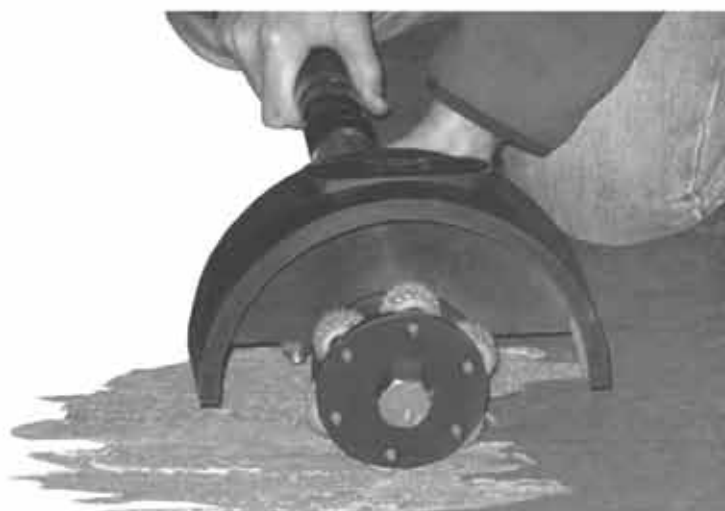




TRIDENT NEPTUNE



OPERATION & MAINTENANCE



OPERATION

Foreword

Thank you for your purchase of the TRELAWNY TRIDENT NEPTUNE DE-SCALING MACHINE.

This manual contains the necessary maintenance information for you to ensure proper operation and care for this machine.

See also the manual that is supplied by the motor manufacturer.

It is essential for you to read through these manuals thoroughly.

In the unlikely event that you experience problems with your Trident Neptune please do not hesitate to contact your local Trelawny dealer or agent. We always welcome feedback and comments from our valued customers.

General Information

Before operating, performing maintenance or repairing the Trident Neptune this manual must be read and understood by the operator, 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 machine and/or personal injury.

Trelawny SPT Limited disclaims all responsibility for damage to persons or objects arising as a consequence of incorrect handling of the machine, failure to inspect the machine 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.

This machine is primarily designed for the removal of heavy rust or paint from steel surfaces. Typically used on ships decks and superstructures. It can be used both indoors and out.

This machine must not be used in a fixture.

The electric motor used has dual 50 or 60 hertz compatibility, no modification is required, it can be converted easily for use on a 110v or 220v electricity supply. See motor plate for further information.

Safety

FACE MASK, EAR DEFENDERS, SHATTERPROOF GLASSES, GLOVES, HELMET, WEAR SAFETY BOOTS, and any other personal protective equipment required for the working conditions.

Avoid loose clothing; this may become trapped in moving parts and cause serious injury.

ENSURE THAT THE WORK PLACE IS WELL VENTILATED.

Avoid operating engine-powered generators or air compressors used to power the Trident Neptune in an enclosed area, since engine exhaust gases are extremely poisonous.

Ensure that all electrical cables and connections are in good condition and that a good earth connection is established.

Do not use the machine if any electrical insulation appears to be damaged.

The tool guard is supplied to protect the operator from flying particles. Always ensure that it is fitted.

Do not modify the Trident Neptune De-Scaler in any way.

Do not apply excessive pressure – let the Scaler do the work.

The electric motor is rated as splash proof, ensure that the electrics are not exposed to excessive moisture.

IMPORTANT

Thermal protection:

If the motor overheats the thermal protector will open the motor circuit, stopping rotation of the tool.

If this has occurred it is imperative that the **motors power switch is switched to off**, wait until the motor has cooled sufficiently.

After the motor has cooled, the thermal protector will reset automatically.

Retry again after 15mins.

If it trips out again investigate the cause before continuing.

(It maybe caused by a bearing failing or incorrect grease used in the flexible shaft, to much force being used etc.)

Risk of Hand-arm Vibration injury

These tools may cause Hand-arm Vibration Syndrome injury if their use is not adequately managed.

We advise you to carry out a risk assessment and to implement measures such as; limiting exposure time [i.e. actual trigger time, not total time at work], job rotation, ensuring the tools are used correctly, ensuring the tools are maintained according to our recommendations, and ensuring that the operators wear personal protective equipment (PPE) particularly gloves and clothing to keep them warm and dry.

Employers should consider setting up a programme of health surveillance to establish a benchmark for each operator and to detect early symptoms of vibration injury.

We are not aware of any PPE that provides protection against vibration injury by attenuating vibration emissions.

See 'Specifications' section for vibration emission data.

Further advice is available from our Technical Department.

We strongly advise you to visit the U/K Health & Safety Executive website <http://www.hse.gov.uk/vibration>.

This site provides excellent advice and information on HAV and currently, includes a Hand-arm Vibration Exposure Calculator that is easy to use to work out the daily vibration exposure for each of your operators.

Cutter Types & Applications

Cutter Wheels

These the most aggressive, they are designed for the rapid removal of very heavy rust and scale and are also suitable for the rapid removal of two part epoxy paint coatings.

Chipping Leaves

These are fitted as standard, they are designed for the rapid removal of very heavy rust and scale, they are less aggressive than cutter wheels, and should provide a surface finish suitable for coating with most modern paint systems.

Wire Brush

These are the least aggressive of all, and are generally used for the removal of light rust and paint, or for final finishing to provide a surface suitable for painting. There are various types available, see parts list for further information.

**DO NOT
OPERATE ELECTRIC
VERSIONS IN WET
CONDITIONS.**

OPERATION

Before Use

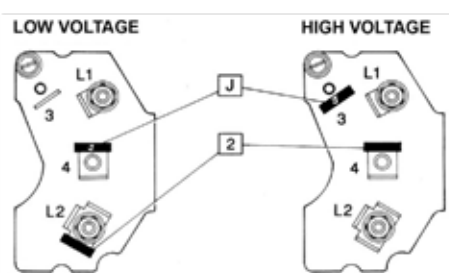
Fit a suitable electric plug for outdoor use to the cable.

Colour code as follows: -

Blue	neutral
Brown	live
Green	earth

Important: Please ensure the motor is set to the correct voltage (110v or 120v)

If there is a need to change the setting of the voltage, remove back plate and cover from the rear of the motor and re-connect the leads as illustrated: -



For Low Voltage 110v Setup:

Disconnect the wire labelled "2" from the terminal numbered (4) and connect it to terminal numbered (L2).

Disconnect the wire labelled "J" from terminal numbered (3) and connect it to terminal numbered (4).

For High Voltage 220v Setup:

Disconnect the wire labelled "J" from terminal numbered (4) and connect it to terminal numbered (3).

Disconnect the wire labelled "2" from the terminal numbered (L2) and connect it to terminal numbered (4).

110v Motor

The motor requires the minimum of a 16amp, 110v power supply. Always use the shortest possible length of extension cable. To avoid voltage drop the cable must be a minimum core wire size of 2.5mm² cross-section.

Maximum length of cable is 30 meters.

Use a centre tap transformer with a continuous rated output of at least 1.5va. In practice this means that a 3.0kva transformer will be required. Be aware that manufacturers have different methods of rating their equipment. All transformers and extension cables should be fitted with 16amp plugs and sockets. The 240v supply to the 110v transformers ideally should be rated to at least 13amp if supply problems are to be avoided.

220v Motors

Take particular care when using 220v machines, ensure that the electrical supply is earthed and that breakers and fuses are correct for the loading.

The 220v motor requires the minimum of a 13amp, 220v power supply. Always use the shortest possible length of extension cable. It is recommended that a residual current device (RCD) or (RCB) tripping at 30mA is fitted in the supply.

Air Models;

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.

Ensure that no moisture (condensation) is present in the air hose.

Check the security of all hoses clamps and fittings.

Check that there is sufficient air tool oil in the inline lubricator's reservoir.

The air motor requires a minimum of 70cfm of free air delivered (not displaced, as given by some compressor manufactures).

Assembly of Flexible Drive

Align D' shaped connector on the flexible drive with that on the motor unit and push home. Secure the flexible drive with the brass locking collar, tighten by hand.

Select the appropriate scaling head for the application and screw into the flexible drive, initially by hand and then fasten securely using the supplied 24mm spanners. Fit the hand guard onto the end of the dumbbell handle and secure with the two nuts & bolts and finally tighten using the two supplied spanners.

Starting

Electric Powered Machines

Inspect the supply cable:

Check that no damage has been caused to the outer casing and that there are no exposed or loose wires.

Obtain the assistance of a qualified electrician if a fault is found.

Do not use the machine until all faults have been rectified.

Check that the cable is not running across sharp or jagged edges and that it is not in contact with any liquid.

Air Powered Machines

Check the security of all hoses clamps and fittings, and that the supplied air pressure is correct at 6.2bar (90psi). Check that there is sufficient air tool oil in the lubricator's reservoir.

To Start;

Holding the dumbbell handle securely and away from your body and clothing, turn the electric toggle switch or air tap to 'on'.

Servicing

Always disconnect power supply from the tool before performing any servicing work.

Lubrication

Unscrew cap (2) to expose front ball race (3) using special tool provided. Please note this is fitted with a **left-hand** thread. Apply a liberal amount of grease to the front bearing.

Unscrew Dumbbell body (5) from hexagonal nut (10) (left-hand thread) and draw apart. Inner coupling is now exposed and may be unscrewed from spindle (1) (right-hand thread).

The flexible inner shaft (16) may now be withdrawn from motor end of the rubber casing. Apply liberal amount of grease to the rear bearing and inner shaft.

NOTE: It is recommended to use one of the following lubricants, or an equivalent.

BP	ENERGREASE LC
CASTROL	LMX
ESSO	BEACON EP2
RAMONOL	WHITE GREASE

Cleaning

If the operation of the Trident Neptune Scaler becomes sluggish or if the electric motor thermal overload protection continually has to reset, it is recommended that the tool be lubricated as indicated in the previous paragraph.

Dismantling

Changing Scaling Head.

Using spanners provided unlock the existing head from the dumbbell handle spindle (1) and unscrew until free. Fit the alternative scaling head or wire brush to the spindle and fasten until hand tight.

Hand Guard Removal

Unlock and remove both sets of nuts, bolts and washers (7). Withdraw the clamp (8) from the dumbbell handle (5) and remove the hand guard (9).

Removing Brush Arbor from Wire Brush

Secure the centre bolt head (29) in vice and remove the hexagonal nut (19) and washer (20). Withdraw the wire brush (30) and the bottom washer (20).

Removing Chipping Leaves

Secure centre bolt head (27) in vice and remove hexagonal nut (19) and washer (20). Remove side plate (28) withdraw the washers (22) and chipping leaves (23) and check for any sign of wear on the leaf pins (24).

Remove the other side plate (28) from the centre bolt and check both side plates for signs of wear.

MAINTENANCE

Removing Cutter Wheels

Secure bolt head (18) in vice and remove hexagonal nut, (19) washer, (20) and side plate (21). Withdraw cutter wheels (25) and check for signs of wear on cutter wheel pins (26). Remove bottom side plate from centre bolt and check both side plates for signs of wear.

Removing Dumbbell Handle

Secure dumbbell handle (5) in a soft jawed vice and unscrew front cap (2) with the special tool provided (left-hand thread).

Unscrew the dumbbell body (5) from the threaded hexagonal adaptor (10) (left-hand thread) and draw apart.

Ball Race Removal

Unscrew front cap (2) with special tool provided (left-hand thread) to expose front ball race (3). Unscrew dumbbell body (5) (left-hand thread) from large threaded hexagonal adaptor (10) (left hand thread) and draw apart.

The inner shaft with its spanner flats are now exposed and can be unscrewed from spindle (1) (right-hand thread). Remove the spindle from the dumbbell housing. Both ball races (3) and (4) are now exposed and can be removed.

Removing Inner Shaft from Outer Casing

Disconnect inner shaft (16) from motor unit (14/15). Remove dumbbell handle and hand guard as previously instructed. The inner shaft (16) can now be withdrawn from the motor end of outer drive casing.

Removing Nose Piece

Remove flexible drive from motor unit as previously instructed. Remove dome headed screws (12) from the motor casing and withdraw nose piece (13).

Assembly

Ensure all parts are clean. If the Scaler is being fully serviced, replace all ball races.

Fitting the Nose Piece

Align the holes in the nose piece (13) with those on the motor unit (14/15). Fit and fasten the three dome head screws (12).

Inner Shaft/Outer Casing Assembly

Insert inner (16) into the motor end of rubber casing after ensuring that the ball race (11) has been packed with grease.

Fitting of Dumbbell Handle

Fit both ball race bearings into the corresponding bores of the dumbbell handle. Ensure that the ball races are fitted correctly and have been packed with grease.

Fit the dumbbell handle onto the large threaded hexagonal adaptor (10) on the outer drive casing (6) and secure (left-hand thread).

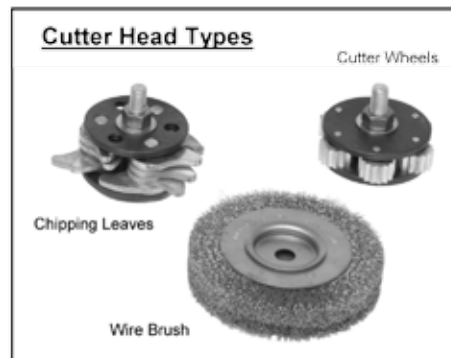
Fit locking cap (2) to front of dumbbell handle ensuring that the recessed holes are on the exposed side to enable locking with special tool provided.

Assembly of Scaling Heads

Wire Brush

Secure centre bolt (29) head in vice vertically and fit washer, (20) wire brush (30) and top washer (20).

Screw hexagonal nut (19) down by hand before fastening securely with the spanners provided.



Cutter Wheels

Secure centre bolt (18) head in vice vertically and fit bottom side plate (21). Insert the cutter wheels (25) with pins (26) into holes in the plate.

Align top plate (21) holes with the six exposed pins. Fit washer (20) and hexagonal nut (19) to centre bolt thread. Screw nut down by hand before fastening securely with the spanners provided.

Chipping Leaves

Secure centre bolt (27) head in vice vertically and fit one of the side plates (28). It is important that the chipping leaves are orientated in the correct manner so that the tip of the leaf is first to contact the surface.

See exploded diagram for clarification.

Fit a pin into the side plate and place a chipping leaf, (23) and washer (22) alternate with chipping leaf and washer for the length of the pin.

The 3 pins must be equally spaced about the 6 holes. Align top plate (28) holes with 3 exposed pins (24).

Fit washer (20) and hexagon nut (19) to centre bolt thread.

Screw nut down by hand before fastening securely with the spanners provided.

Fitting Assembled Scaling Head to Dumbbell Handle

All scaling heads are fitted to the dumbbell handle by screwing the centre bolt (18), (27) or (29) into the dumbbell handle spindle, (1) and fastening securely using the spanners provided.

Fitting of Hand Guard

Place rubber guard (9) onto front of dumbbell handle (5), align holes with metal clamp (8) and fasten securely with bolts, nuts and washers (7).

Machine Storage

Short period storage: up to 3months.

Clean the outside of the machine and inspect the cutters and pins for wear, replace any worn parts as required.

Liberal spray the cutterhead assembly with a rust preventative solution which is also safe to use on the rubber components, if accidentally applied.

See also motor manufactures operation and maintenance instruction book.

Cover the machine to protect it.

Store the machine in a dry place.

Be sure to check the security of all fastenings after any lay up period.

Long period storage: over 3months

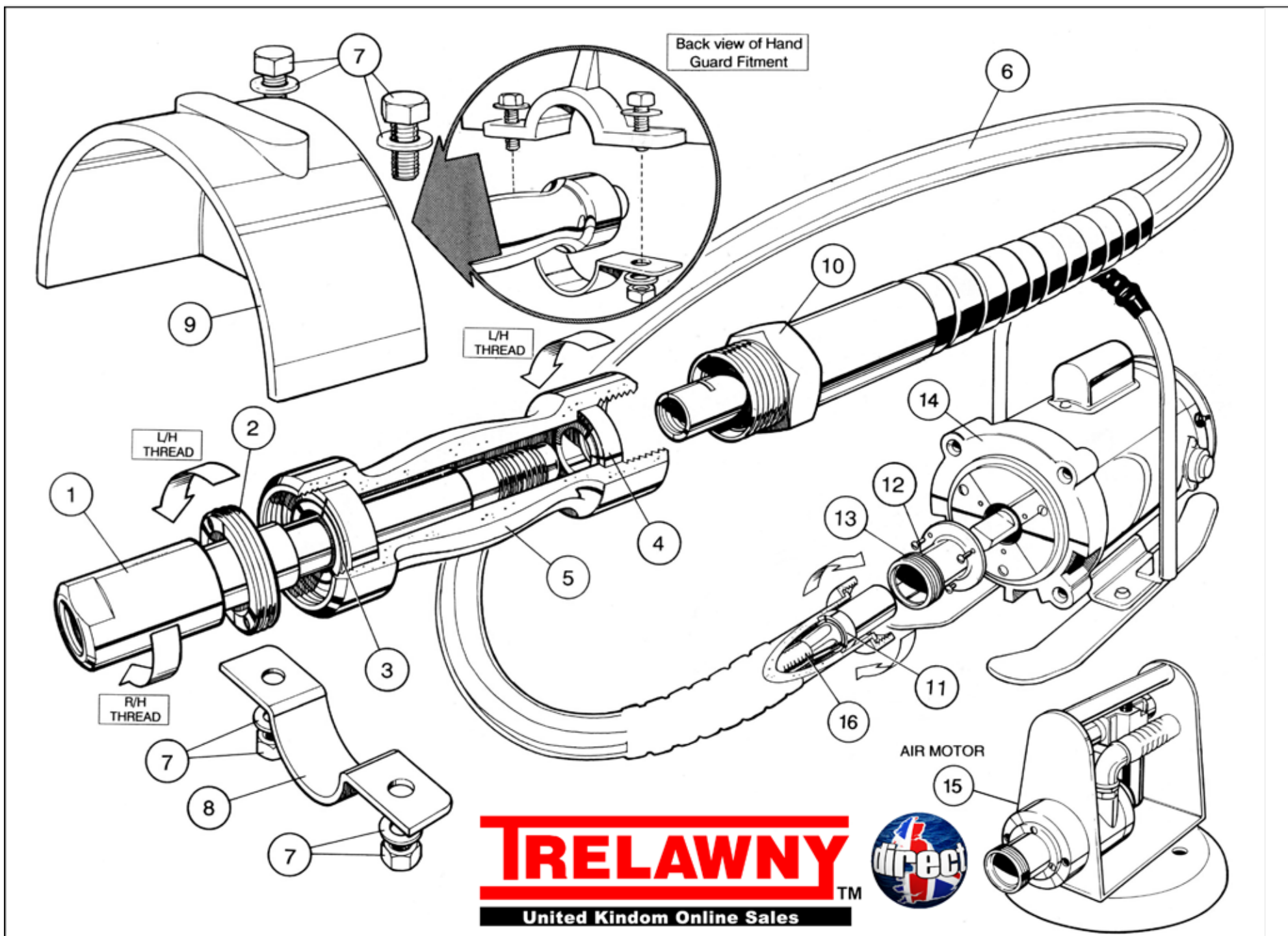
Clean the outside of the machine and strip down the flexible shaft and dumbbell handle, grease all bearings and the flexible inner shaft. Inspect the cutters and pins for wear, replace any worn parts as required.

Liberal spray the cutterhead assembly with a rust preventative solution which is also safe to use on the rubber components, if accidentally applied.

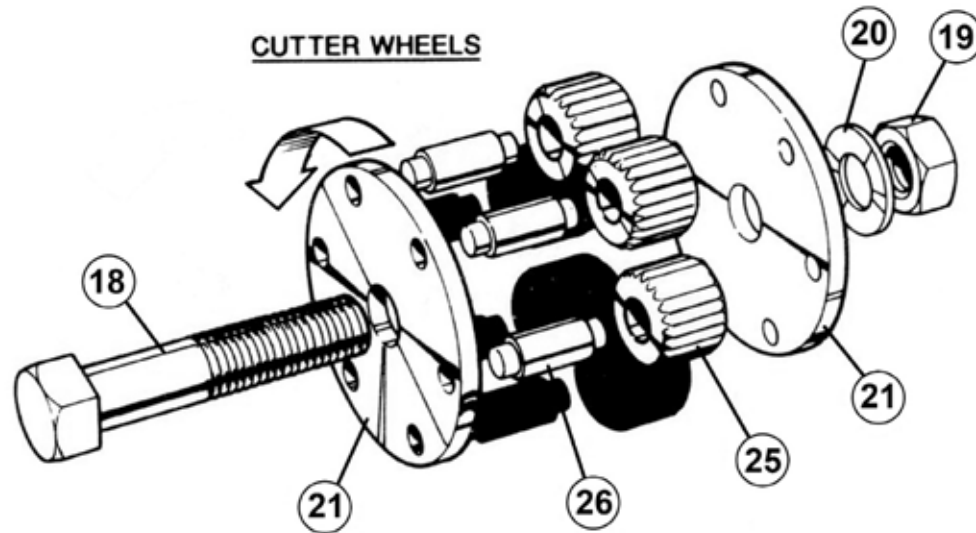
See also motor manufactures operation and maintenance instruction book.

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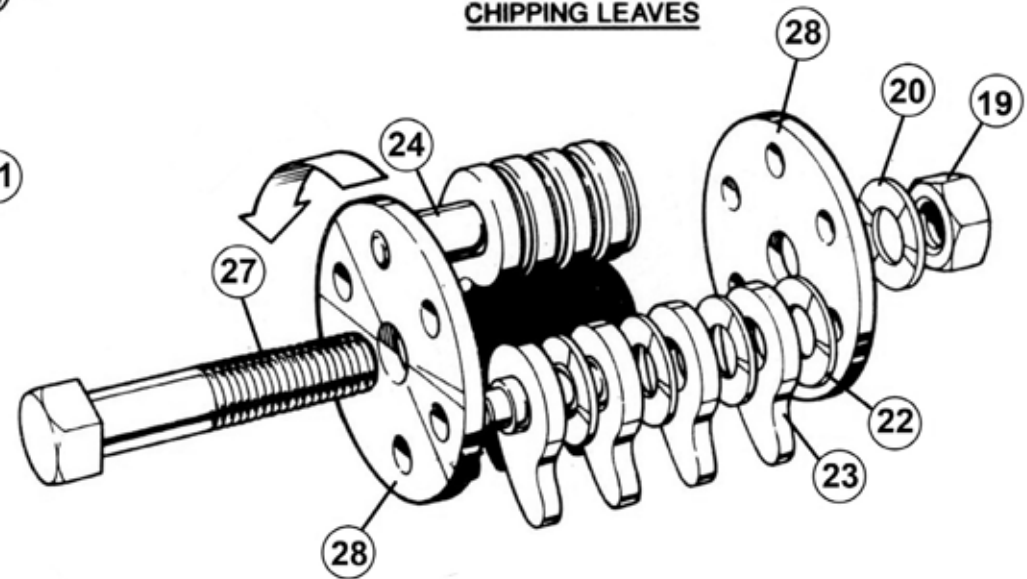
Be sure to check the security of all fastenings after any lay up period.



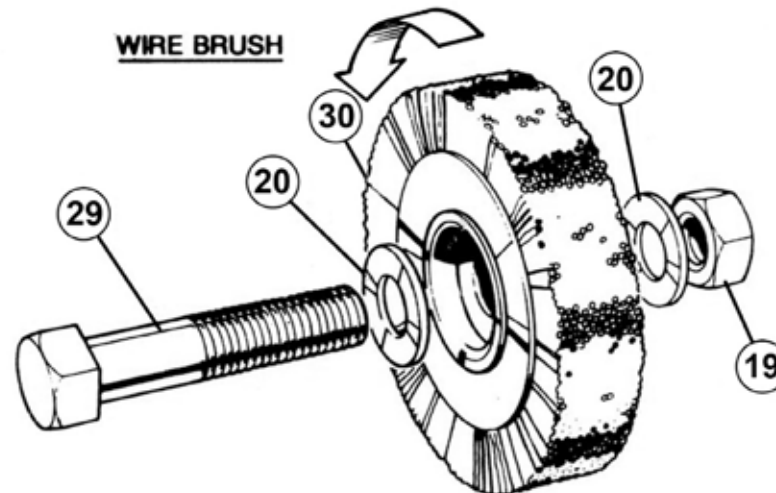
CUTTER WHEELS



CHIPPING LEAVES



WIRE BRUSH



Item	Part Number	Description	Item	Part Number	Description
1	340.542	Dumbbell Handle Spindle	23b	340.348	Thin Chipping Leaf (not shown)
2	340.536	Front Cap	24	340.553/12	Leaf Pin for Scaling Head (Pack of 12)
3	340.251	Ball Race (Large)	24a	340.546	Leaf Pin for Single Leaf Scaling Head
4	340.252	Ball Race (Small)	24b	340.556	Leaf Pin for Light Duty Scaling Head
5	340.541	Dumbbell Body			
5a	340.540	Dumbbell Handle Assembly	25	340.332	Cutter Wheel
6	340.290	Outer Drive Casing Assembly	26	340.583/12	Cutter Wheel Pin (Pack of 12)
6a	340.285	Flexible Drive Assembly	27	340.552	Centre Bolt for Chipping Leaves
7		Nut / Bolt & Washer Set (Part of item 9)	27a	340.545	Centre Bolt for Single Leaf Cutting Head
8		Hand guard Clamp (Part of item 9)	28	340.551/2	Side Plate for all Chipping Leaves (Pack of 2)
9	340.633	Hand guard Assembly	29	340.558	Centre Bolt for 6" Power Brush
10		Threaded Hexagon Adapter (Part of item 6)	29a	340.559	Centre Bolt for 6" Twisted Knot Brush
11	340.252	Ball Race	29b	340.557	Centre Bolt for Crimped Wire Cup Brush
12	340.TN/11	Domed Screw			
13	340.664A	Threaded Nose Piece	30	340.160	6" Crimped Wire Power Brush
14	340.TN/110	Electric Motor (inc Skid)	30a	340.166	Crimped Wire Cup Brush
15	340.490	Air Motor (inc base)	30b	340.167	Twisted Knot Cup Brush
16	340.288	Inner Shaft	30c	340.548	Thin Leaf Scaling Head
18	340.581/A	Centre bolt kit - 6 Cutter Scaling Head (inc nut).	30d	340.550	Heavy Duty Scaling Head
19	340.160A	Hexagon Nut	30e	340.581	6 x Cutter Scaling Head
20	340.584	Washer	30f	340.163	6" Twisted Knot Power Brush
21	340.575/2	Side Plate for 6 Cutter Scaling Head (Pack of 2)			
22	340.584/50	Washer for Leaf Scaling Head (Pack of 50)			
23	340.347/24	Chipping Leaf (Pack of 24)			

TECHNICAL SPECIFICATIONS

Flexible Shaft Length (approximately)	2.7 metres	9ft
Flexible Inner Shaft Diameter	16mm	5/8"
Total Weight	Approximately 34 kg	75 lbs
Life expectancy of the cutterheads	50 hrs	50 hrs
Cutting Width	Chipping Leaves - 30mm	Cutter Wheels - 17mm
Electric Motor		
	110v / 220v	50 / 60Hz
Amperage	110v = 11.4amp / 115v = 9.8amp	220v = 5.7amp / 230v = 4.9amp
Power	0.75hp	
Revolutions per minute	2850rpm at 50Hz / 3450rpm at 60Hz	
Time to stop rotation	9 sec	
Air Motor - (Air inlet J-Mac Claw Coupling)	6.2bar (90psi) - 32.1 lps (68cfm)	1.1kw (1.5hp)
Revolutions per minute	3000rpm	
Noise (process noise not inc) (L _{WA} SWL)	73.1dB (A)	
Vibration at Dumbbell Handle (Leaf Cutters)	8.7m/s ² (AEQ) (k = -0% +40% **)	
(Cutter Wheels)	5.4m/s ² (AEQ) (k = -0% +40% **)	
(Wire Brush)	10.1m/s ² (AEQ) (k = -0% +40% **)	

(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 5.4m/s² & 14.1m/s².

The vibration is dependent on the task, the operators grip and power source 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 and EN ISO 20643 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)

This tool has been designed and produced in accordance with the following directives:

2006/42/EC Machinery Directive

73/23/EC Low Voltage Directive



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 call: 01698 333200

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 Trelawny 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 invalidates the warranty.