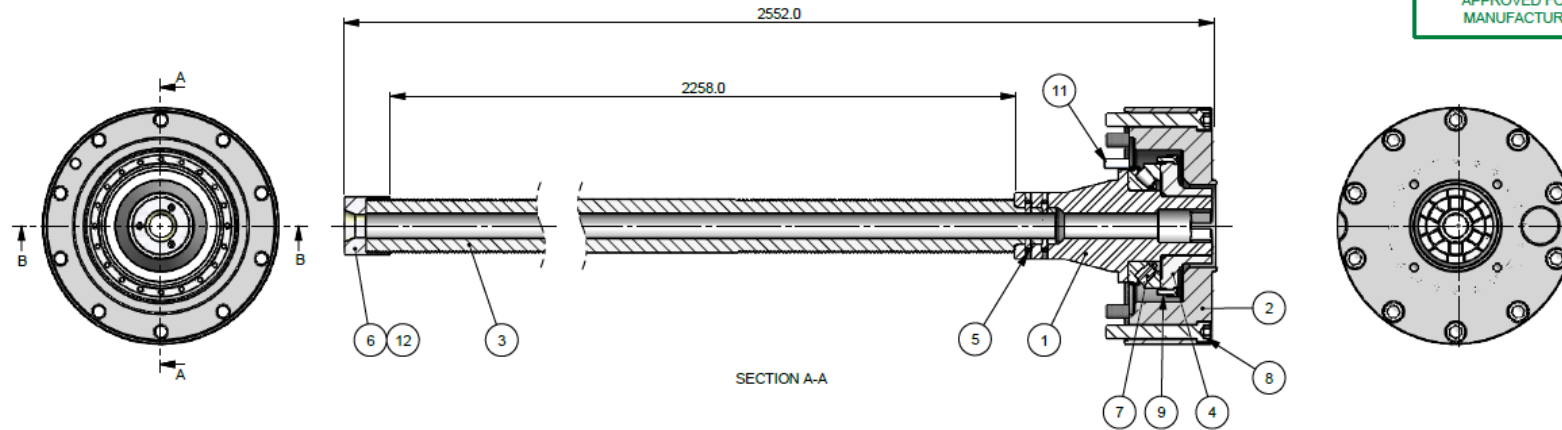
Printed on 17/02/2020

DO NOT SCALE

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MIRAGE MACHINES

APPROVED FOR
MANUFACTURE



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		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 references		17/02/2020	DRB	RH
A	INITIAL ISSUE		10/01/2020	DC	DMS
REV.	INC.	DESCRIPTION	DATE	DRAWN BY	APPROVED



THIRD ANGLE PROJECTION

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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
SCALE: 1:5

BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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: MHT824-53
SHEET 1 OF 1

A3

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

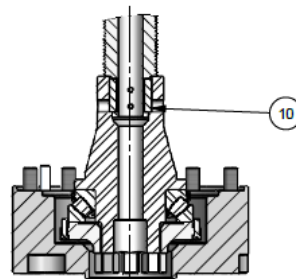
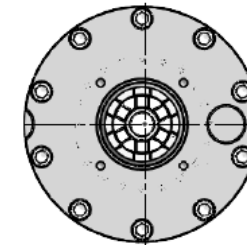
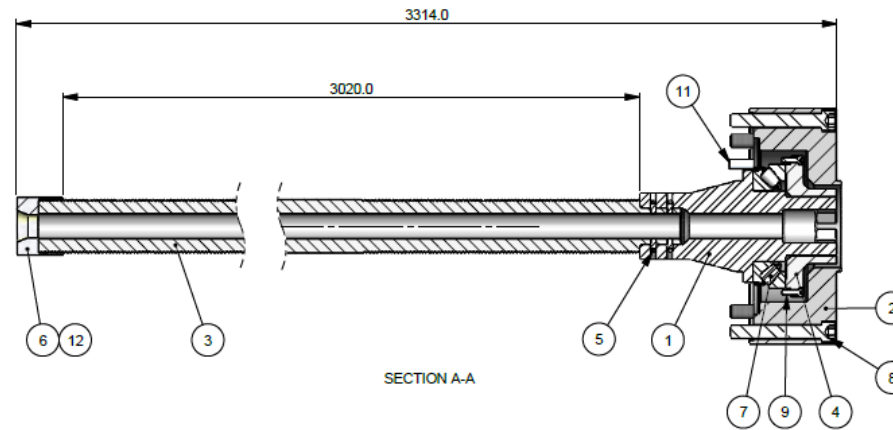
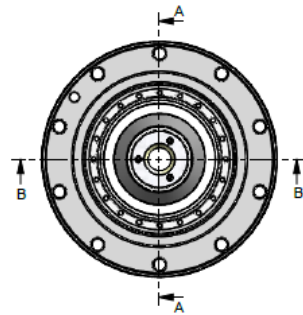
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MIRAGE MACHINES

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	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
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 WEIGHT 110.95kg DRAWN BY DC 19/12/2019 CHECKED BY DMS 17/01/2020 APPROVED BY TITLE LEADSCREW ASSEMBLY SCALE: 1:5				
BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS 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: MHT1236-53 SHEET 1 OF 1				

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17/02/2020 14:03:00

Doc: MML265

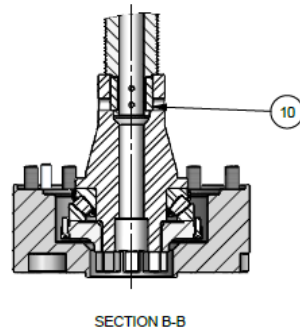
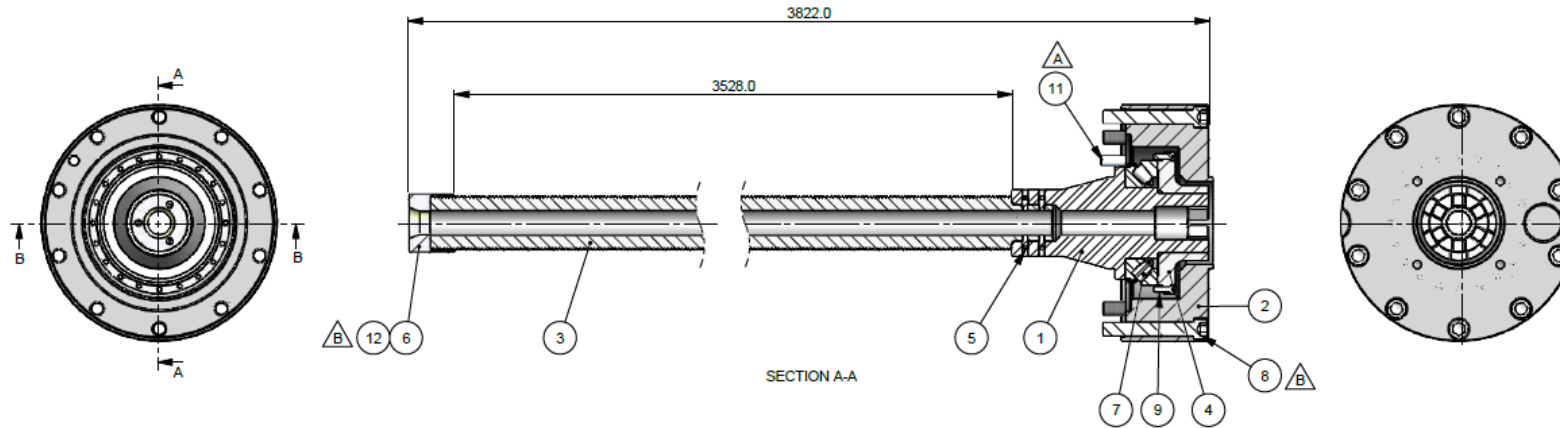
Issue: 004

Issue Date: 13.06.2013

Printed on 30/09/2019

DO NOT SCALE

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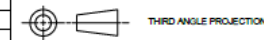


MIRAGE MACHINES

APPROVED FOR
MANUFACTURE

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MHT1242-14-001	LEADSCREW ADAPTER	1
2	MHT1242-14-002	END COVER	1
3	MHT1242-14-005	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	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

REV.	INC.	DESCRIPTION	DATE	DRAWN BY	APPROVED
B	-	M16x110 QTY TO WAS M16x80 QTY 13. M4x25 ADDED.	03/09/2019	RW	DB
A	-	TIMING DOWEL ADDED	25/04/2019	DC	DS



THIRD ANGLE PROJECTION

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WEIGHT	121.431kg
DRAWN BY	DC
CHECKED BY	DB
APPROVED BY	DS

TITLE
LEADSCREW 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: MHT1242-14
SHEET 1 OF 1

A3

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Doc: MML265

Issue: 004

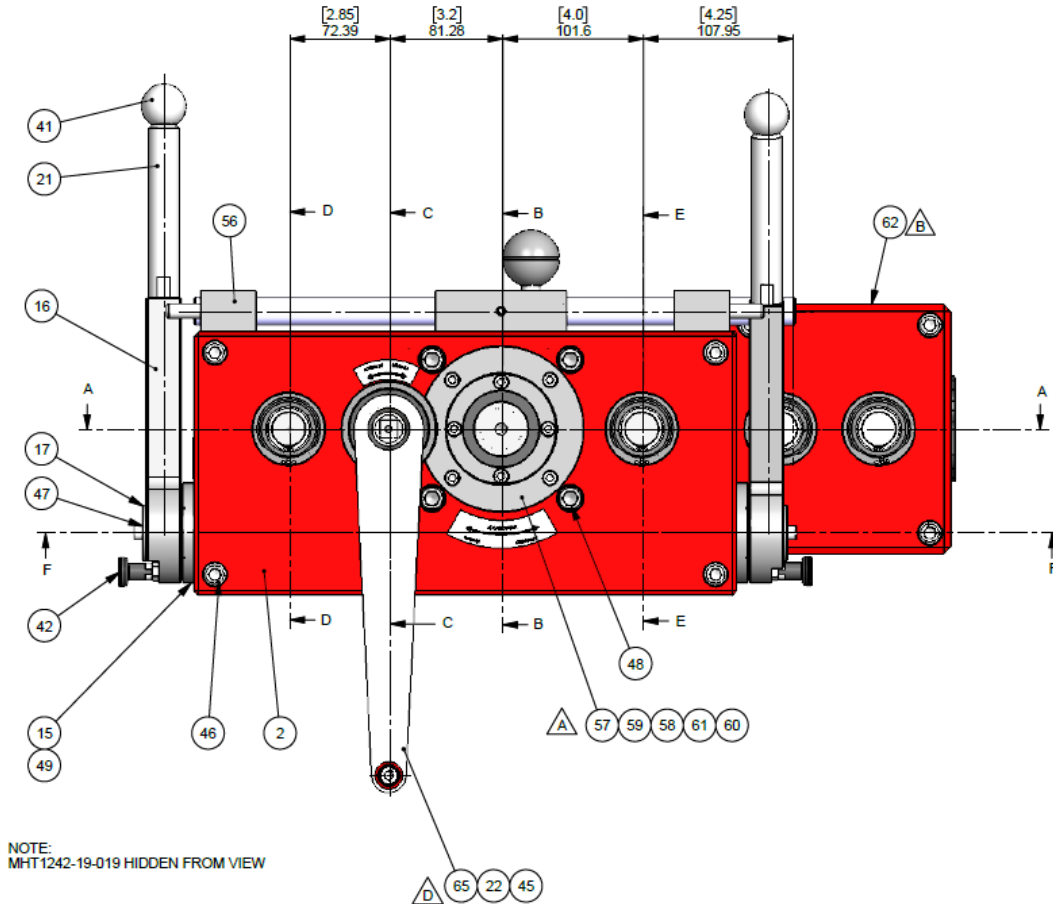
Issue Date: 13.06.2013

Printed on 10/09/2020

DO NOT SCALE

IF IN DOUBT ASK

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 431 SPUR GEAR	1
4	MHT1242-19-004	10DP 211 SPUR GEAR	1
5	MHT1242-19-005	10DP 241 SPUR GEAR	1
6	MHT1242-19-006	Spine External 45-211 DIN 5482	2
7	MHT1242-19-007	10DP 331 SPUR GEAR	1
8	MHT1242-19-008	10DP 351 SPUR GEAR	1
9	MHT1242-19-009	10DP 361 SPUR GEAR	1
10	MHT1242-19-010	10DP 371 SPUR GEAR	1
11	MHT1242-19-011	10DP 401 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	D1300-0860	DIN 472 INTERNAL CIRCLIP	3
35	D1300-0960	DIN 472 INTERNAL CIRCLIP	1
36	D1300-0115	DIN 472 INTERNAL CIRCLIP	1
37	AMF202420	Flanged Oilite Bush	2
38	AMF162220	Flanged Oilite 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	NX20-ZXL	Needle Roller/Axial Ball Bearing	1
51	3205 A-2RS1	DOUBLE ROW ANGULAR CONTACT BEARING	2
52	3030DU	DU BUSH	2
53	M8	TAB WASHER	1
54	KM8	LOCK NUT M8X1.5	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



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

GEARBOX ASSEMBLY
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

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

Doc: MML265

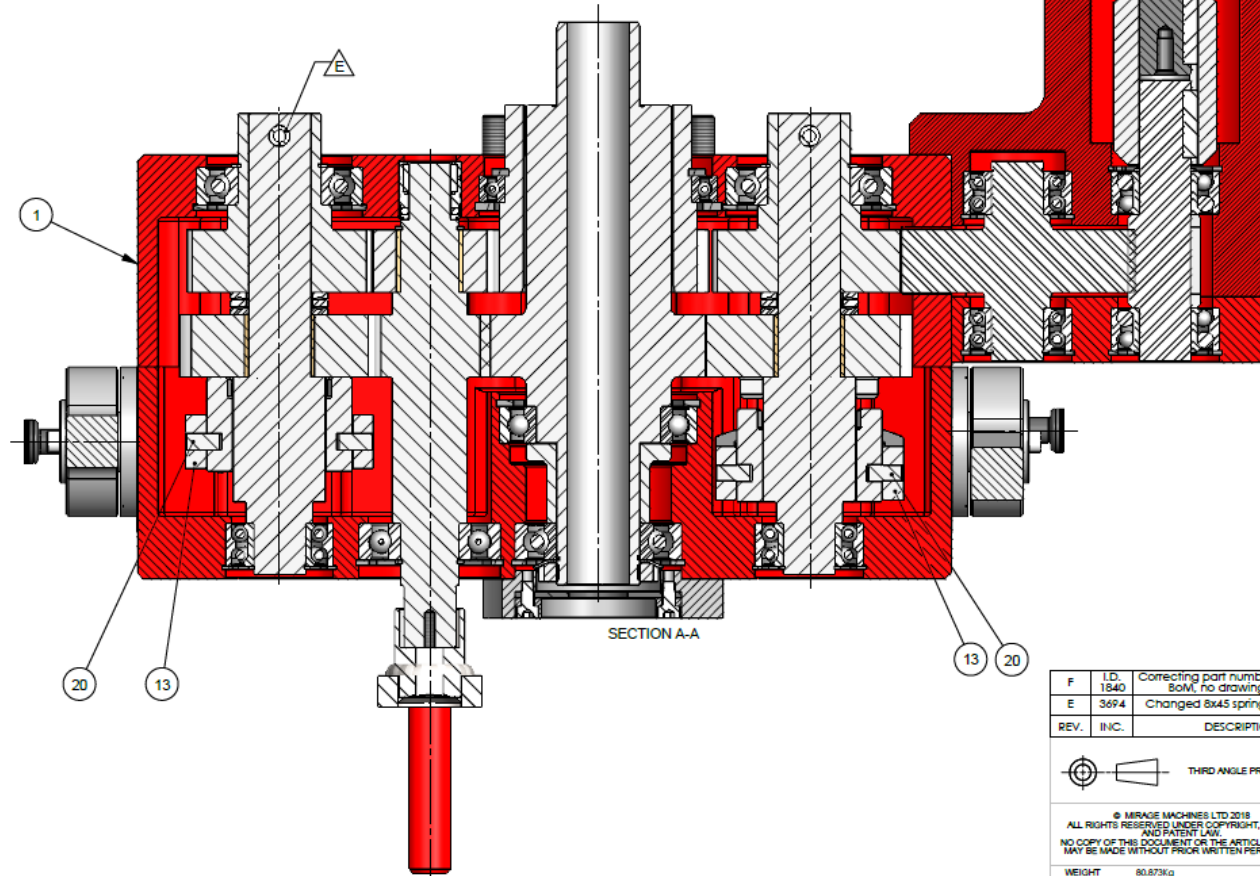
Issue: 004

Issue Date: 13.06.2013

Printed on 10/09/2020

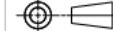
DO NOT SCALE

IF IN DOUBT ASK



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

REV.	INC.	DESCRIPTION	DATE	DRAWN BY	APPROVED
------	------	-------------	------	----------	----------

 THIRD ANGLE PROJECTION		MIRAGE PORTABLE PERFORMANCE			
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WEIGHT	80.873kg	DRAWN BY	DC	17/04/2018	
CHECKED BY	DB	03/05/2018			
APPROVED BY	---				
TITLE		GEARBOX ASSEMBLY		MHT1242-19	
SCALE: 1:2				SHEET 2 OF 5	
				A3	

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Doc: MML265

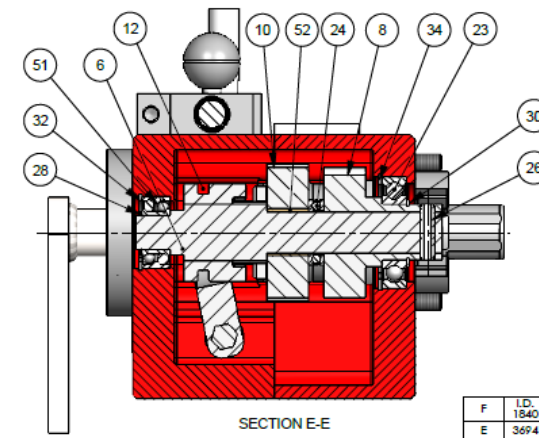
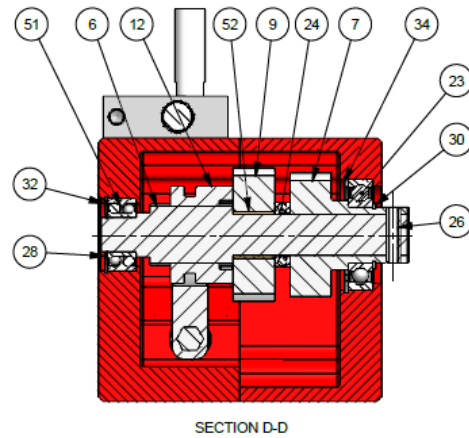
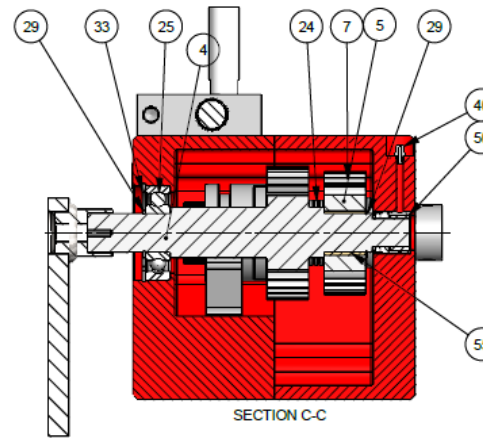
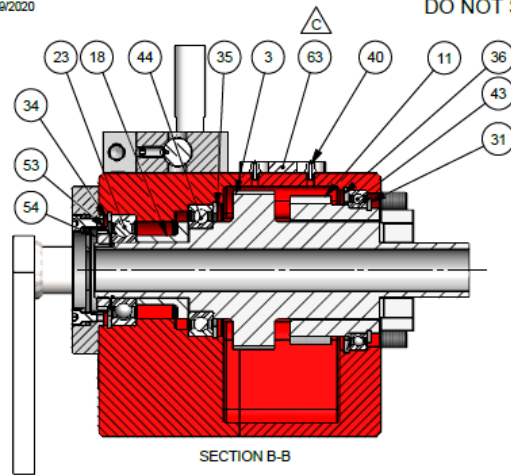
Issue: 004

Issue Date: 13.06.2013

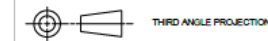
Printed on 10/09/2020

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			
REV.	INC.	Changed 8x45 spring pin to 10x40	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,
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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

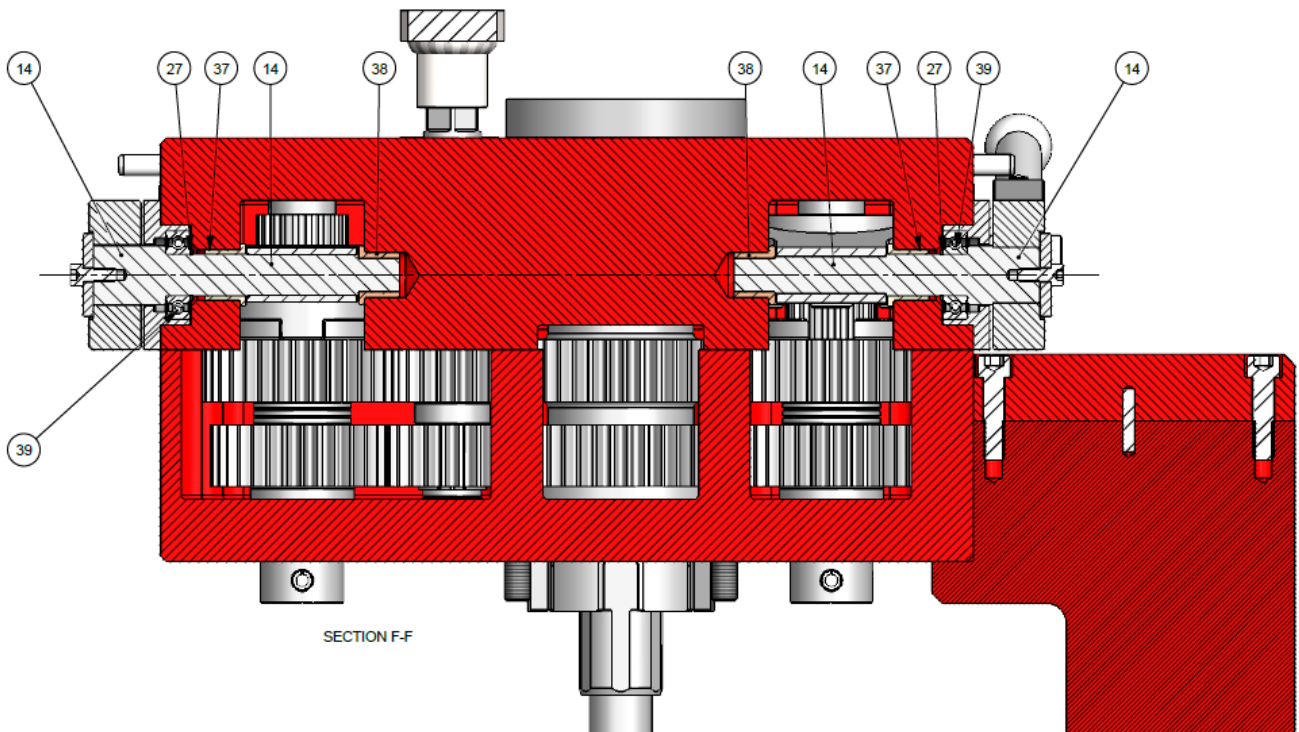
Issue: 004

Issue Date: 13.06.2013

Printed on 10/09/2020

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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



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DWG No
MHT1242-19
SHEET 4 OF 5

A3

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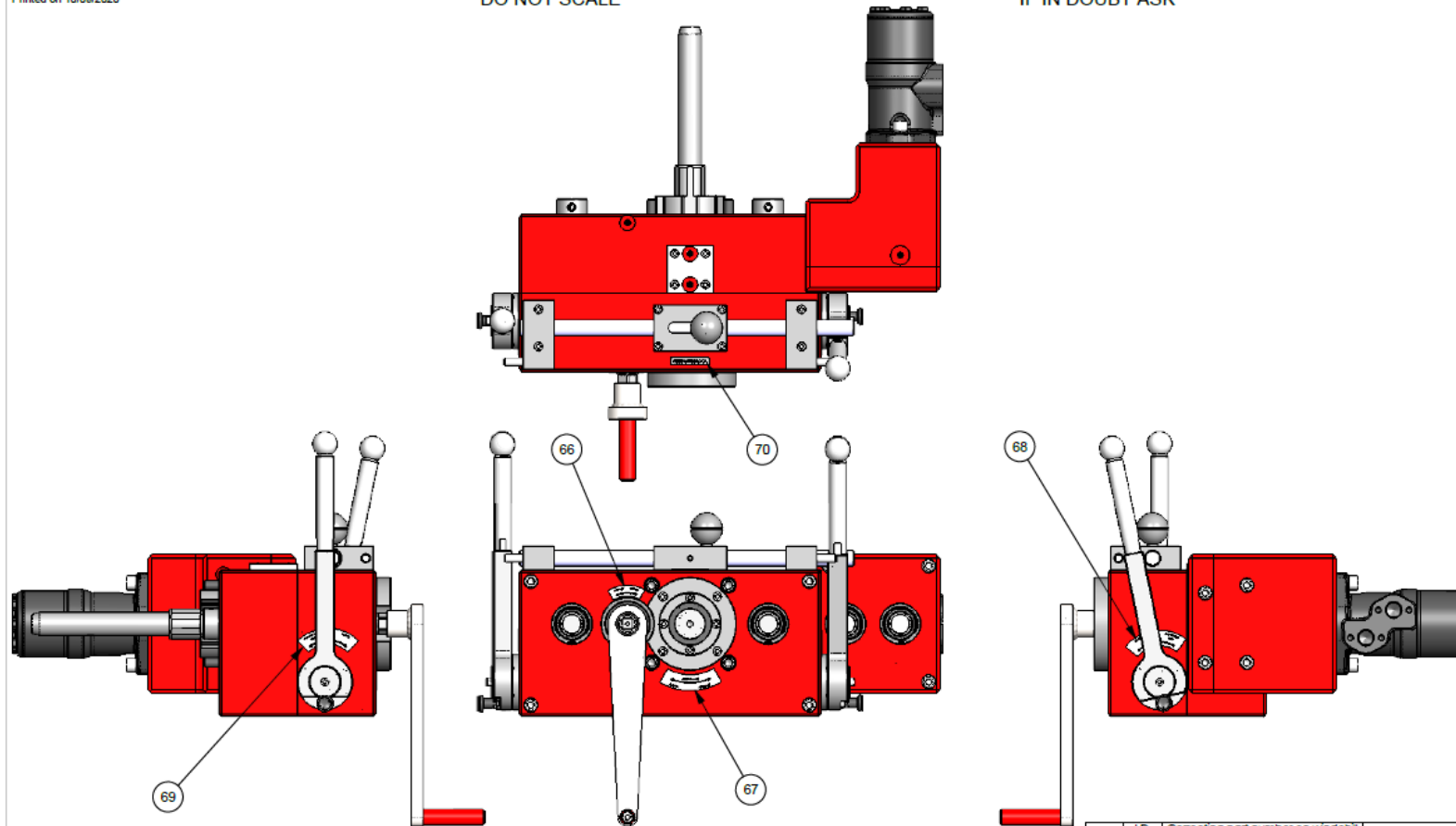
Issue: 004

Issue Date: 13.06.2013

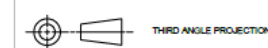
Printed on 10/09/2020

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



BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS

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WEIGHT	80.873kg
DRAWN BY	DC
CHECKED BY	DB
APPROVED BY	—

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

TITLE
GEARBOX ASSEMBLY
SCALE: 1:5

DWG No
MHT1242-19
SHEET 5 OF 5

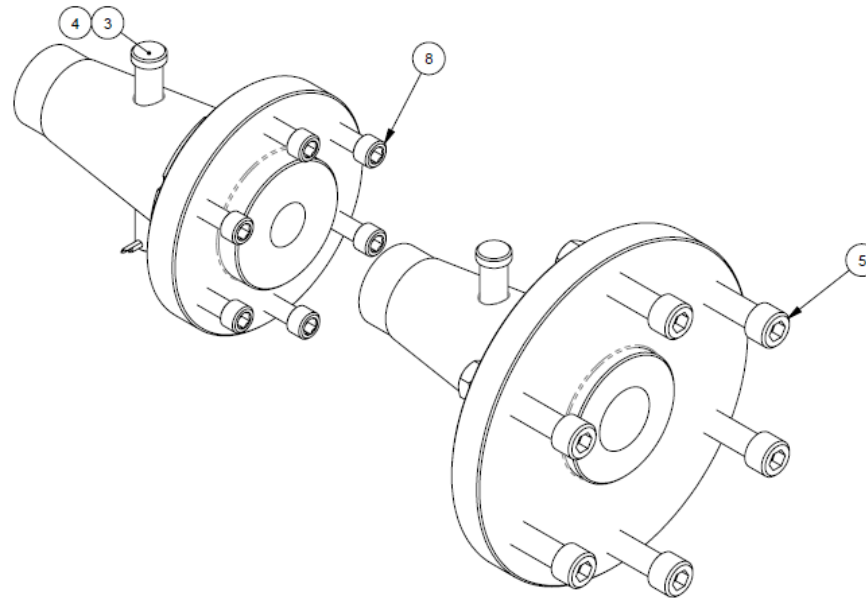
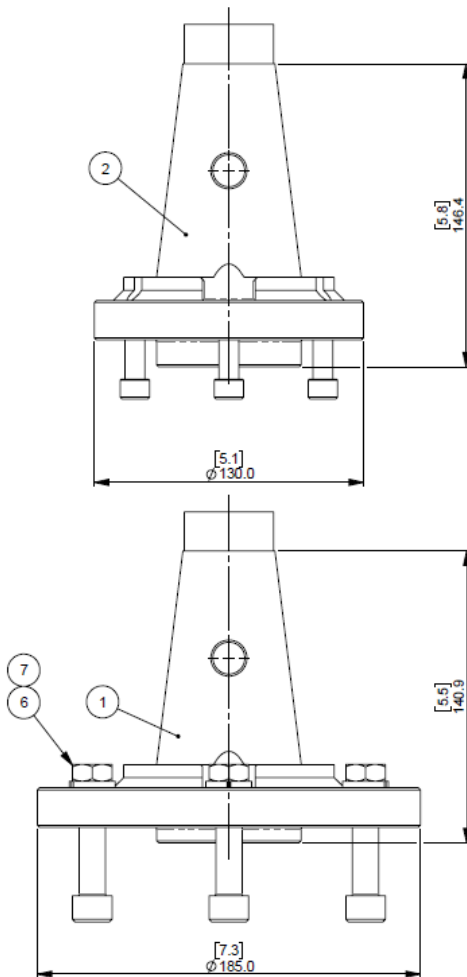
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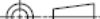
Doc: MML265

Issue: 004

Issue Date: 13.06.2013



ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY
1	MHT1242TD-21-001	12"-24" CUTTER HOLDER	1
2	MHT824-56-001	6"-12" CUTTER HOLDER	1
3	MHT1242TD-21-003	CLEVIS PIN	2
4	DIN914_M4x20	DIN 94 SPLIT PIN	2
5	12-20UNF12-12-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

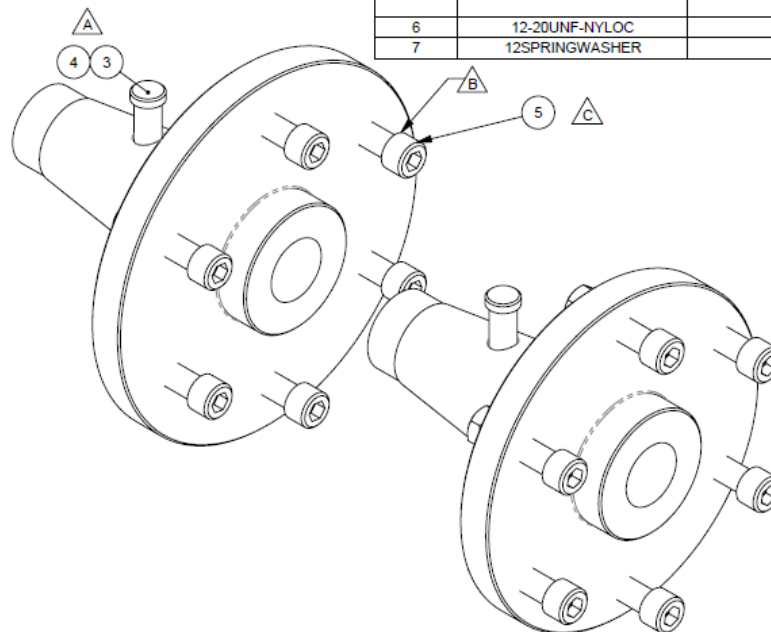
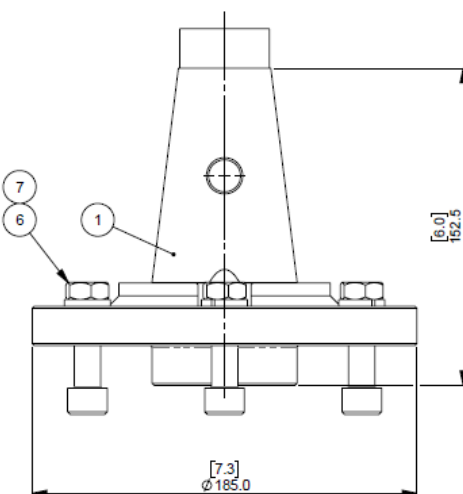
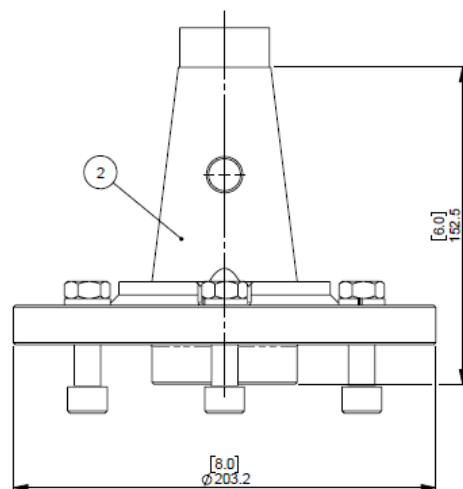
A		INITIAL ISSUE		13/02/2020		DC		DMS			
REV.		INC.		DESCRIPTION		DATE		DRAWN BY APPROVE			
				THIRD ANGLE PROJECTION							
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				AN ENERPAC BRAND							
WEIGHT		12.551 Kg		10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4EB TEL (01332) 291767 FAX (01332) 370356 E MAIL info@mirage-machines.co.uk							
DRAWN BY		DC								08/01/2020	
CHECKED BY		DMS								13/02/2020	
APPROVED BY		--									
TITLE				MHT824 CUTTER HOLDER SET		MHT824-56		A3			
				SCALE: 1:2		SHEET 1 OF 1					

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 DCHILL	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		MIRAGE PORTABLE PERFORMANCE 10 ENTERPRISE WAY, JUBILEE PARKWAY, STORES ROAD, DERBY DE21 4BB TEL (01332) 291787 FAX (01332) 370358 E MAIL info@mirage-machines.co.uk
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WEIGHT 15.99Kg DRAWN BY SR CHECKED BY MML APPROVED BY	29/01/2016	
TITLE MHT1242TD CUTTER HOLDER SET SCALE: 1:2		
DWG No MHT1242TD-21 SHEET 1 OF 1		A3

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

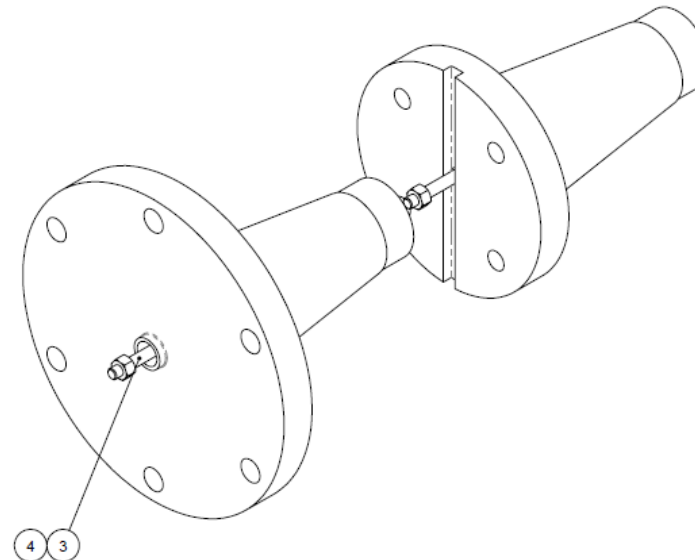
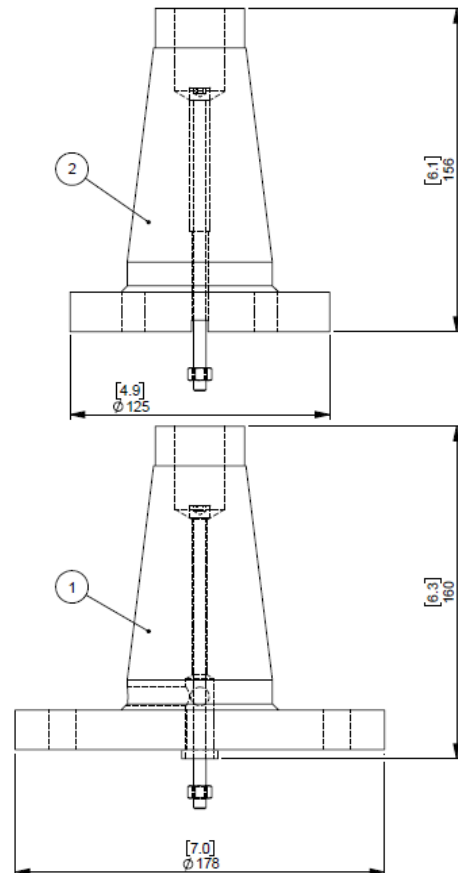
Printed on 13/02/2020

DO NOT SCALE

IF IN DOUBT ASK

MIRAGE MACHINES

APPROVED FOR
MANUFACTURE



A		INITIAL ISSUE		13/02/2020	DC	DWG
REV.	INC.	DESCRIPTION		DATE	DRAWN BY	APPROVED
				BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS		
				THIRD ANGLE PROJECTION		
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				WEIGHT 10.508kg		
				DRAWN BY DC 15/01/2020		
				CHECKED BY DMS 13/02/2020		
				APPROVED BY		
				TITLE MHT824 PLUG HOLDER SET		
				SCALE: 1:2		
				DWG No: MHT824-57		
				SHEET 1 OF 1		

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10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE11 4BB
TEL (01332) 291767 FAX (01332) 370356
E MAIL info@mirage-machines.co.uk

DWG No: MHT824-57
SHEET 1 OF 1

A3

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Doc: MML265

Issue: 004

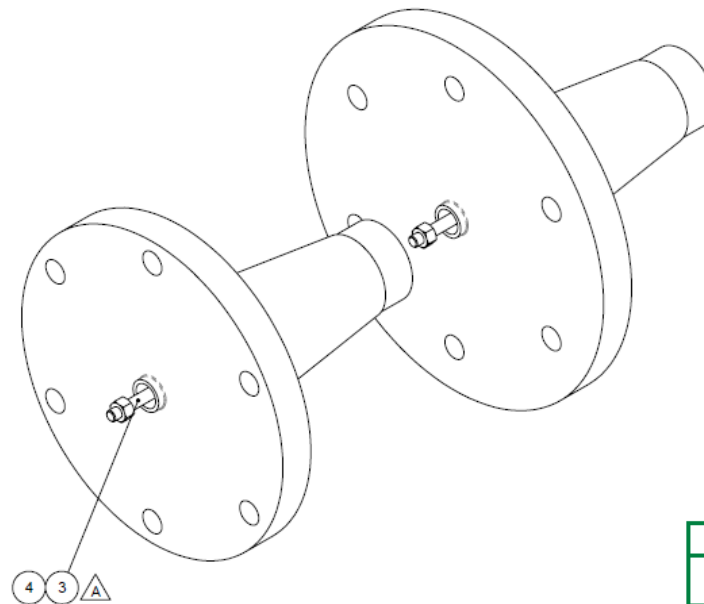
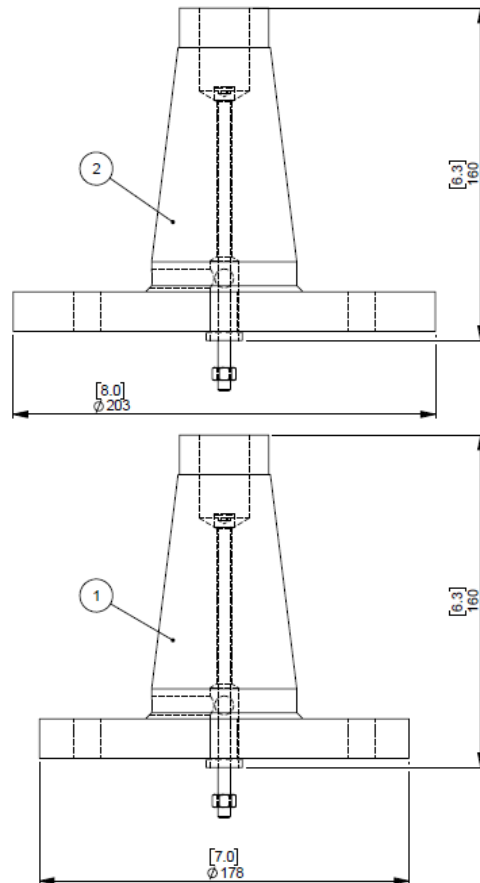
Issue Date: 13.06.2013

Printed on 08-Apr-16

DO NOT SCALE

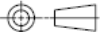
IF IN DOUBT ASK

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



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A	N/A	M6 NUTS & M6x140 BOLTS ADDED.	08-Apr-16	SR	DC
REV.	INC.	DESCRIPTION	DATE	DRAWN BY	APPROVED



THIRD ANGLE PROJECTION

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WEIGHT 13.533kg

DRAWN BY SR 14-Jan-16

CHECKED BY MML 29-Jan-16

APPROVED BY --

TITLE

MHT1242TD PLUG HOLDER SET

SCALE: 1:2



PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
 STORES ROAD, DERBY DE1 4BB
 TEL (01332) 291787 FAX (01332) 370366
 E MAIL info@mirage-machines.co.uk

DWG No: **MHT1242TD-20**

SHEET 1 OF 1

A3

MIRAGE
PORTABLE PERFORMANCE

10 ENTERPRISE WAY, JUBILEE PARKWAY,
STORES ROAD, DERBY DE21 4BB
TEL (01332) 291767 FAX (01332) 370366
E MAIL info@mirage-machines.co.uk

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Doc: MML265

Issue: 004

Issue Date: 13.06.2013

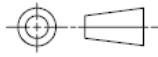
Printed on 29/01/2020

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,
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DWG No

MHT824-H-SK

A4

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Doc: MML265

Issue: 004

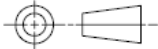
Issue Date: 13.06.2013

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

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
 THIRD ANGLE PROJECTION © MIRAGE MACHINES LTD 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 WEIGHT Kg DRAWN BY DB 11/06/2015 CHECKED BY BC 11/06/2015 APPROVED BY -- -- TITLE Spares Kit SCALE: 1:1					
 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 MHT1236-H-SK SHEET 1 OF 1		
MIRAGE MACHINES APPROVED FOR MANUFACTURE			A4		

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

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 21/08/2019

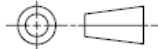
DO NOT SCALE

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



THIRD ANGLE PROJECTION

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MIRAGE
PORTABLE PERFORMANCE

WEIGHT		Kg
DRAWN BY	DB	06/11/2018
CHECKED BY	EM	06/11/2018
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

MHT1242-H-SK

SHEET 1 OF 1

MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

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

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

Printed on 23/11/2018

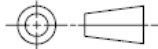
DO NOT SCALE

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

MIRAGE MACHINES
APPROVED FOR
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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PORTABLE PERFORMANCE

WEIGHT		Kg	
DRAWN BY	DRB	08/11/2018	
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

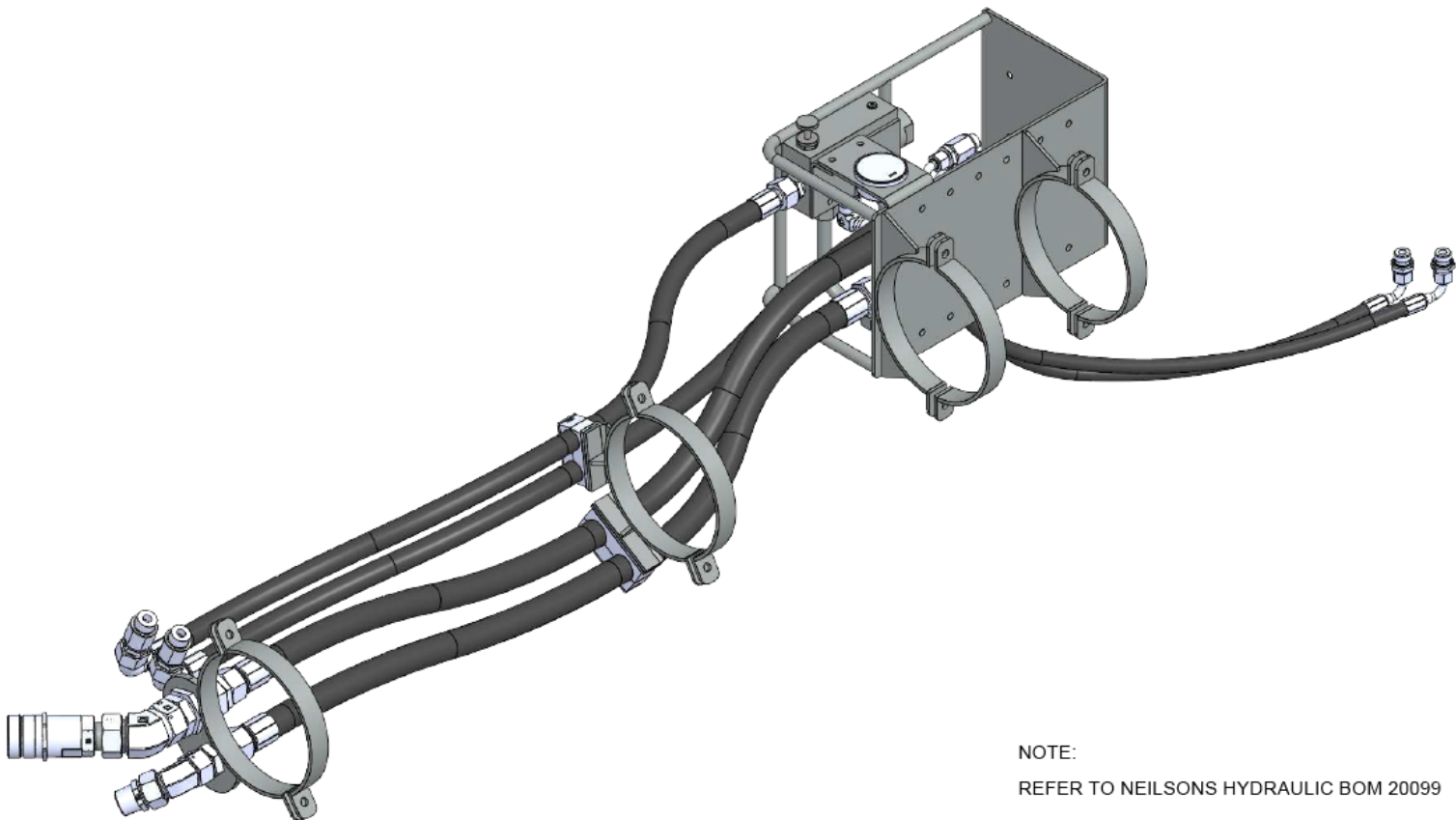
Issue: 004

Issue Date: 13.06.2013

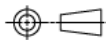
Printed on 28/02/2020

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			BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS		
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WEIGHT	4.780kg				
DRAWN BY	EM	27/02/2020			
CHECKED BY	DMS	27/02/2020			
APPROVED BY	--				
TITLE	HYDRAULIC CONTROL PANEL-CYLINDER MOUNT		DWG NO	MHT824-HDCP-CM	A3
SCALE: 1:50		SHEET 1 OF 1			

MIRAGE
AN ENERPAC BRAND

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

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

13.06.2013 MML265

Doc: MML265

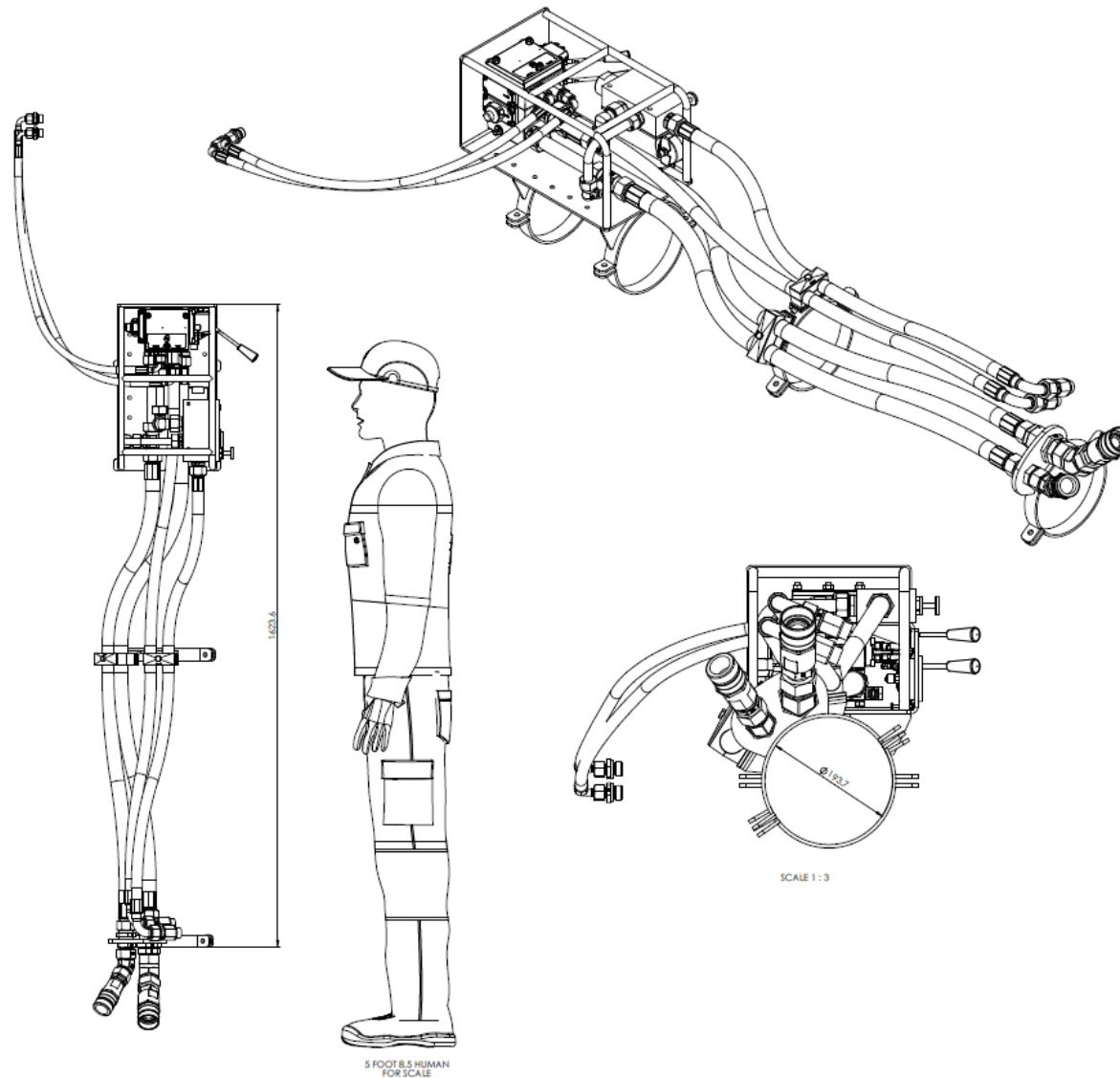
Issue: 004

Issue Date: 13.06.2013

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-BU	PVO33 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	SP0-8AS-100-6040-P-304-LI	PRESSURE GAUGE	1
11	SP-436-9/26.9-PFH-GD-AS-M-W10	GP-4 TWIN PIPE CLAMP	1
12	SP-535/35-PFH-GD-AS-M-W10	GP-5 TWIN PIPE CLAMP	1
13	FLGE-18L-WD-8-W3	BAND ELBOW (BODY ONLY)	1
14	FLGE-12L-1/2-WD-8-W3-M8	MALE STUD COUPLING (BODY ONLY)	4
15	FLGE-18L-1/4-WD-8-W3	MALE STUD COUPLING (BODY ONLY)	1
16	FLGE-18L-8-W3-DKO	ADJUSTABLE ELBOW (BODY ONLY)	1
17	FLGE-22L-1/2-WD-8-W3	MALE STUD COUPLING (BODY ONLY)	2
18	FLGE-22L-8-W3	MALE STUD COUPLING (BODY ONLY)	3
19	FLGE-22L-WD-8-W3-DKO	STRAIGHT MALE STUD CONNECTOR	1
20	FLGE-22L-8-W3-DKO	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	FLGE-28L-8-W3-DKO	ADJUSTABLE ELBOW 45° (BODY ONLY)	1
24	FLS-28L-1/2-W3	UNEQUAL TUBE TEE (BODY ONLY)	1
25	FLGE-28L-1/4-WD-8-W3	MALE STUD COUPLING (BODY ONLY)	2
26	FLGE-28L-1/4-W3-DKO	STUD STANDOFF (NPT)	1
27	FLGE-28L-1/2-W3-DKO	STRAIGHT REDUCER (BODY ONLY)	1
28	FLGS-33L-W3-3EM	STRAIGHT BULKHEAD FITTING (BODY ONLY)	1
29	FLGE-33L-8-W3-DKO	ADJUSTABLE ELBOW 45° (BODY ONLY)	1
30	FLGE-33L-1/2-W3-DKO	STUD STANDOFF (NPT)	1
31	1/2" BIP X 1/2" BIP M8 FRED	FRED STRAIGHT BUSH	2
32	3/4" BIP 45-D	1/2" BONDED WASHER	2
33	ADP-G-12-MFY-W66A	FRED STRAIGHT BUSH	2
34	3/4" BIP 45-F	3/4" BONDED WASHER	2
35	20099-H01	3/4" 255K 25L 90 25L STR 1455mm LONG	2
36	20099-H02	3/4" 255K 28L 90 25L 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-300-8-W3	1
42	20099-P01	28x2 C-8F 180mm LONG	1
43	20099-P02	22x2 C-8F 107 140mm LONG	1
44	20099-P03	18x1.5 C-8F 211 35mm LONG	1

NOTES:

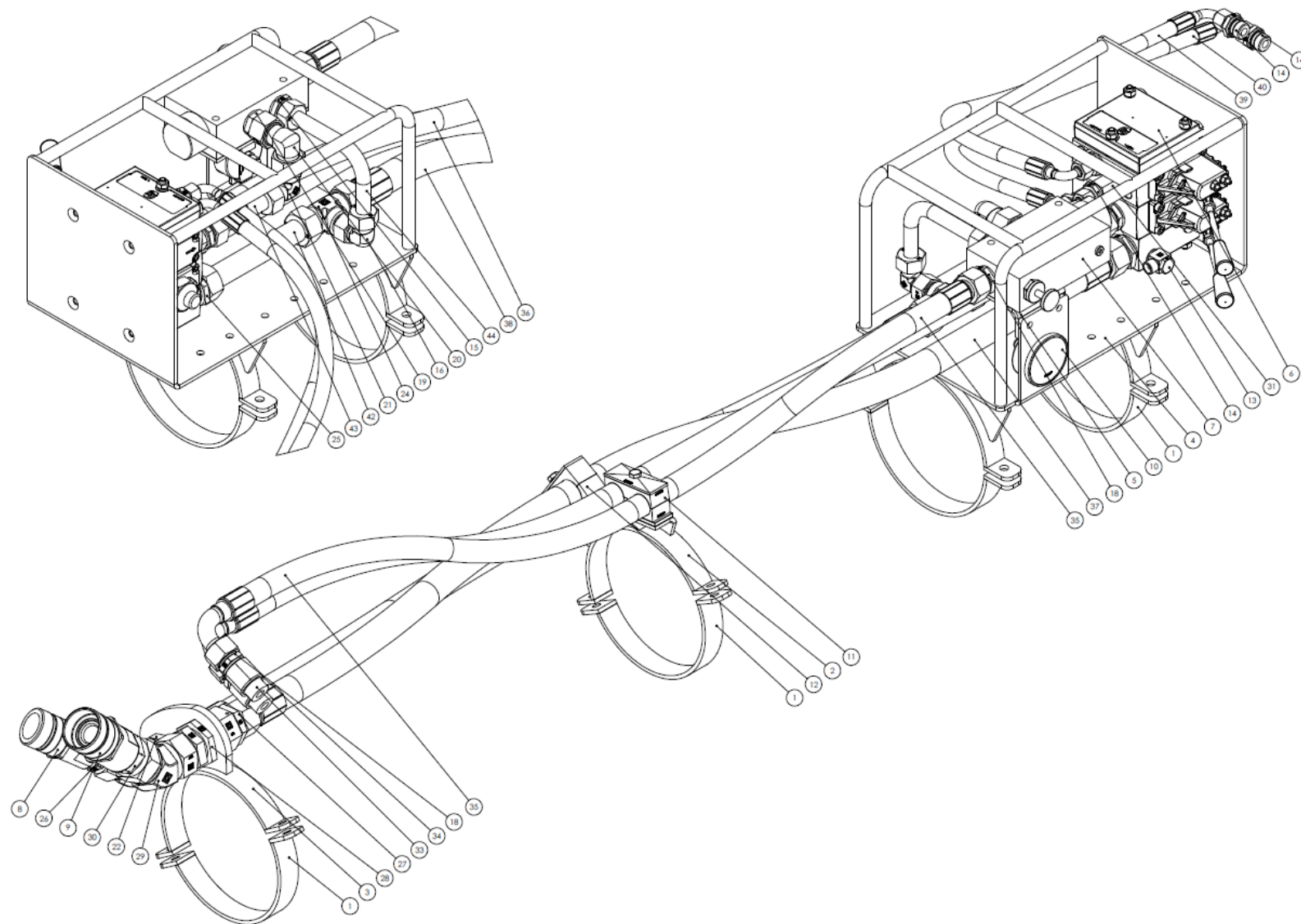
- FRAME + CLAMPS PAINTED TO RAL 9005.
- HYDRAULIC KIT FOR MHT824-H.

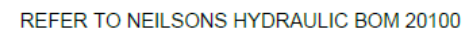


Doc: MML265

Issue: 004

Issue Date: 13.06.2013



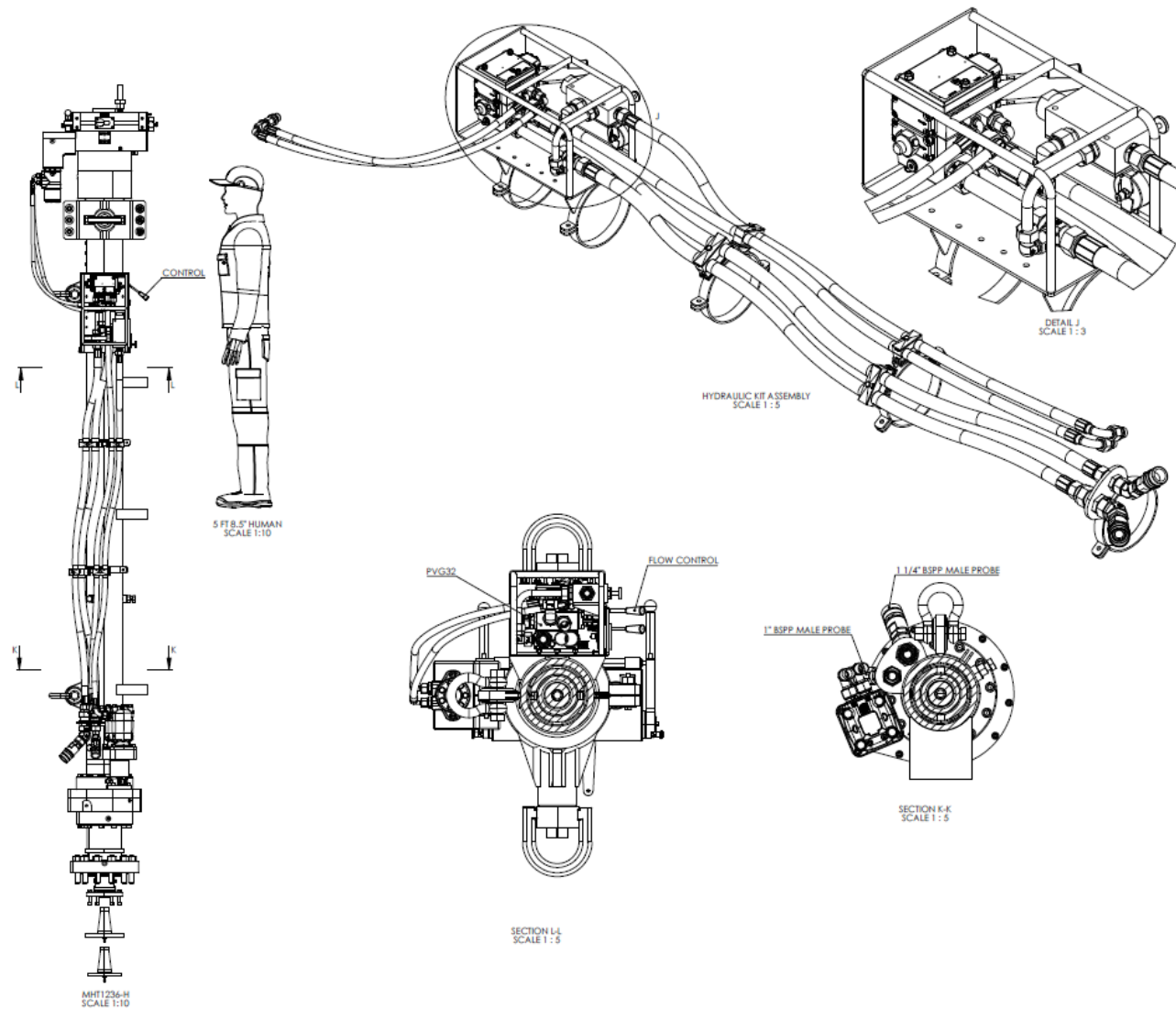


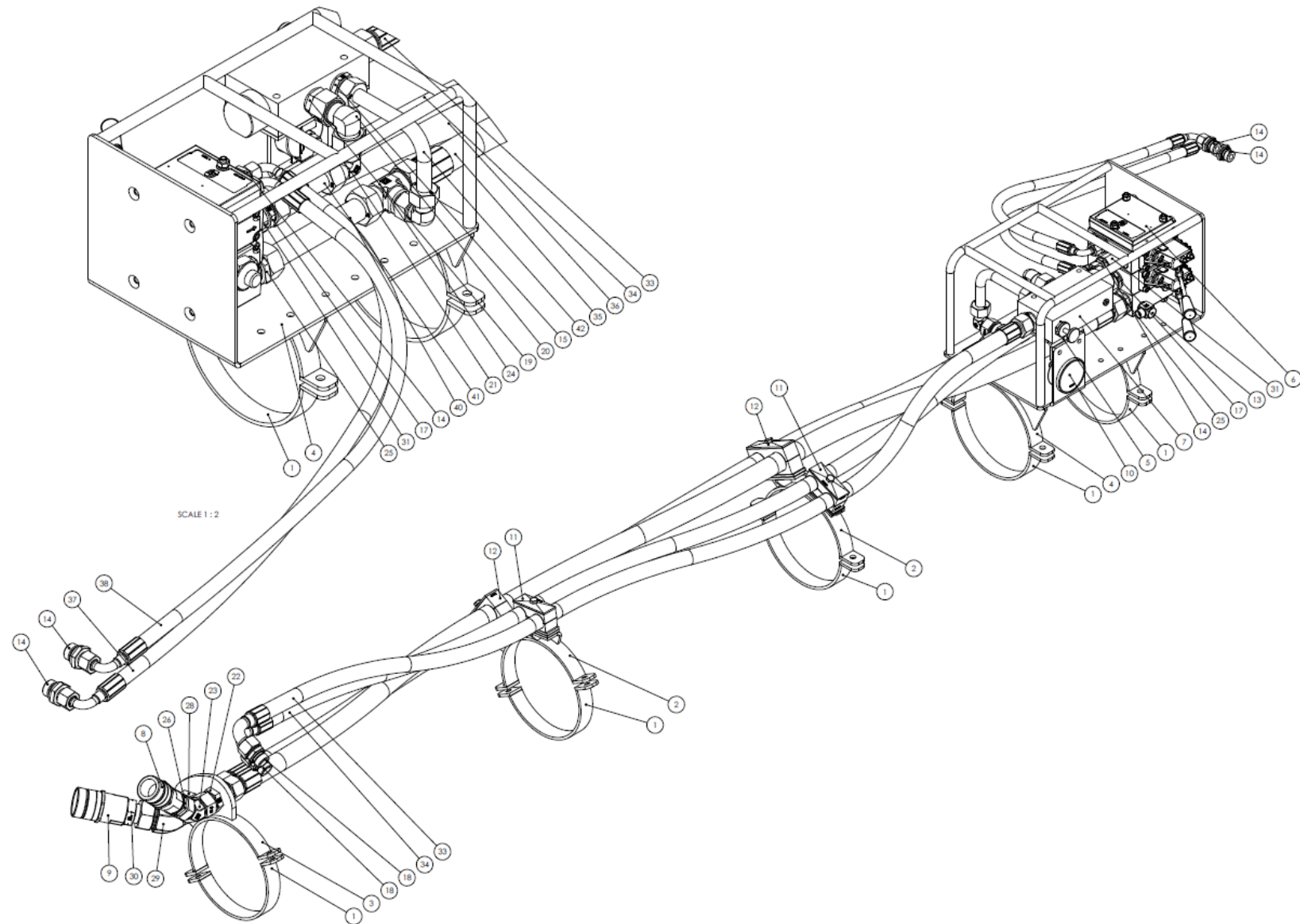
MIRAGE MACHINES
APPROVED FOR
MANUFACTURE

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	5100-52-148	1" 5100 SERIES MALE PROBE	1
9	5100-52-208	1-1/4" 5100 SERIES MALE PROBE	1
10	SPG-063-00160-01-F-004-1	PRESSURE GAUGE	1
11	GP-42L/92L/9-PPH-GD-AS-M-W10	GP 4 TWIN PIPE CLAMP	2
12	GP-535/535-PPH-GD-AS-M-W10	GP 5 TWIN PIPE CLAMP	2
13	FLBSW-10LR-WD-8-W3	BANJO ELBOW (WD TYPE) BODY ONLY	1
14	FL-GE-12LR1/2-WD-8-W3-MS	MALE STUD COUPLING WD TYPE (BODY ONLY)	4
15	FL-GE-18LR3/4-WD-8-W3	MALE STUD COUPLING (BODY ONLY) WD TYPE	1
16	FL-EWD-18L-8-W3-DK0	ADJUSTABLE ELBOW (BODY ONLY)	1
17	FL-GE-22LR1/2-WD-8-W3	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
18	FL-GE-22LR-WD-8-W3	MALE STUD COUPLING NPT (WD TYPE) BODY ONLY	3
19	FL-EQED-22LR-WD-8-W3-DK0	STRAIGHT MALE STUD CONNECTOR	1
20	FL-EWD-22L-8-W3-DK0	ADJUSTABLE ELBOW (BODY ONLY)	1
21	FL-W-22L-W3	TUBE ELBOW (BODY ONLY)	1
22	FL-GS-28L-W3-SKM	STRAIGHT BULKHEAD FITTING (BODY + LOCKWIT ONLY)	1
23	FL-EVD-28L-8-W3-DK0	ADJUSTABLE ELBOW 45 (BODY ONLY)	1
24	FL-T-28LR/28L-W3	UNEQUAL TUBE TEE (BODY ONLY)	1
25	FL-GE-28LR3/4-WD-8-W3	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
26	FL-EQED-28LR-8-W3-DK0	STUD STANDPIPE (NPT)	1
27	FL-REDSD-35/28L-8-W3-DK0	STRAIGHT REDUCER (BODY ONLY)	1
28	FL-GS-35L-W3-SKM	STRAIGHT BULKHEAD FITTING (BODY ONLY)	1
29	FL-EVD-35L-8-W3-DK0	ADJUSTABLE ELBOW (45) BODY ONLY	1
30	FL-EQED-35L-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 107.6mm LONG	1
42	20100-P03	18x1.5 Cnf 211.55mm LONG	1

NOTES:

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

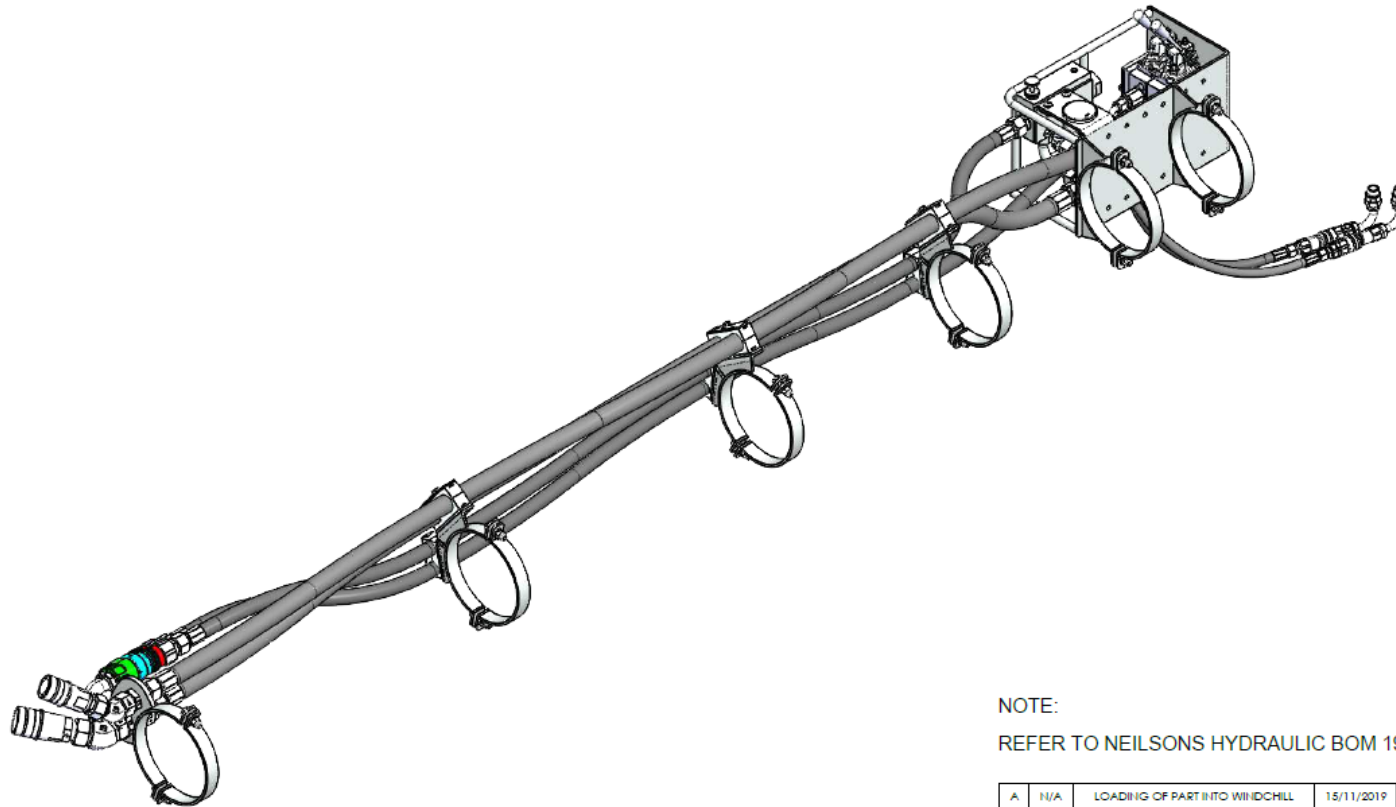




Printed on 15/11/2019

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		
© 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			BREAK ALL SHARP EDGES AND CHAMFER ALL THREADS		
WEIGHT			0.671kg		
DRAWN BY		EM	08/10/2019		
CHECKED BY		DMS	15/11/2019		
APPROVED BY		---			
TITLE			DWS NO		
HYDRAULIC CONTROL PANEL-CYLINDER MOUNT			MHT1242-HDCP-CM		
SCALE: 1:50			SHEET 1 OF 1		

MIRAGE MACHINES
APPROVED FOR
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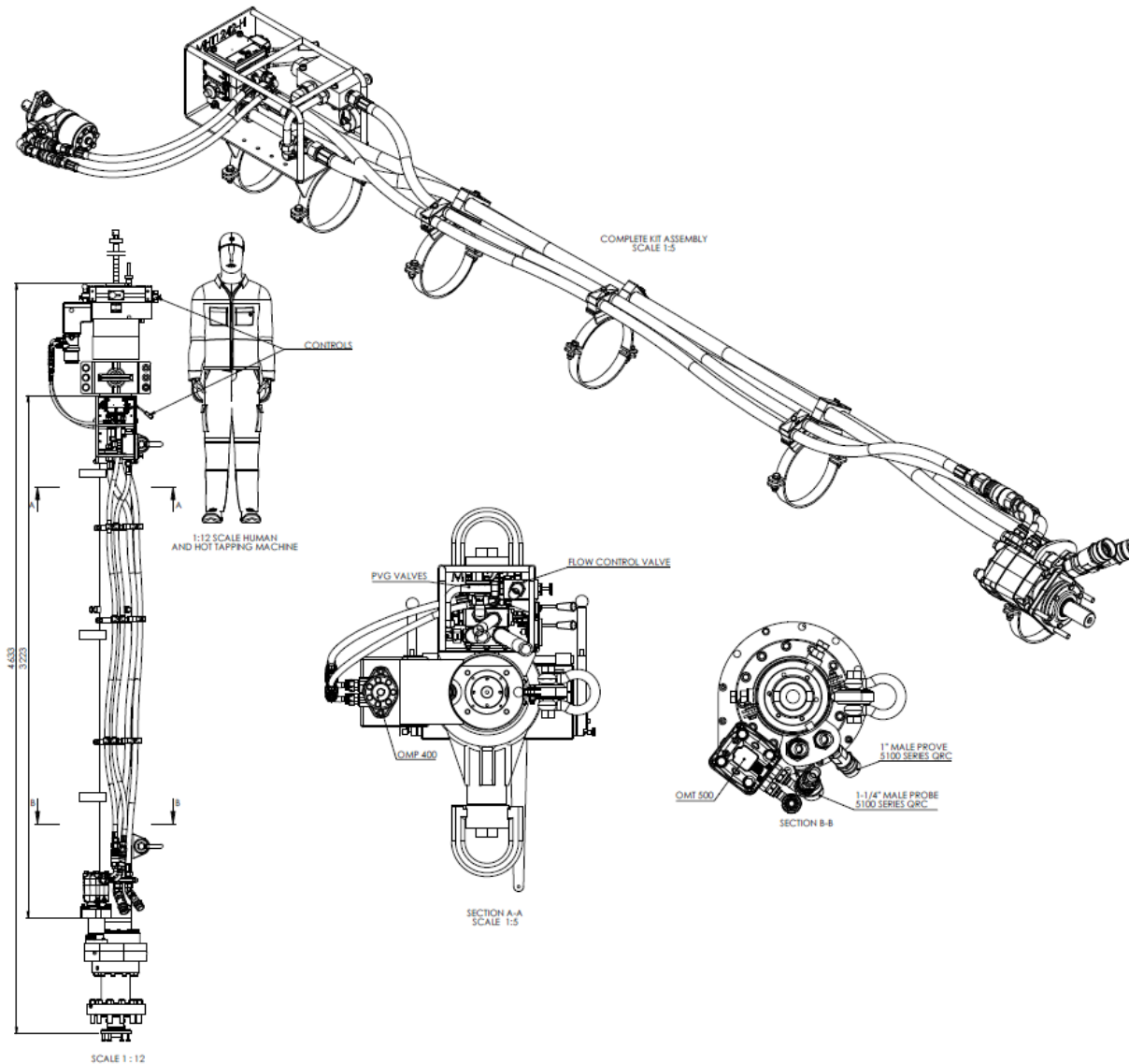
N:\Drawing Storage\MACHINES GA's\HOT TAPPING\MHT12-42\Neilsons Hose Kit\MHT1242-HDCP-CM
AS ASSEMBLY (A1) ENERPAC 04.03.2019

Doc: MML265

Issue: 004

Issue Date: 13.06.2013

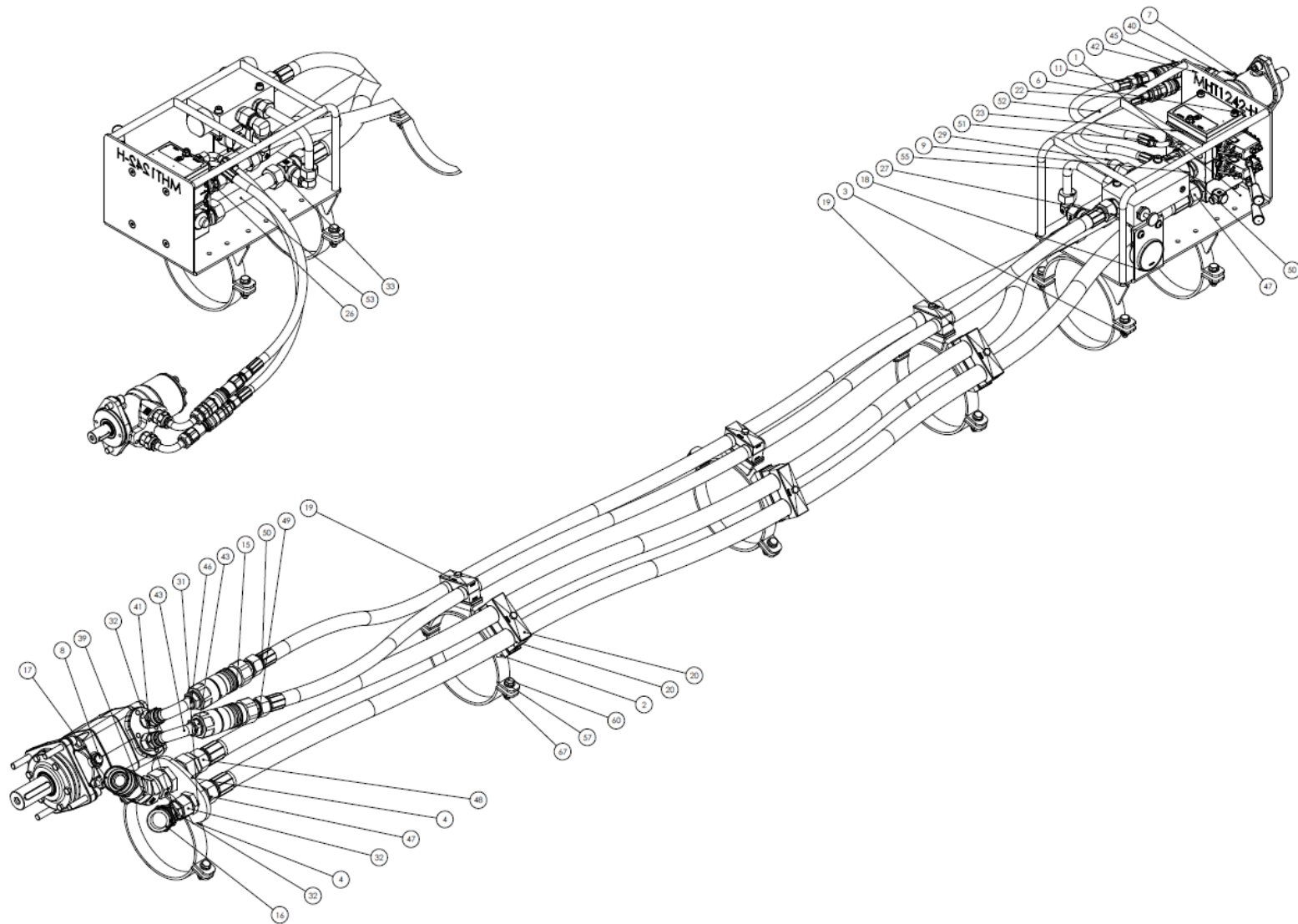
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	19983 (1)	PVG FRAME	1
2	19983 (2)	CLAMP	3
3	19983 (3)	CLAMP (2)	6
4	19983 (4)	BRACKET (3)	1
5	19994	FLOW CONTROL VALVE BRACKET	1
6	A1726V801	AUX FEED PVG VALVE	1
7	11186714	OMP 400	1
8	15180005	OMT 500	1
9	V1080	FLOW CONTROL VALVE - VPR3 1/2"	1
10	801300005	A9 3/8" 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	5100-52-148	1" 5100 SERIES MALE PROBE	1
17	5100-52-208	1-1/4" 5100 SERIES MALE PROBE	1
18	SPG-043-001-60-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-10L-R-WD-B-W3	BANJO ELBOW (WD TYPE) BODY ONLY	1
22	FL-GE-12L-R-WD-B-W3	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
23	FL-GE-12L-R1/2-WD-B-W3-MS	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
24	FL-GE-18L-R-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-22L-R1/2-WD-B-W3	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
27	FL-GE-22L-R-WD-B-W3	MALE STUD COUPLING BSP (WD TYPE) BODY ONLY	3
28	FL-EGED-22L-R-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-W3-5KM	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-28L-R3/4-WD-B-W3	MALE STUD COUPLING WD TYPE (BODY ONLY)	2
35	FL-EGED-28L-1/4-W3-DKO	STUD STANDPIPE (NPT)	1
36	FL-RED-35/28L-B-W3-DKO	STRAIGHT REDUCER (BODY ONLY)	1
37	FL-GS-35L-W3-5KM	STRAIGHT BULKHEAD FITTING (BODY ONLY)	1
38	FL-ED-35L-B-W3-DKO	ADJUSTABLE ELBOW (45) BODY ONLY	1
39	FL-EGED-35L-1/4-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 3/4" 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 2420mm 22L STR 22L STR	1
50	19984-H04	3/4" 25X 2405mm 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 1.85L	1
54	19984-P02	22x2 C&F 1.13L	1
55	19984-P03	18x1.5 C&F 1.39	1
56	W3HMPA008C	M8 PLAIN WASHER FORM A	8
57	W3HMPA010C	M10 PLAIN WASHER FORM A	24
58	W3HMPA012C	M12 PLAIN WASHER FORM A	4
59	W3HMSQ012C	M12 SPRING WASHER	4
60	MCB-10040R	M10x40 HEX BOLT	12
61	MCS008025R	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	MCS008020R	M8x20 COUNTERSUNK	4
66	NUTMCDN08T	M8 NYLOC	4
67	NUTMCDN10T	M10 NYLOC	12



Doc: MML265

Issue: 004

Issue Date: 13.06.2013



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.

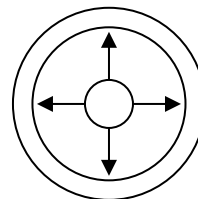
Pipe Size.....
Wall Thickness.....
Material.....
Product Type.....
Pipe Pressure.....
Temperature.....

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.

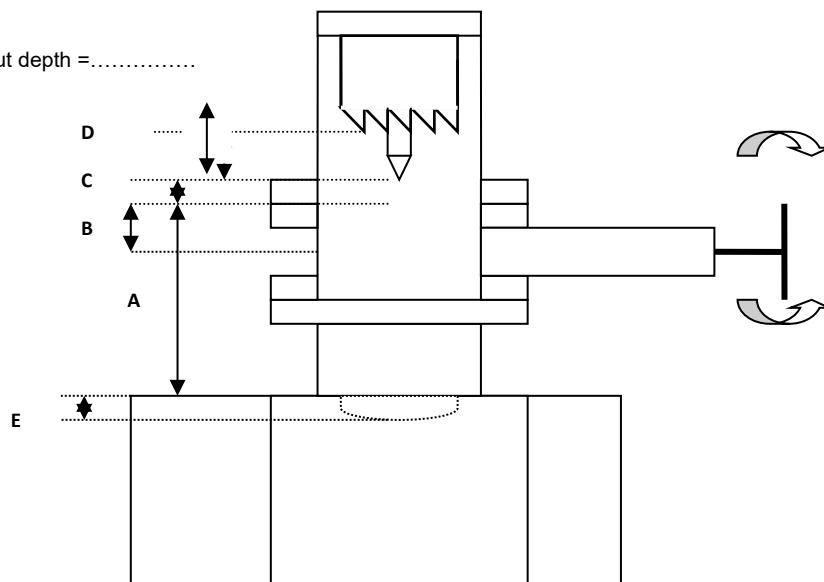
A, Flange to pipe =.....
B, Top valve to gate =.....
C, Pilot drill to flange =.....
D, Cutter to flange =.....E, Coupon cut depth =.....

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

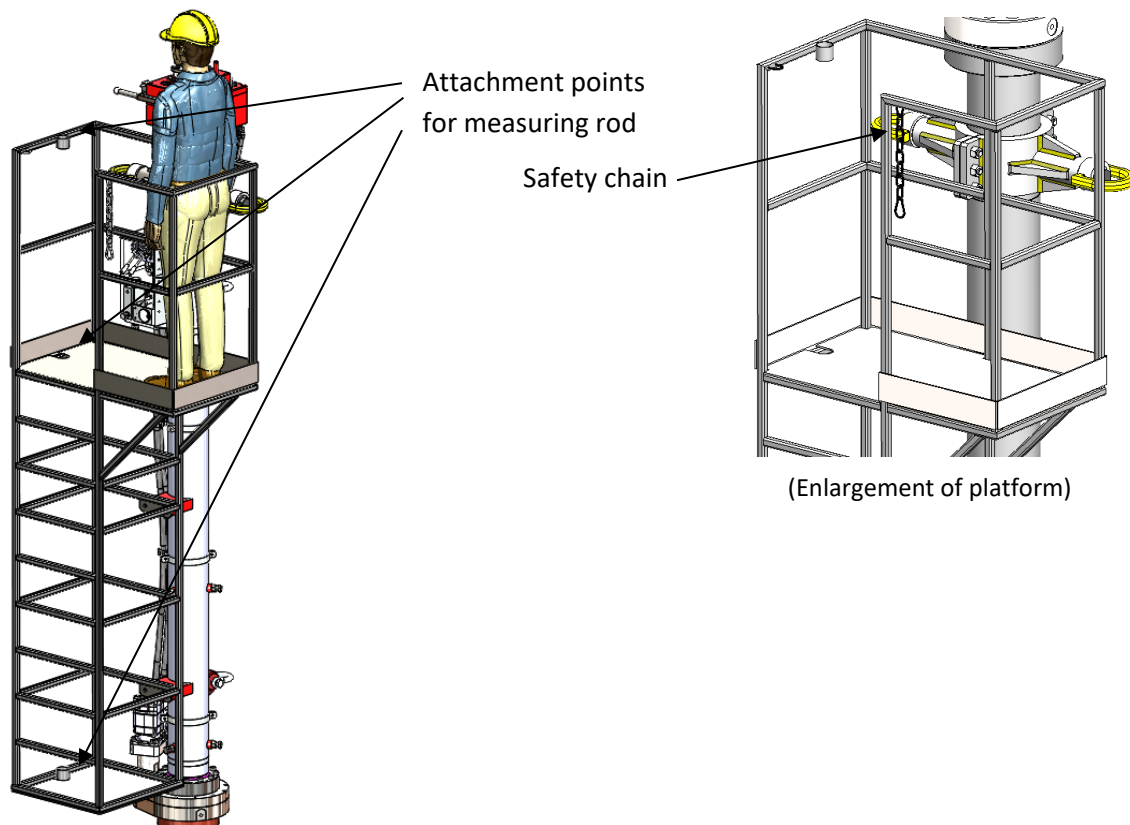
Thread Ø	Tensile Strength		Torque Setting	
	kN	lbs	Nm	in - lbs
M3	6.54	1470	2.1	19
M4	11.4	2560	4.6	41
M5	18.5	4160	9.5	85
M6	26.1	5870	16	140
M8	47.6	10700	39	350
M10	75.4	17000	77	680
M12	110	24700	135	1200
M14	150	33700	215	1900
M16	204	45900	330	2900
M20	306	68800	650	5750
M22	374	83950	875	7725
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

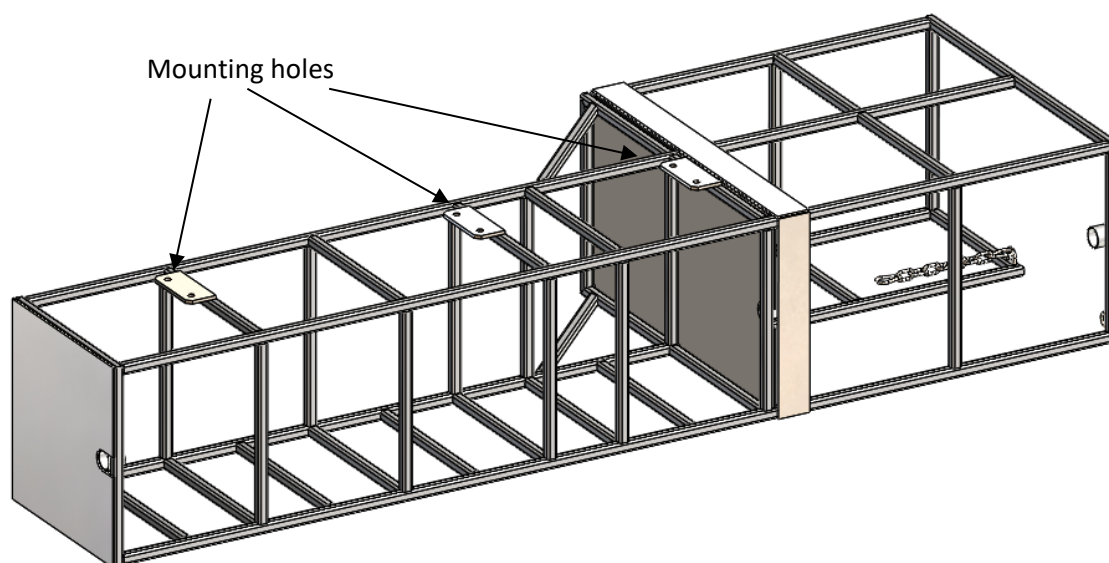
- Do not lean or stretch over the platform barriers.

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.

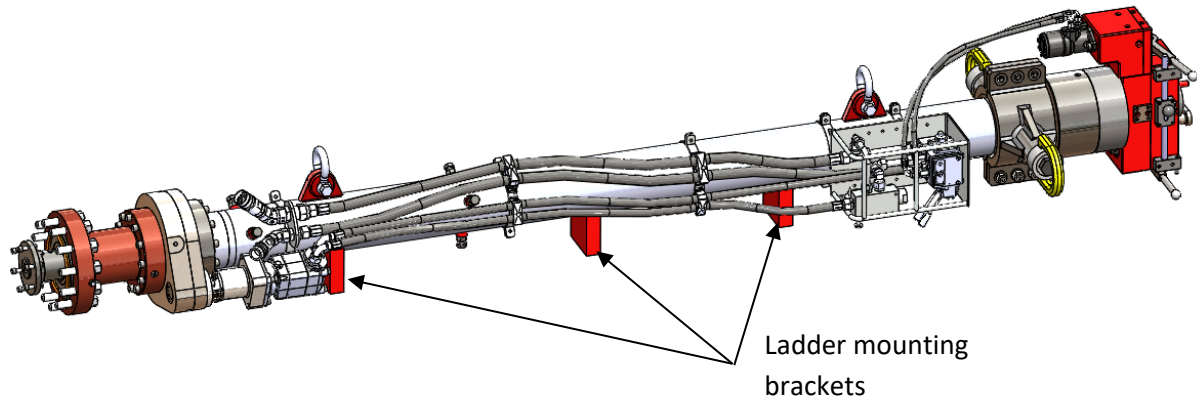
11.3.1. Installation

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.



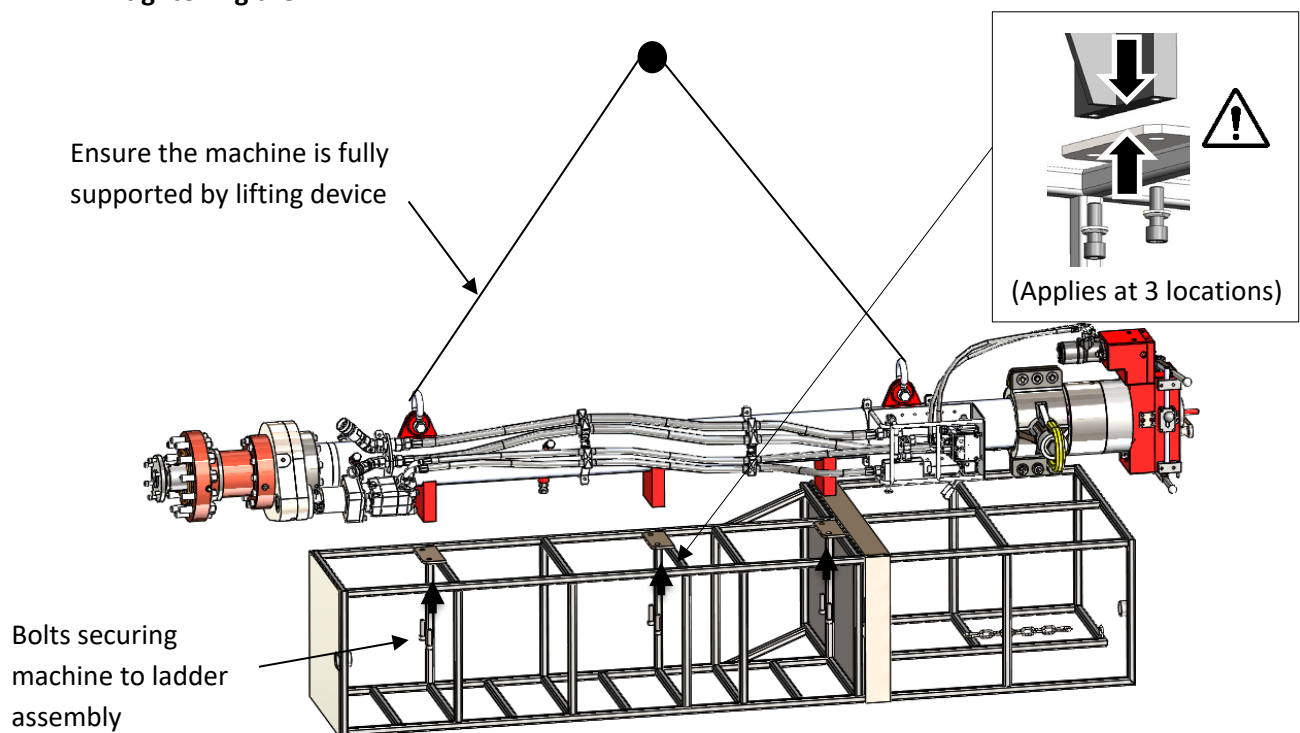
3. Introduce the machine to the ladder assembly. The machine should be suspended horizontally using a suitable lifting device (crane). At no time should the full weight of the machine be loaded onto the ladder assembly. Failure to adhere to this may cause structural damage to the ladder assembly. The 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.



(Machine shown is a representation only)

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.



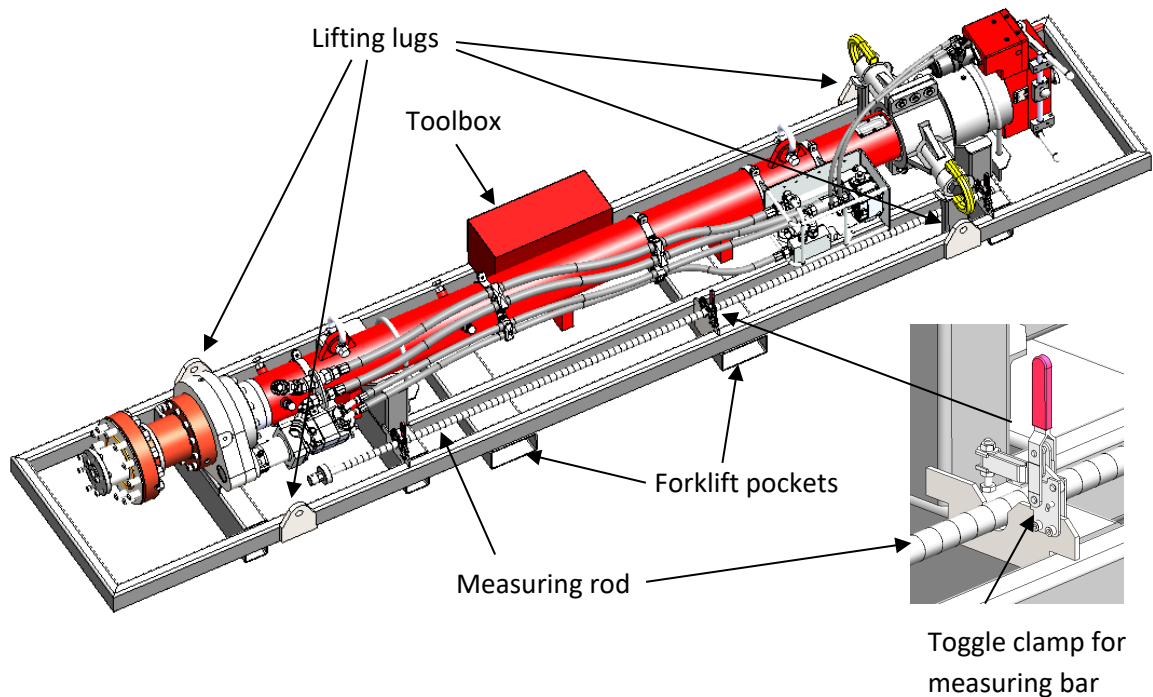
6. The machine is now ready to be lifted and installed on to the pipeline.
7. To disassemble the ladder assembly from the machine, follow the above procedure in reverse. Never store the machine on the ladder assembly.

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

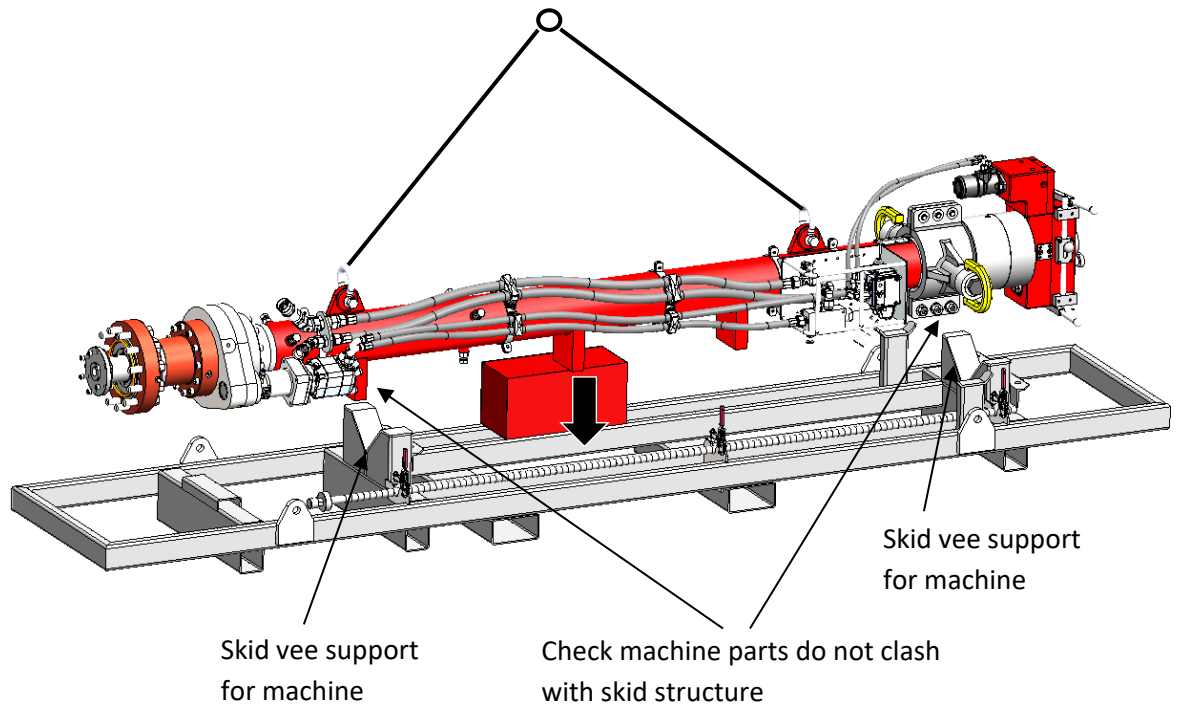
- Crushing/ trapping/ shearing hazard when lowering the machine into the skid vee. Stay clear from the machine when it is being lowered. Only approach the assembly once the machine is fully lowered and resting on the vees, to install the U-bolts to strap down the machine.

CAUTION

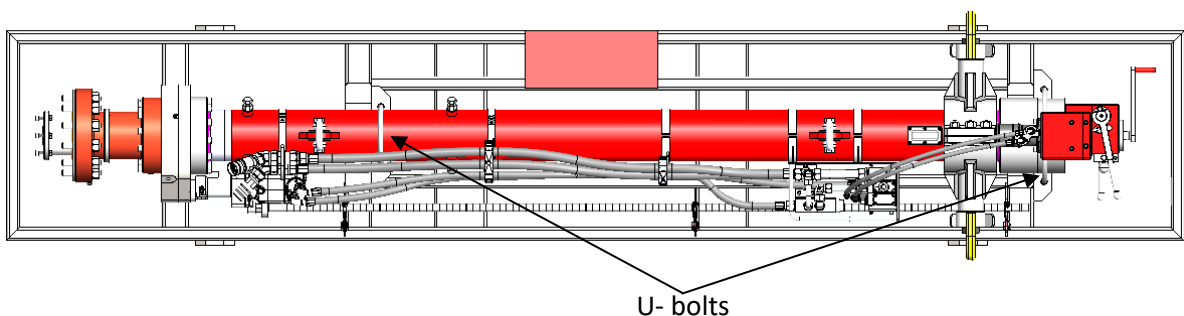
- Do not climb or stand on the skid. The skid surfaces have not been designed for such activity.
- When lowering the machine, make sure the machine is correctly aligned with the Vees to prevent any damage to the machine components.

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.

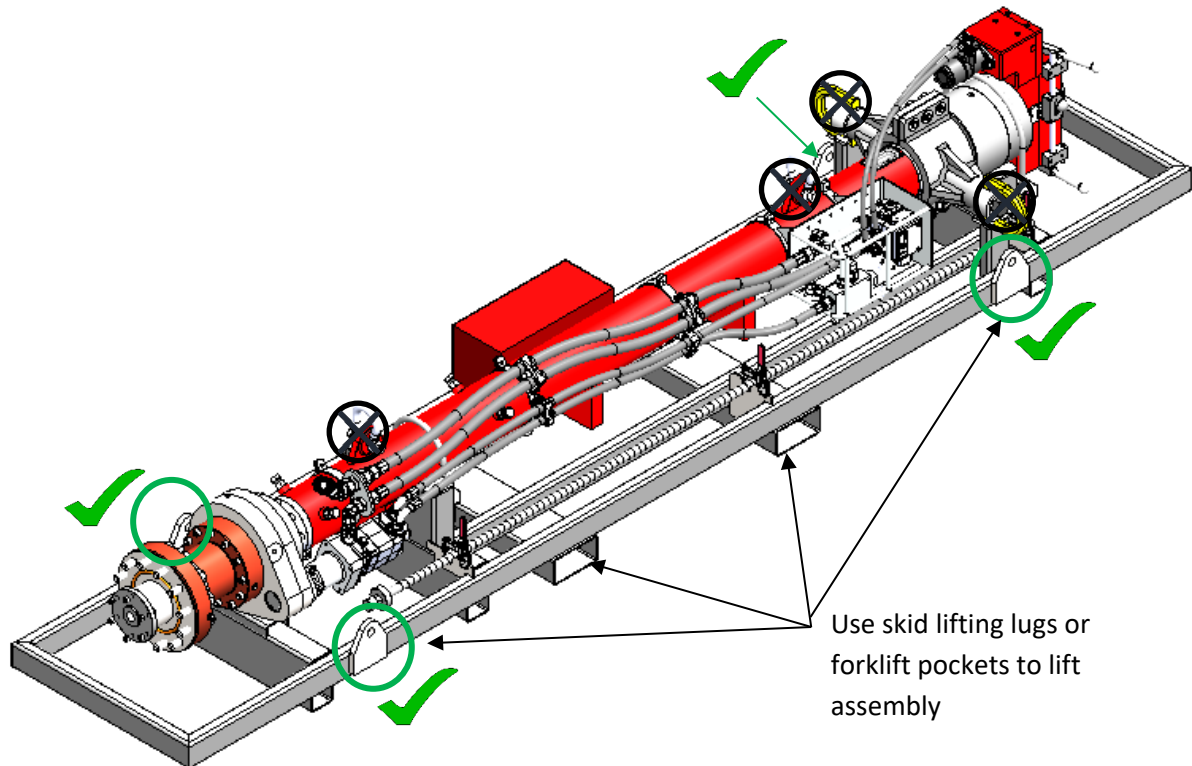


4. Place the machine onto the vees and fit the two U-Bolts over the machine to the skid. Ensure that the machine is rigidly secured to the skid.



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.

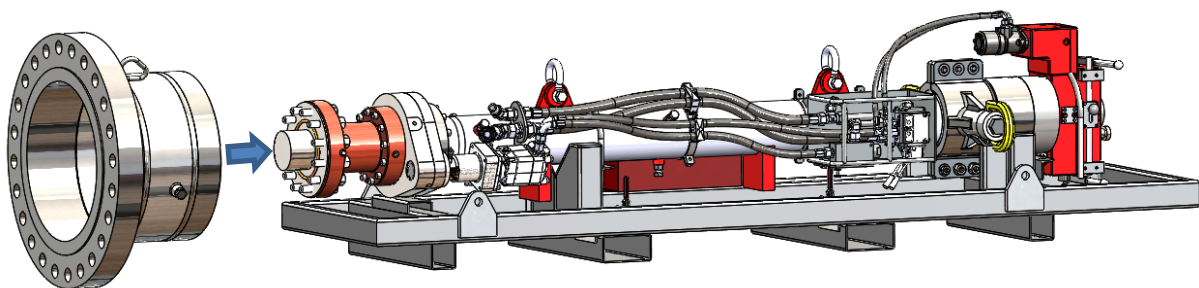
7. The machine and skid assembly are now ready to be transported or stored. Always use the skid lifting points or forklift pockets to move the unit. Do not use the machine lifting points to lift when the machine is attached to the skid.



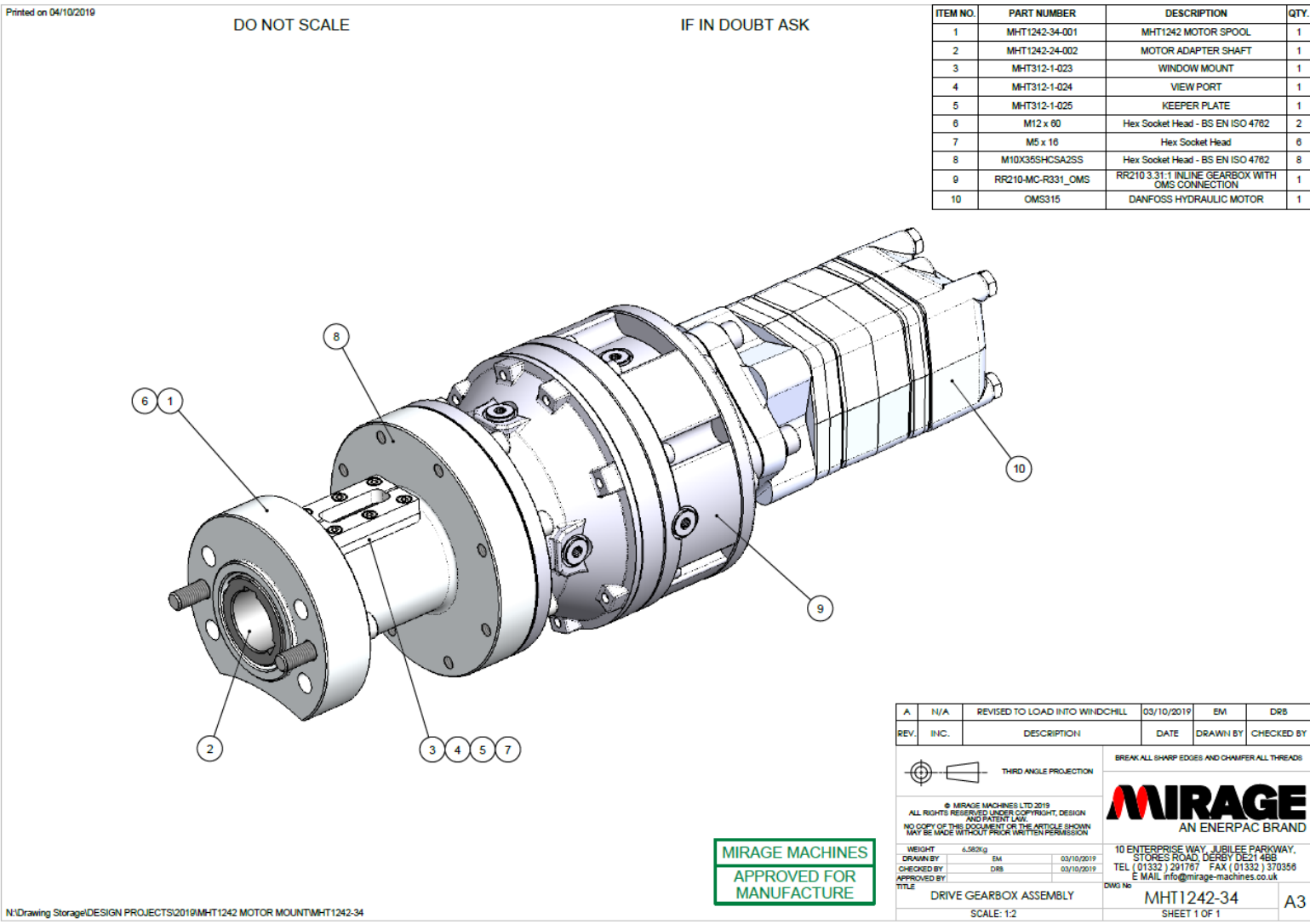
8. To disassemble the machine from the skid, follow the above procedure in reverse.

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.



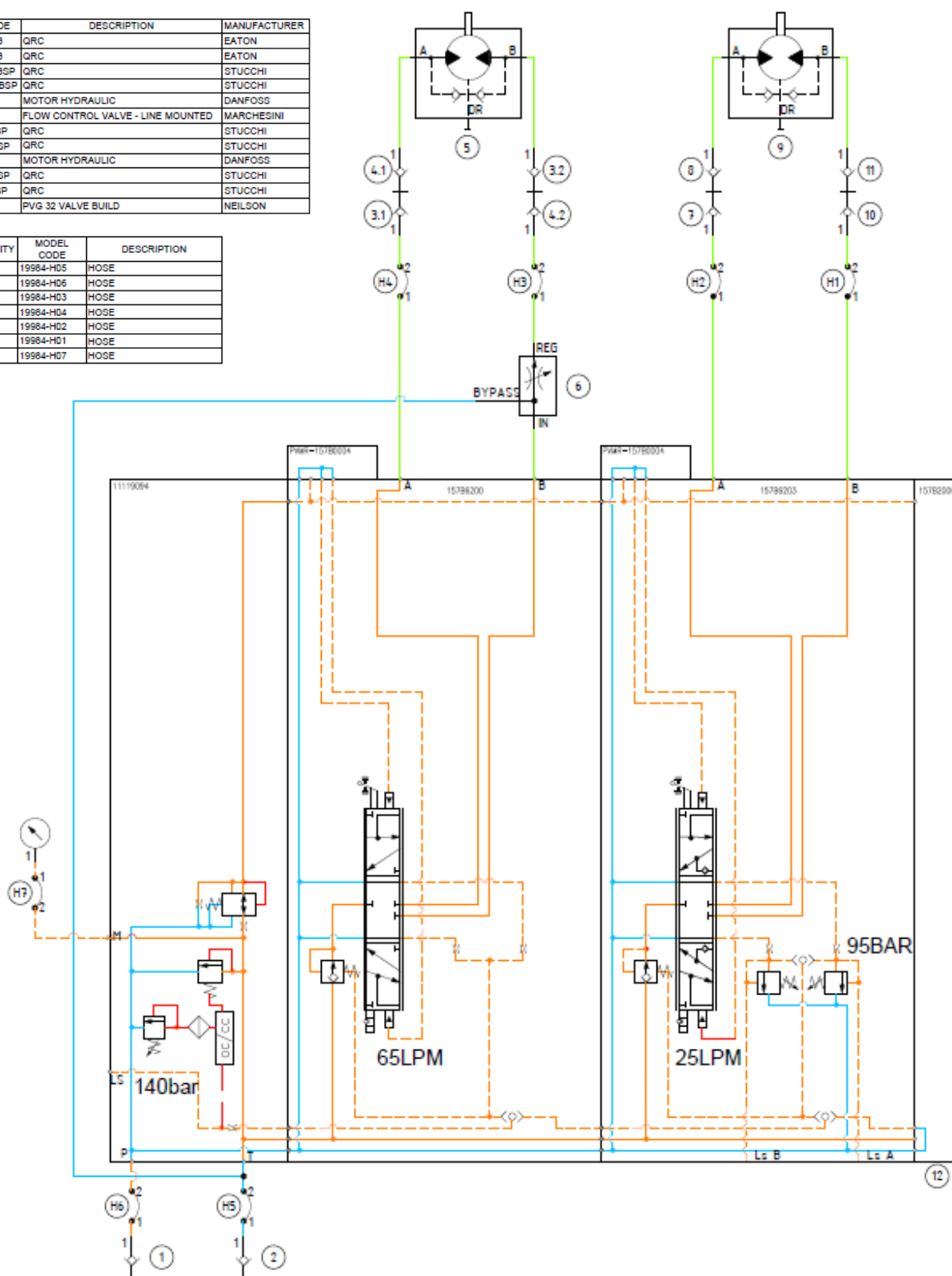
11.5. Alternative Gearbox assembly (MHT1242-34)



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]