

# ATEX Certified VL303Ex Challenger Needle Scaler

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## Operation and Maintenance Manual



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**TRELAWNY**<sup>TM</sup>  
SURFACE PREPARATION TECHNOLOGY

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## DECLARATION OF CONFORMITY

We,

Trelawny SPT Limited of  
Trelawny House, 13 Highdown Road, Sydenham Industrial Estate, Leamington Spa, Warwickshire, CV31  
1XT, United Kingdom,

Declare that under our sole responsibility for supply/manufacture of the product

Name of product \_\_\_\_\_

Model, Serial Number \_\_\_\_\_

Year of production \_\_\_\_\_

to which this document relates is in conformity with the provisions of the following Directive(s), Normative Documents and their relevant Standards:

- |                            |   |
|----------------------------|---|
| <b>2006/42/EC</b>          | <b>MACHINERY DIRECTIVE</b>  |
| <b>2006/95/EC</b>          | <b>LOW VOLTAGE DIRECTIVE</b><br><b>(Applicable only to products using electric power)</b> |
| <b>EN ISO 11148-4:2012</b> | <b>HAND HELD NON-ELECTRIC</b><br><b>(Non-Rotary Percussive Tools)</b>                     |

A handwritten signature in blue ink, appearing to read "Rob Chapman", written over a horizontal line.

Date and place of issue,  
24<sup>th</sup> June 2016  
Leamington Spa, England.

Rob Chapman,  
Managing Director.



Registered Office: Trelawny SPT Ltd, Trelawny House, 13 Highdown Road, Sydenham Industrial Estate, Leamington Spa, Warwickshire, CV31 1XT, United Kingdom



DOCUMENT No. Q:57/7

## Appendix 1 - Hazardous Area Certification

The **VL203/223 & VL303 Needle Scalers** are certified compliant to the ATEX Directive (2014/34/EU) for safe use within a hazardous area and has been assessed so by TRaC (Notified Body 0891).

This product conforms to the Standards:

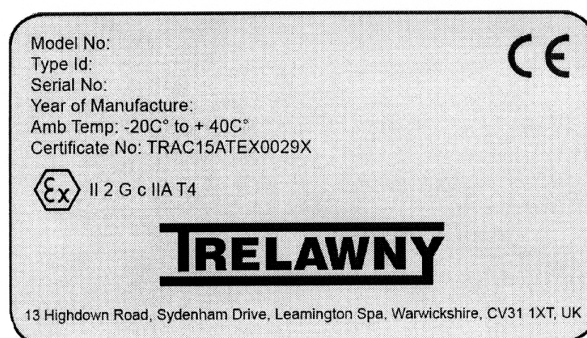
**EN 13463-1:2009**

**EN 13463-5:2011**

and is attributed with the product certification codes:

 **II 2 G c IIA T4**

ATEX Certificate Number: **TRAC15ATEX0029X**



### Special Conditions of Safe Use

1. Air compressors used in conjunction with these Needle Scalers shall incorporate means to prevent the ingress of dust or other foreign material into the air supply i.e. a filter on the compressor intake.
2. For air compressors used in conjunction with these Needle Scalers, only lubricants that are resistant to carbonisation are to be used
3. Equipment is to be operated at a maximum of 6.9bar (100p.s.i). Equipment must not be operated below 5.5bar (80p.s.i).
4. The external painted surfaces of the equipment are not to be exposed to charging mechanisms stronger than manual rubbing.
5. Any lubricating oil used must have an ignition temperature of >100°C
6. Air supply and vacuum hoses used in conjunction with the equipment must be manufactured from anti-static material with a surface resistance not greater than 10<sup>9</sup>Ω.
7. For the purpose of vacuum extraction at source, equipment used in conjunction with the Needle Scalers must be suitably rated ATEX certified.
8. Ensure the lanyard is attached to the fall arrester and attached to a safety harness or belt.
9. Equipment is to be lubricated before use as detailed in the Operation & Maintenance Manual.

**Equipment must only be installed & maintained by suitably qualified and competent personnel in accordance with the instructions provided and the terms of the applicable product services.**

Part Number 733.3003X issue (1)

# OPERATION

## General Information

Before operating, performing maintenance or repairing the ATEX Certified VL303Ex Needle Scalers, this manual must be read and understood. If in any doubt, ask your supervisor before using this equipment.

Local safety regulations must be followed at all times. Failure to follow these instructions could result in damage to the Scaler and/or personal injury.

Operators should be familiar with the data given in the specification section. Please keep these instructions in a safe and accessible place.

Trelawny SPT Limited disclaims all responsibility for damage to persons or objects arising as a consequence of incorrect handling of the tool, failure to inspect the tool for damage or other faults that may influence the operation prior to starting work, or failure to follow the safety regulations listed or applicable to the job site.

The tool is primarily designed for the removal of paint, rust and scale, it can be used both indoors and out.

This tool must not be used in a fixture.

## Air Supply

The compressed air must be free from water and dirt. The installation of a filter/regulator/lubricator air preparation set (with moisture trap) adjacent to the tool is **strongly recommended**.

In particularly cold temperatures it is recommended that a proprietary anti-freeze lubricating oil is used.

Always clear the air hose before connection to the tool. Ensure that no moisture (condensation) is present in the air hose.

Ensure that only 10mm (3/8") bore Antistatic air hose is used and that all couplings are secure, leak free and in good condition. (See Parts list for recommended hose.)

For maximum efficiency, limit the length of air hose to 10M (33ft). Where extra length is necessary, for each additional 15M (50ft) of air hose used, the pressure drop is approximately 0.16bar (3psi).

**The correct air pressure for this machine is to 6.2bar (90psi).**

Do not let the operating pressure fall below 5.5bar (80p.s.i.) or rise above 6.9bar (100 psi) absolute maximum.

The compressor should be able to supply a minimum of 3.77 L/s (8cfm) of **free air** not displaced as quoted by some compressor manufactures, this will give 3cfm of headroom, so that the compressor isn't continually running.

### NOTE:

**If this tool stops working**, it is most likely that the plastic (17) ball has worn excessively and may have passed into the cylinder, check the cylinder exhaust holes for the remnant also. This is designed to run for approximately 160hrs before requiring replacement. (Spare balls are supplied with the tool)

## Safety

**Always, read instructions first before use.**

### Do -

Be aware that this tool is **not** electrically insulated. Be aware that the tool can create dust and flying debris. Keep hands and clothing away from moving parts.

Be aware of others working around you.

Ensure that this tool is lubricated **daily**.

Store this tool in a secure and dry environment.

Wear Personal Protective Equipment including safety goggles, footwear, ear defenders and gloves. In some environments it will be necessary to wear facemasks or breathing apparatus. (Vacuum shroud available)

**Always observe safe-working practices at all times.**

### Do not -

Allow the tool to run unattended.

Use the Scaler as a lever.

Modify this tool in any way, this will invalidate the warranty and could also lead to serious injury.

Use wire or any other fixing to lock the throttle lever in the on/open position.

Operate tool with the front tube (34) removed.

Use the tool in potentially explosive environments.

Drag the tool by the air hose.

Use petrol (gasoline), thinners or any other high flash point solvent to clean the tool.

Use the tool if you become tired, this can lead to physical strain or injuries; where practical; use a spring balance, balance weights or similar equipment to take the weight of the tool.

Hold the exposed needles, whilst the tool is in use, this could cause vibration damage to the hands.

### Please note:

Unrestrained hoses can whip if they become detached.

Care must be taken to avoid damaging or tripping over the trailing air hose.

Always use a suitable vacuum system connected to the 38mm vacuum take-off port fitted to the tool.

The Beryllium Copper spark resistant needles may create airborne dust, which maybe harmful to health if ingested.

A Trelawny ATEX rated, 30 litre air operated vacuum system with a HEPA filter, is available as a separate vacuum or as a Kit containing either a VL203, VL223 or the VL303 Needle Scaler and also comes with an Anti-static tool air hose.

30 litre ATEX Vacuum

Part Number: 303.10KAV30/DH

30 litre ATEX Vacuum Kit with a VL203

Part Number: 139.2503

30 litre ATEX Vacuum Kit with a VL223

Part Number: 139.2523

30 litre ATEX Vacuum Kit with a VL303

Part Number: 139.2533

# MAINTENANCE

## Starting work

Please note,

Always use a lanyard or strap attached to a belt or harness, but preferably this should be attached to a fixed and secure mounting point.

Always use Trelawny Beryllium Copper Needles.

### **Prior to operating the tool check: -**

That all fittings are secure, free from leaks and air hoses are in good condition.

**That the air pressure is correct for this tool 6.2 bar (90 p.s.i.).**

Put a few drops of a recommended lubricant into the air inlet of the tool.

Safe use of this tool requires a solid stance and secure foothold, the tool may be used in other postures but care must be taken that the operator adopts a firm and stable position.

Maintain contact with the work surface with sufficient pressure only to keep the tool from bouncing.

Excessive pressure can prevent the tool from working to its full capacity.

Handled correctly the VL303Ex Needle Scaler will work quickly and efficiently.

**Excessive operator pressure will not improve the tool efficiency but could cause premature tool failure and operator fatigue.**

Never allow the tool to run continuously whilst not in contact with the surface being prepared.

To operate the tool, pull the throttle lever (7) towards the handle and then apply the needles to the surface to be worked.

Do not place needles on the surface, and then pull the throttle lever as this will result in the tool bouncing off the surface.

**To switch off, simply release the throttle lever.**

Gloves and personal protective equipment **must** be worn when using this tool.

### **VERY IMPORTANT**

Only Trelawny Beryllium Copper Needles must be used in this tool.

DO NOT substitute with any other needle.

### **IMPORTANT:**

The plastic tool box containing the ATEX tool is not ATEX certified or anti-static, neither is the foam inserts containing the equipment.

Do not take the tool box into an ATEX restricted area.

## Maintenance

**Maintenance** must only be carried out by a competent person, in a suitably equipped workshop.

**Disconnect the tool from the air supply before carrying out any of the following operations.**

Clean all debris from the exterior of the tool.

This tool has been designed so that you only require a vice, screwdriver, 3mm pin punch and light hammer, no other specialist tools are required to completely strip and service the tool.

For safe efficient running and at intervals of no more than 120 hours, dismantle and clean with highly refined paraffin.

Check all components for wear, replace the 6mm Ball (Item 17) and all O'Rings. Immediately after cleaning, thoroughly oil the tool with one of the recommended lubricants.

### **Removing Needles**

Disconnect from air supply, hold the Cover in a vice using the flats provided, keeping the tool vertical, unscrew by hand, the Front Tube assembly complete with Return Spring (32), Needles(31), and Needle Holder (30).

Check the condition of the Front Tube Locking O'Ring (25). Take care not to invert the Needle Scaler while removing the Front Tube or the Piston may fall out of the Intermediate Tube.

Remove the Needles from the Needle Holder (30) and dispose of the used Needles in an appropriate manner.

### **Re-fitting the Needles**

Insert the new needles into the Needle Holder location holes; ensure that the Needles are inserted into the chamfered side of the holes. Fit new Front Tube Locking O'Ring (25) to the Intermediate Tube. Fit the Return Spring over the needles (31) and insert the Needle assembly into the Front Tube (34). Screw the Front Tube assembly onto the intermediate Tube until hand tight.

## Recommended lubricants

Oil the tool daily during use. Put a few drops of one of the following bio-degradable air tool lubricants through the air inlet.

SHELL

Naturelle HF

CASTROL

Carelube HTG 22

Always use clean oil from a sealed container and ensure ignition temperature is above 100deg C.

## Tool Dismantling

Before carrying out any dismantling, ensure the air supply is turned off and remove the air-line from the tool. Clean all deposits from the outside of the tool. Service kits are available, see parts section.

### **Piston and Cylinder removal**

Hold the Cover in a vice using the flats provided, keeping the Front Tube (34) vertical. Unscrewing anti-clockwise

# MAINTENANCE

by hand, remove the Front Tube (34) complete with the Needles (31), Needle Holder (30) and Spring (32) as an assembly.

**Note:** When removing tool from vice, do not point the front of the tool downward; the piston may fall out of the Intermediate Tube causing damage.

Hold a clean lint free cloth over the open end of the Intermediate Tube, remove from vice and tilt the Tube downwards to remove the Piston (26). Secure the Cover (10) in a vice with the Intermediate Tube in the vertical position, using the flats provided.

Use a suitable 6mm bar through the holes provided, unscrew the Intermediate Tube (22) anticlockwise. Carefully remove the Intermediate Tube from the cover and remove the Cylinder from its location hole in the Cylinder Guide Plate, which is fitted in the cover.

The Cylinder Guide Plate (12) can be pulled out of the cover to gain access to the Guide Plate Seal (13).

## Cylinder Ball Valve replacement

This is a consumable item and will require replacing after approximately 120 -160 hours use; this is dependant on the cleanliness of the air supply and frequency of lubrication.

**Do not replace this plastic ball with a steel version,** as it will damage the cylinder valve seat and piston valve pin. The ATEX certification will also become invalid.

Remove the ball retaining O'Ring (18) from its groove just inside the bore of the stem using a suitable pointed implement. Remove the ball from the bore or if it has worn excessively and may have passed into the cylinder, check the cylinder exhaust holes for the remnant also. Replace and refit new O'Ring into groove.

## Piston Valve Pin replacement

Hold the piston in a vice by the stem, using a pair of cutters remove the top of the Valve Pin (28), using a drill & 6mm drill bit and remove the remainder from the piston. A small socket (4mm) which just fits over the actual pin, will stop damage occurring. Drive the valve pin in up to its shoulder using a vice or a small hammer.

## Valve Body - Valve Stem removal

Hold the Valve Body (6) in a vice using the flats provided. Using a 3 mm diameter punch, drive the Throttle Lever retaining Spring Pin (8) out of the Valve Body (6) and withdraw the Throttle Lever (7). Remove the Valve Cap with O'Ring (2), Valve Spring (3), Valve Stem (4) and the Valve Seat O'Ring (5).

## Valve Body removal

Remove the Front Tube and remove Needle Holder, Needles and Return Spring as per instructions for Needle replacement above. Replace the Front Tube without the Needles etc, onto the Intermediate Tube and screw up until hand tight. Hold the Valve Body flats securely in a vice, with the Cover (10) uppermost. Turn the tool anticlockwise around the Valve Body by holding the Cover and Front Tube, unscrew the Valve Body from the handle until loose, remove from vice and finally unscrew by hand.

## Vacuum Take-off

The vacuum take-off fitted is also available as a spare part. (See parts list for take-off and cuff) which fits over the front tube. Position the front of the cuff with the needle tips 15-20mm inside, adjust as the needles wear. Tighten the caphead screw to secure. Use a Trelawny recommended ATEX certified vacuum, fitted with a HEPA filter for 99.9% dust containment.

## Assembly

Ensure all parts are clean and internal parts have a film of recommended lubricant. Replace any parts that show signs of wear. If the tool is being fully serviced, it is strongly recommended to change all O'Rings (2), (5), (14), (18), (25), & Cushion Ring (19), the Seals (13,) (29), 6mm Ball (17) and Needle Holder during assembly.

## Valve assembly

Replacement of the Valve Body (6) onto the Cover assembly is the reverse of removal. Use a few turns of P.T.F.E. tape on the threads of the handle and screw on the Valve Body (6) initially by hand, then insert the Valve Body in a vice, holding securely on the flats provided, and with the Cover (10) uppermost. Finally tighten up clockwise by hand, holding the Front Tube and Cover, and align the Throttle Lever (7) with the front of the tool when resistance is felt. Replace the O'Ring (2) on the Valve Cap (1). Fit a new Valve seat O'Ring (5) in the Valve Body (6). Insert the Valve Stem (4), in the Valve Body (6). Place the Valve Spring (3) on top of the Valve Stem (4), screw down the Valve Cap (1) by hand, and then fasten until fully tight with a flat blade screwdriver. Locate Throttle Lever (7) in the Valve Body using a 3mm punch to align holes. Secure by inserting Spring Pin (8).

## Tool assembly

Ensure that all components are clean and lubricated with a thin film of the recommended lubricating oil. Assembly is the reverse of dismantling. Secure the Cover (10) vertically in a vice using the flats provided, insert the Cylinder Guide Plate ensuring that the flat face is uppermost, ensure that it is located onto the shoulder at the bottom of the threaded section inside the Cover. Fit the Cylinder's stem into the bore of the Cylinder Guide Plate (12). With the removal holes uppermost carefully slide the Intermediate Tube over the Cylinder, screwing down by hand. Finally tighten by using a 6mm bar x 200mm through the holes provided. **(Do not over tighten).** Gently insert the Piston (26), small diameter first into the Intermediate Tube (22), if resistance is felt, turn the piston slightly until it is located in the cylinder.

**Note:** When removing tool from vice, do not point the front of the tool downward; the piston will fall out of the tube and become damaged. Remove the tool from the vice and follow as per Re-fitting the Needles, hold the tool horizontal when completing this operation.

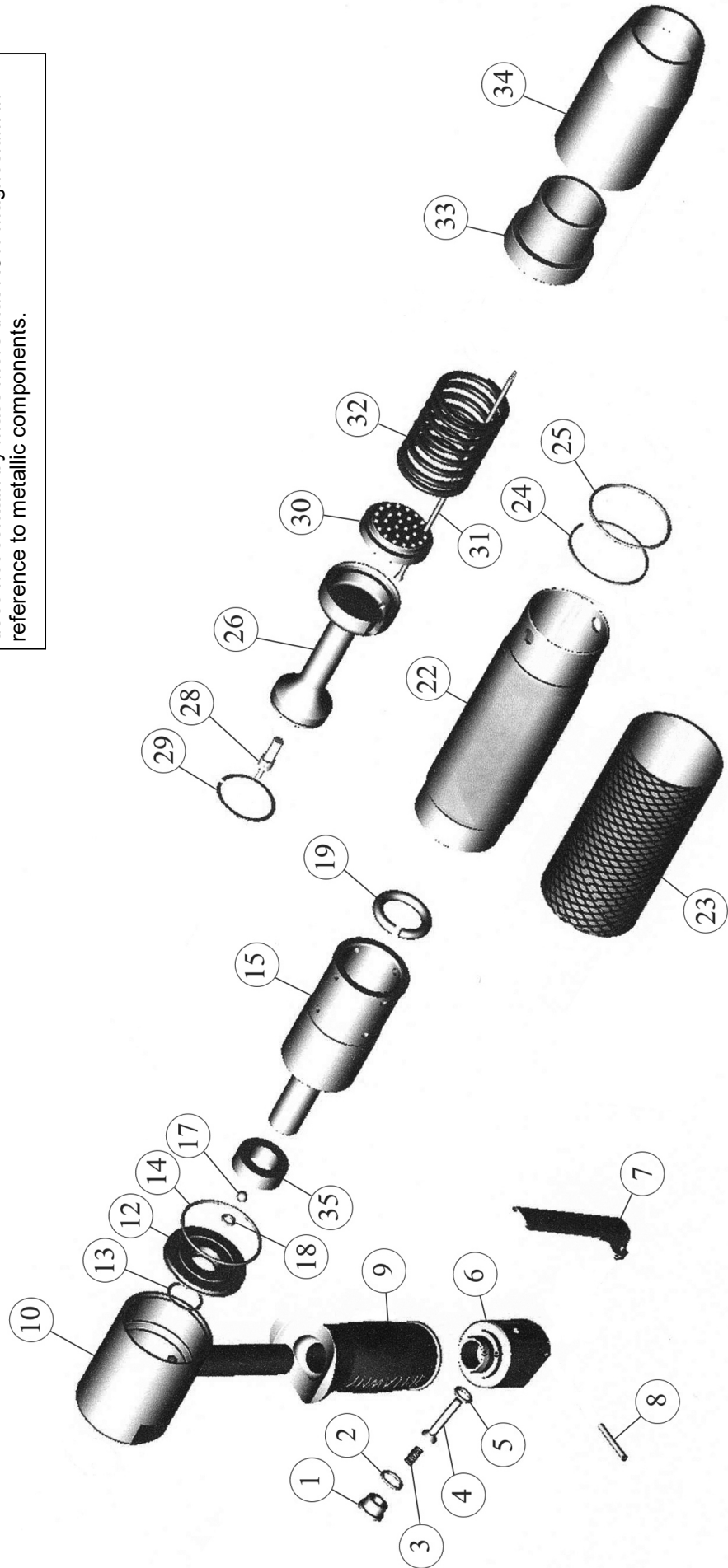
## Disposal

Dismantle into component form, segregate according to material composition and dispose of using waste recycling processes specified by local regulations.

# EXPLODED VIEW

# EXPLODED VIEW

This ATEX certified tool is manufactured from material that does not contain by mass more than 7.5% magnesium in reference to metallic components.



# PARTS LIST

ITEM No.	PART No.	DESCRIPTION
<b>VL303Ex Components</b>		
1	615.3021	Valve Cap
2	809.0139	Valve Cap O'Ring
3	712.3022	Valve Spring
4	618.3022	Valve Stem
5	809.0089	Valve Seat O'Ring
6	423.3021	Valve Body Assembly BSP Thread (inc items 1-8)
7	716.3000	Throttle Lever
8	813.0108	Roll Pin
9	717.3050	Rubber Handle Grip
10	425.3003	Cover Assembly (Pistol Grip)
12	652.3003	Guide Plate
13	829.3003	Guide Plate Seal
14	809.0299	Guide Plate O'Ring
15	428.3003	Cylinder
17	816.3003	Plastic Ball 6mm diameter
18	809.0080	Ball Retaining O'Ring
19	809.3004	Piston Cushion
22	622.3031	Intermediate Tube
23	721.3003	Intermediate Tube Outer Sleeve
24	814.3003	Circlip
25	809.0299	Front Tube Locking O'Ring
26	612.3003	Piston
28	636.3003	Valve Pin
29	829.3002	Piston Ring
30	601.3030	3mm Needle Holder
31	403.1328	Needle set (1 x set Beryllium Copper)
32	712.3003	Front Spring
33	620.3003	Front Tube Insert
34	622.3030	Front Tube
35	729.3003	Cylinder Stem Reaction Ring
		<b>NOT SHOWN IN EXPLODED VIEW</b>
	418.3003	Vacuum take-off (with flat cuff)
	731.3103	Flat Cuff
	731.3101	Corner Cuff
	731.3102	Edge Cuff
	720.3003	Fall arrester
	415.3003	Anti-Static Lanyard
	819.2375	Connector 1/4" BSPT-3/8" Stem
	843.0825	Adaptor 1/4" BSP to 1/4" NPT
	421.3530	Anti-static air hose (10mtr) 1/4" BSP/ Open
	446.3003X	Service Kit for ATEX (VL303)
	458.1530	1/4" BSP Oiler with whip hose and whip check
	427.5330	Claw Coupling Y-Connector with snap connectors. (Comes with two 3/8" hose connectors & hose clips)



# TECHNICAL SPECIFICATION

TROUBLE SHOOTING	CAUSE	ACTION
Poor performance or lack of power.	Low air pressure.	Ensure that the air pressure is correct at 90psi, max 100psi.
	If tool has been left for some time without use, the oil may dry out slightly, causing a sticky residue.	Strip tool down, clean and re-oil.
	Needles worn or some missing.	Replace with new set of BC needles and needle holder.
	Piston seal worn.	Remove seal from piston and fit into bore of cylinder. If it drops to the bottom of the bore, a replacement is required.
	Valve pin worn.	Replace valve pin and 6mm plastic ball.
Tool continues to run with trigger released.	Valve seal may have become dislodged through the tool being disconnected with the trigger in the open position.	Ensure that the trigger has not been taped or wired in the open position, reposition or replace valve seat o'ring.
High vibration.	High air pressure.	Ensure that the air pressure is correct at 90psi, max 100psi.
	Lack of lubrication.	Lubricate with the recommended air tool oil daily.
	Low air pressure 70-80psi can also cause high vibration.	Ensure that the air pressure is correct at 90psi, max 100psi.
	Front return spring weak or broken.	Replace return spring.
	Guide plate seal worn.	Replace guide plate seal.
Tool stopped working.	Piston cushion failed. (This is a split o'ring)	Replace with a new piston cushion.
	6mm plastic ball worn out.	Check for and remove the remains of the ball, possibly in an exhaust hole of cylinder and renew 6mm plastic ball.
	Valve pin broken.	Replace valve pin and 6mm plastic ball.

	VL303Ex PISTOL GRIP NEEDLE
Piston Diameter	34.4mm (1.35")
Piston Stroke (approximate)	20mm (.787")
BPM	3000
Air Consumption @ 6.2bar	2.6lps (5.5cfm)
Overall Length	370mm (14.6")
Weight	3.51kg (7.74lbs)
Needle	28 x 3mm
Noise LwA (Power Level)	109.5 db(A)
Vibration (AEQ) Primary	2.3 m/s <sup>2</sup> (k)
Vibration (AEQ) Secondary	3.7 m/s <sup>2</sup> (k)

**Noise Levels** Noise level measured in accordance with: EN ISO 15744: 2008  
**Vibration Levels** Vibration measured in accordance with: EN ISO 28927-9:2012 and EN ISO 20643:2005. (k) Equals the factor of uncertainty, which allows for variations in measurement and production. Vibration Data figures are tri-axial, which gives the total vibration emission. Because of various factors, the range of vibration from these tools may vary between -0% +40%. The vibration is dependent on the task, the operators grip and feed force employed etc.  
**NOTE:** The above vibration levels were obtained from tri-axial measurements to comply with the requirements of "The Control of Vibration at Work Regulations 2005\*" and the revisions to the (8662) now EN ISO 28927-9:2012 and EN ISO 20643:2005 series of standards. These values are at least 1.4 times larger than the values obtained from single axis measurements.  
\*Based on European Union Council Directive 2002/44/EC (Physical Agents (Vibration) Directive)).  
**Risk of Hand Arm Injury**  
Because of various factors, the vibration from this range of tools may be between 3.7 m/s<sup>2</sup> – 5.2m/s<sup>2</sup>  
The vibration is dependent on the task, the operators grip, and feed force employed.

#### Machinery Directive Information:

This tool has been designed and produced in accordance with the following directives: 2006/42/EC Machinery Directive  
and applicable harmonised standard: EN ISO 1 1148-4:2012

EN ISO 11148-4: 2010 Hand Held Non-Electric (Non-Rotary Percussive Tools)

This tool conforms with the following EC legislation:  
Based on the following harmonised standards:

ATEX directive 94/9/EC

EN13463-1:2009  
EN13464-5:2011

Notified Body:  
Certificate Number:

TRaC Global Ltd.  
TRaCC15ATEX0029X

If your company has any problem with our products or would like to discuss the possibility of an improvement being made to them, then please do not hesitate to contact us. Your comments are both important and appreciated.

Trelawny tools are thoroughly tested under specified conditions in accordance with applicable internationally recognised standards. When a tool is used on site the conditions may not be the same as those used in our tests.

Trelawny Surface Preparation Technology operates a policy of continuous product development and refinement and therefore reserves the right to change technical specifications and product designs without giving prior notice.

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**The use of non-Trelawny spare parts will invalidate the ATEX certification and also the warranty .**





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