

# Operating and Maintenance Handbook

## WIDE BORE LTM



### REVISION HISTORY

REVISION	DATE	COMMENTS	INITIALS
1	28-05-2012	Original release	MJD
2	13-08-15	VACGEN rebrand	AJL

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## **WARRANTY**

Subject to fair wear and tear and the due observance of any installation, user, storage, operating or maintenance instructions the Seller undertakes to replace or at its option repair free of charge to the Purchaser any goods which the Purchaser can establish are defective by reason of defective workmanship or materials and which are returned to the Seller carriage paid within 12 months of the date of dispatch by the Seller. In the event, however, that the Seller supplies spare parts either direct or are fitted or installed or replaced by the Seller's Service Centre such spare parts will be subject to warranty period of six months only.

1. The Purchaser cannot return any product for warranty repair without the prior approval of VACGEN and the issue of a Goods Return Number (GRN). This shall be obtained by contacting the service centre at VACGEN. All returned products must be accompanied by a completed Declaration of Contamination form (see note 2 below). Overseas customers must in the first instance contact the local selling agent.
2. We reserve the right to decline to service equipment we consider is in any way hazardous until a clearance or safety certificate, in a form satisfactory to VACGEN, has been completed and returned by the customer.

## **SERVICING AND REPAIR**

The following additional terms and conditions apply in the event that the customer elects to use the services of VACGEN workshop on a chargeable basis.

- 1 At own cost the customer shall dispatch the equipment to the workshop, carriage paid, suitably packed, protected and insured, bearing a Goods Return Number (GRN) and a completed Health & Safety Certificate (see note 2 below) obtained from VACGEN in advance of shipment.
- 2 During the period the equipment is on VACGEN premises, VACGEN will ensure the equipment against all risks.
- 3 VACGEN will provide an acknowledgement of the receipt together with an estimate of the repair charges. Such estimates are carried out on a visual basis and are therefore intended as a guide only. Formal fixed price repair quotations are available and involve the disassembly of the equipment to determine the full extent of work necessary to restore the equipment to an acceptable standard. In the event that the customer chooses not to proceed with the repair, VACGEN will make a charge to cover this examination effort.

**NOTE 1:** The above are extracts from VACGEN Conditions of Sale. Complete copies can be obtained from: VACGEN, Maunsell Road, Castleham Industrial Estate, St Leonards on Sea, East Sussex TN38 9NN, England

**NOTE 2:** This product is exempt from requiring a Declaration of Contamination form, but the user is nevertheless responsible for ensuring that the product is safe for transportation and handling.  
Service Department Direct Lines: Tel: +44 (0) 1424 856371 Fax: + 44 (0) 1424 852280

## 1 INTRODUCTION

### 1.1 Health and Safety information

This equipment is a component for use with vacuum systems. Whilst every effort has been made to eliminate hazards it's safe use is also dependant on the system to which it will be connected. The owner of the equipment must ensure that all users are aware of the Health and Safety information contained in this handbook. If the equipment is sold or passed to another owner this handbook must be included with the equipment. If in doubt, contact VACGEN Ltd.

### 1.2 Wide Bore LTM

The Wide Bore LTM is a robust UHV linear translator of modular construction. It comes in a range of travels, typically 25, 50, 75, 100 and 150 mm. The mounting and travelling flanges are 114 OD (DN 63) with a clear bore of Ø 68mm through the bellows.

Limit switches are supplied as standard with motorised options. A second pair of limit switches can be requested at the time of ordering or may be purchased separately (see p.8) They are also an option with the manually operated versions.

The manual units are operated via a simple hand wheel mounted on the top of the mechanism.

There is a graduated scale to easily see the travel position.

Integral positive stops are built in as part of the design.

### 1.3 Specification

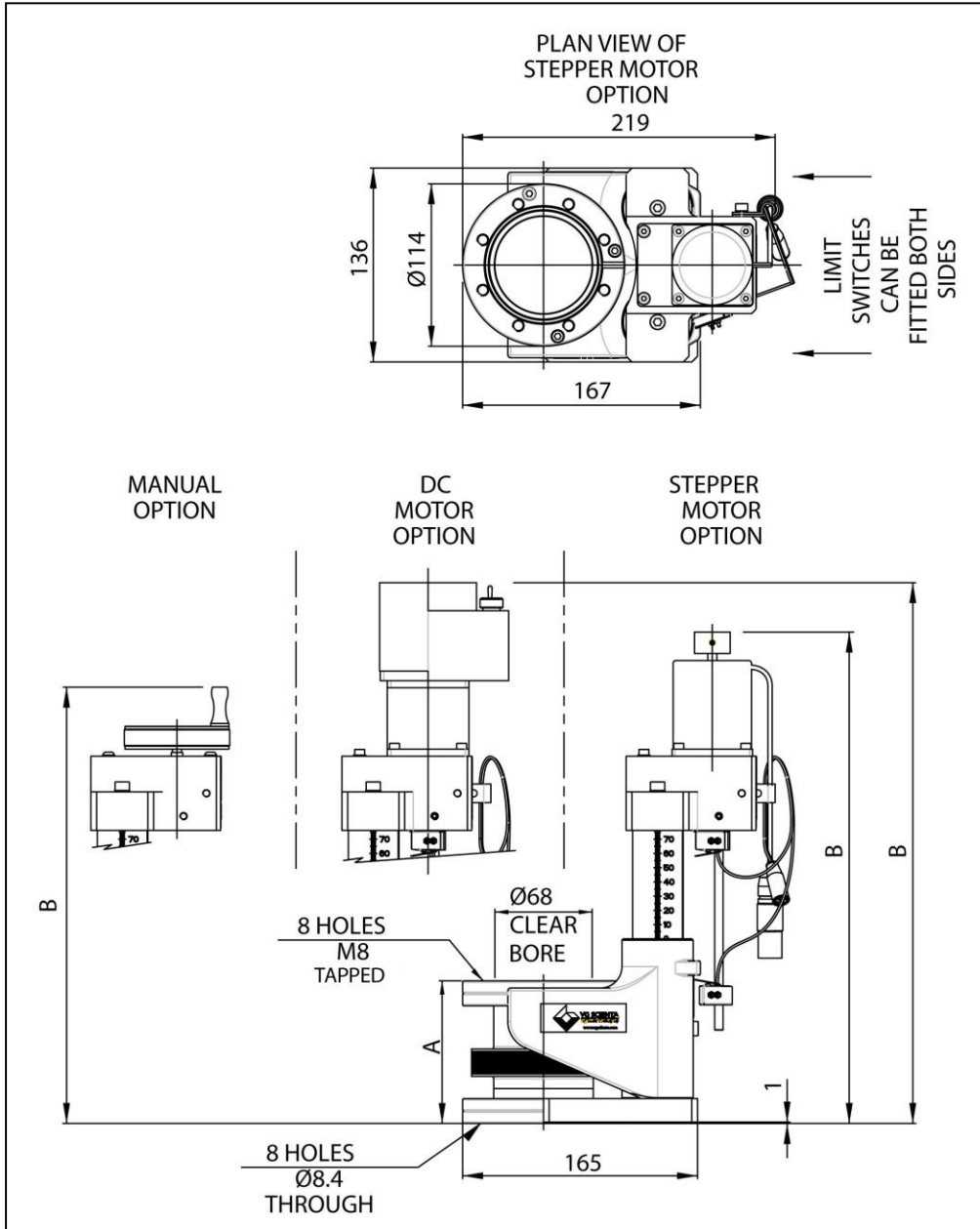
Technical Data LTMW Series	
Clear bore through bellows	68.0 mm
Operating Pressure Range	1 bar to 10 <sup>-11</sup> mbar pressure difference between inside and outside the bellows
Operating Temperature	-20°C to +200°C
Baking Temperature	250°C (after removing the motor and or limit switches, if fitted)
Base Flange	114 OD - Ø8.4 through holes (4.5") (DN 63)
Travelling Flange	114 OD – M8 tapped holes (4.5") (DN 63)
Motor / Hand wheel resolution	1 revolution of the motor / hand wheel gives 1.164 mm of Z travel. Torque required at hand wheel 1 Nm max under vacuum conditions. Making it easy to operate.
Motor size	NEMA 23 frame size stepper motor
Gear ratio between motor and lead screw	16 teeth on motor, 55 teeth on the lead screw
Lead screw pitch	4 mm
Deflection under vacuum	0.026° Maximum (measured on 150mm travel)
Maximum applied axial load	300 N
Maximum applied radial load	200 N

### Environment

This equipment is intended for use in clean, dry environment. For use in other conditions, please contact technical sales.

### Materials of construction

All units are manufactured mainly from austenitic stainless steel and aluminium alloy. Stainless steel is used for parts that form the vacuum envelope. Bearing surfaces may include PTFE.



## 1.4 Order Codes and Basic Dimensions

LTMW Series Linear Transfer Mechanism - 68.0 mm Clear Bore									
Flange mm	OD inch	Travel	Operation	A Extended	A Compressed	B Height	Shipping Weight kg	Bake Temp °C	Order Code
114	4.5	25	Manual	126	100	256	10	250	ZLTM-114-25-HW
114	4.5	50	Manual	151	100	281	10.5	250	ZLTM-114-50-HW
114	4.5	75	Manual	176	100	306	11	250	ZLTM-114-75-HW
114	4.5	100	Manual	201	100	331	11.5	250	ZLTM-114-100-HW
114	4.5	150	Manual	251	100	381	12.5	250	ZLTM-114-150-HW
114	4.5	25	Stepper	126	100	295	11	250	ZLTM-114-25-SM-S
114	4.5	50	Stepper	151	100	320	11.5	250	ZLTM-114-50-SM-S
114	4.5	75	Stepper	176	100	345	12	250	ZLTM-114-75-SM-S
114	4.5	100	Stepper	201	100	370	12.5	250	ZLTM-114-100-SM-S
114	4.5	150	Stepper	251	100	420	13.5	250	ZLTM-114-150-SM-S
114	4.5	25	DC Motor	126	100	330	11.4	250	ZLTM-114-25-DC-S
114	4.5	50	DC Motor	151	100	355	11.9	250	ZLTM-114-50-DC-S
114	4.5	75	DC Motor	176	100	380	12.4	250	ZLTM-114-75-DC-S
114	4.5	100	DC Motor	201	100	405	12.9	250	ZLTM-114-100-SM-S
114	4.5	150	DC Motor	251	100	455	13.9	250	ZLTM-114-150-SM-S

### Gasket required for Wide Bore LTM

Wide Bore Copper Gasket

ZCU68

## 2 INSTALLATION

### 2.1 Unpacking

The packaging should be inspected for visual signs of damage. If the packaging appears to be damaged you should contact either your local sales office, or VACGEN Ltd, immediately. There are no shipping brackets, pins or bolts of any kind to be removed once unpacked, though ensure all packaging materials are fully removed.

### 2.2 Installation Guidelines

The translator will operate when mounted in any operation, either vertical, horizontal or inverted. Consideration must be given to the loading on the support vessel by the translator especially in the horizontal position. When installing, take care when lifting to avoid damage to protruding components. Care **MUST** be taken not to damage the bellows when bolting up the fixed flange.

## 3 Maintenance

### 3.1 Lubrication

The 2 round bearing shafts (Ø35) must be kept clean at all times and do not require lubrication. The lead screw and gears are sparingly lubricated with ZLUBEMK. The amount fitted from new will last 10,000 cycles. All that is required is to reapply the lubrication on the lead screw every 1000 cycles with a short haired paint brush lightly covered in ZLUBEMK.

### 3.2 Servicing

The unit will perform for up to 10,000 cycles, lubricating as 3.1. The only parts that are replicable by the user are the gears, lead screw and bearings on the lead screw. Any other repairs will require the unit to be returned to the factory.

In order to maintain compliance with EU directives, only use approved spare parts.

### 3.3 Cleaning

Clean away the remains of the existing lubricant using a cloth moistened with a solvent such as Ethyl Alcohol, Acetone etc.

## 4 Accessories

Stroke (mm)	Description	Order Code
25	Limit Switch kit 25 Z	SLTM-114-25-S
50	Limit Switch kit 50 Z	SLTM-114-50-S
75	Limit Switch kit 75 Z	SLTM-114-75-S
100	Limit Switch kit 100 Z	SLTM-114-100-S
150	Limit Switch kit 150 Z	SLTM-114-150-S

\* The motorised versions are supplied with these limit switches. If required on the manual version they must be ordered separately.

Description	Order Code
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Metric Bolt Kit	ZM8B35
Hand Wheel Kit	SLTM-114-HW
Motor Kit DC	SLTM-114-DC
Motor Kit Stepper	SLTM-114-SM

## 5 Recommended Spares

Description	Order Code
Lubrication grease kit	ZLUBEMK

## 6 Changing between Hand Wheel and Motor

To change from a manual unit to a motorised unit and vice versa, remove top plate and replace as shown below:

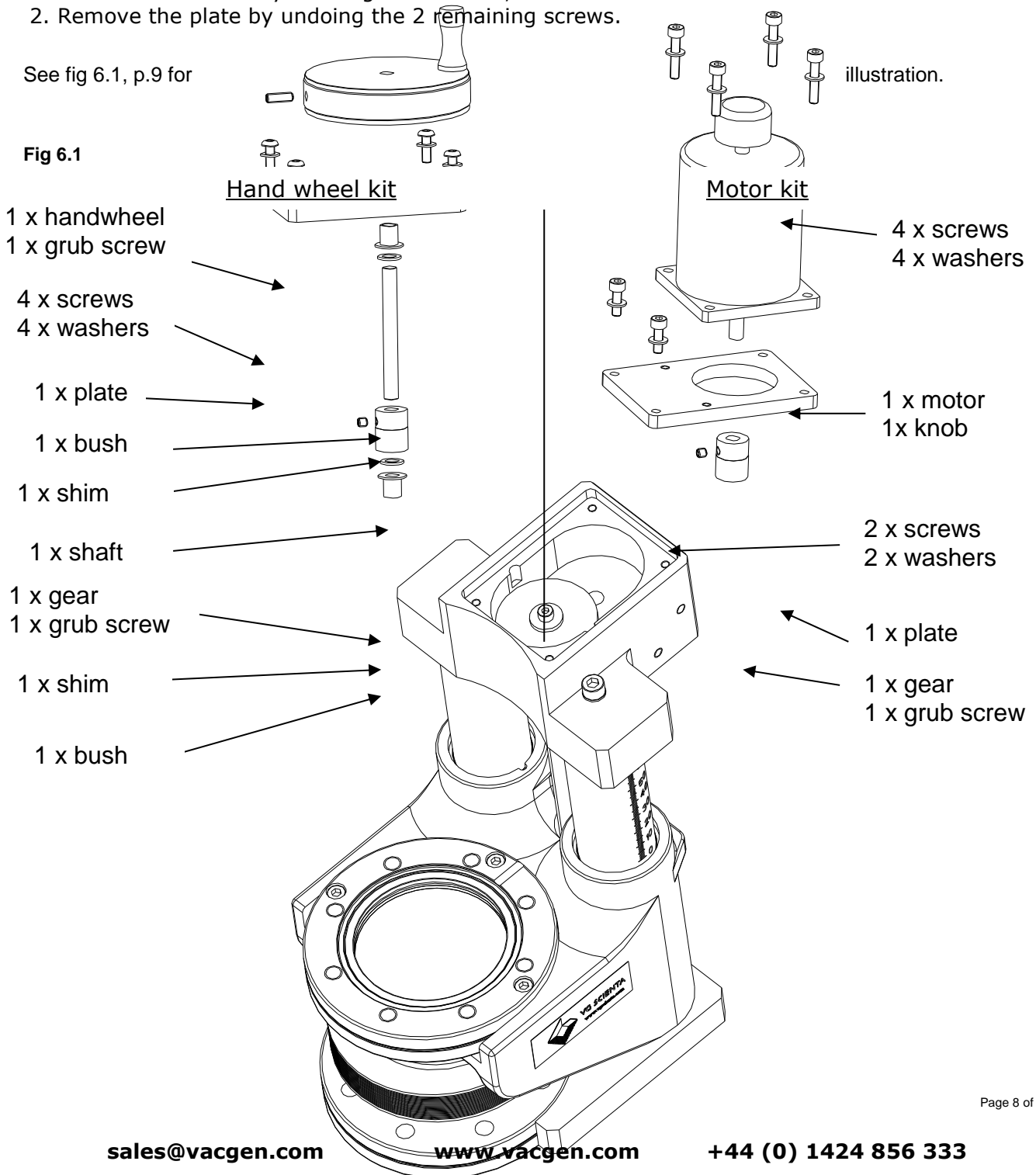
### Converting a hand wheel to motorised

1. Remove handwheel by undoing its grub screw.
2. Remove the 4 screws, and remove plate
3. Slide out the shaft

### Converting a motorised to a hand wheel

1. Remove the motor by undoing its 4 screws, and lift motor out.
2. Remove the plate by undoing the 2 remaining screws.

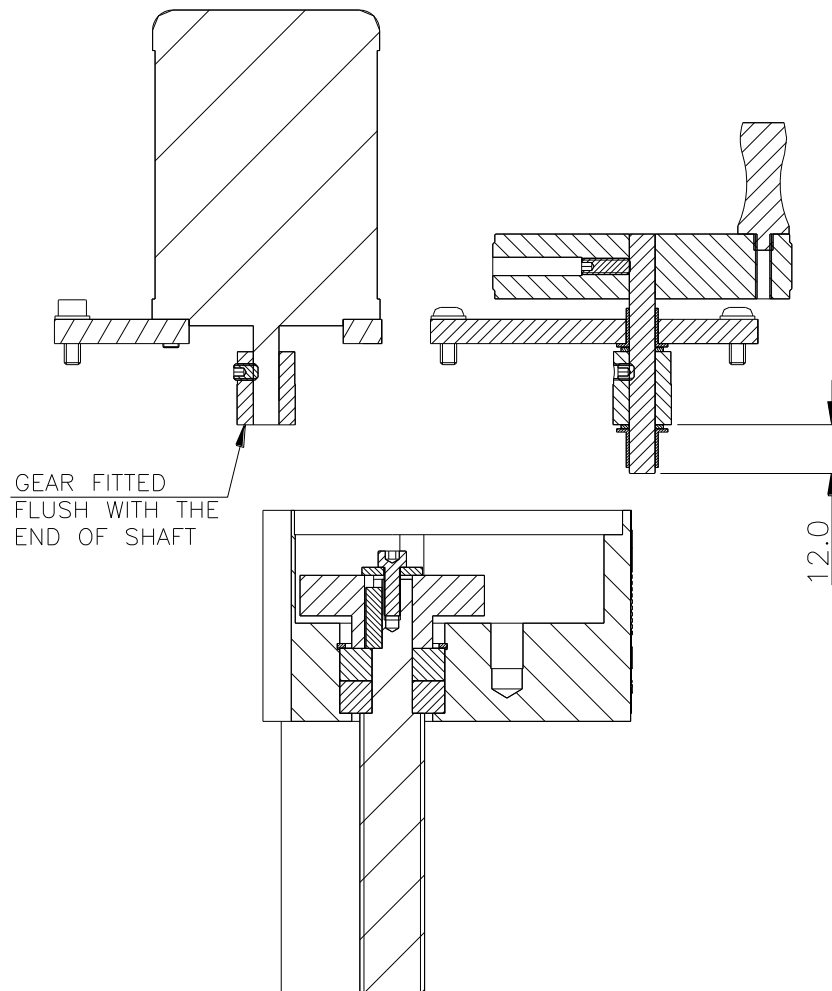
See fig 6.1, p.9 for





**Fig 6.2**

When fitting gear, fit as shown below:



## 7. Service and Repair Form

<b>Declaration of Contamination of Equipment and Components</b>	
<p>Serving and repairs will only be carried out if the conditions for Servicing and Repair are complied with in full, according to the VACGEN Ltd. Conditions of Sale. A summary of these requirements are included on the inside front cover of the Operating Instructions. The manufacturer will refuse to accept any equipment without a signed declaration attached to the OUTSIDE of the packaging. This declaration can only be completed and signed by authorized and qualified staff.</p>	
<b>1 Description of Equipment and Components</b>	
Equipment Type.....	Model Number.....
Serial Number.....	Your Reference Number.....
<b>2 Reasons for return</b>	
<p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	
<b>3 Condition of Equipment</b>	
YES ( ) NO ( ) Toxic?	YES ( ) NO ( ) Corrosive?
YES ( ) NO ( ) Explosive?	YES ( ) NO ( ) Biological Hazard?
YES ( ) NO ( ) Radioactive?	YES ( ) NO ( ) Other Harmful Substances?
<p>Equipment and Components that have been contaminated, WILL NOT be accepted without written evidence of decontamination.</p>	
<b>5 Contamination Materials</b>	
<p>List all the substances, gases and by-products that may have come in contact with the equipment, giving trade name, manufacture, chemicals names or symbols.</p> <p>Please note that any of these listed, must be completely removed, so it is safe to handle and weld, without giving off health threatening gases. Please enter details below and/or attach data sheets</p> <p>.....</p> <p>.....</p> <p>.....</p>	
<b>6 Legally Binding Declaration</b>	
<p>I hereby declare that the information supplied on this form is complete and accurate.</p> <p>There by stating that the goods offer no risk to health or safety</p> <p>Organisation..... Name.....</p> <p>Country..... Job Title.....</p> <p>Post/ZIP code..... Telephone.....</p> <p>Signature..... Email.....</p> <p>Signature..... Date.....</p>	
<p>Return goods to: Address at top</p> <p>Phone: (0) 1424 851291 Fax (0) 1424 851489 (Form VGF33)</p>	