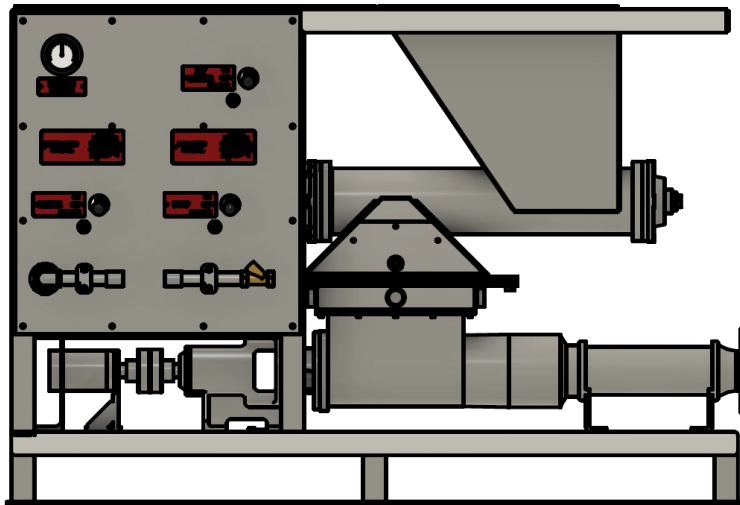


STEVE VICK INTERNATIONAL



SOLUTIONS FOR THE REPAIR RENOVATION AND DECOMMISSIONING OF PIPELINES



Grout Rig Operating Instructions

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1. INTRODUCTION

Since its foundation in 1981, Steve Vick International has been at the leading edge of trenchless techniques for the repair and renovation of underground **gas** distribution pipes.

In the UK, we are a major supplier to the gas distribution networks and many of our techniques have become accepted practice in the industry. We constantly seek to provide our customers with renewal methods which will minimise their costs and maximise their production.

The company has been supplying pipe handling equipment to the **water** utilities and their contractors for over 20 years. More recently we have entered the market with pipe cutting equipment and our sealant technology has been successfully adapted for use in the waste water sector.

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REVISION HISTORY

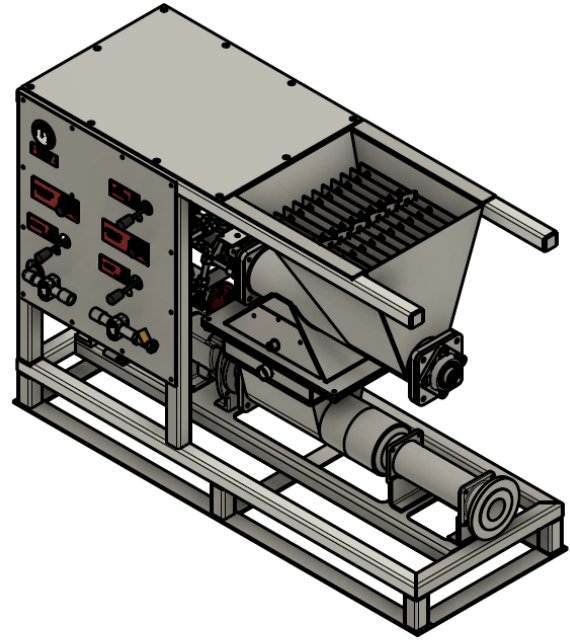
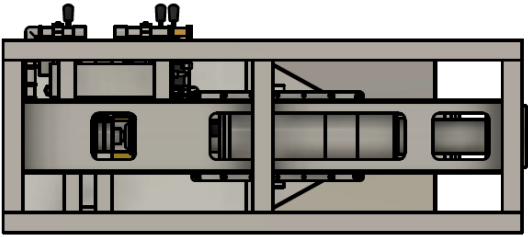
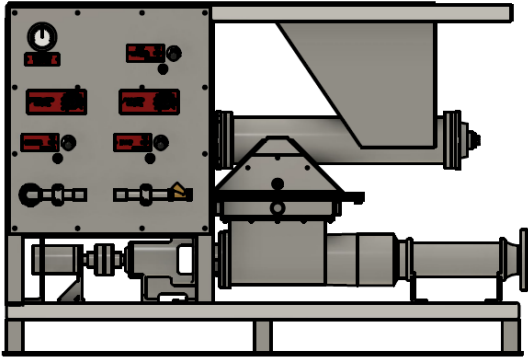
| Version No. | Revision Date | Summary of Changes |
|----------------|----------------------|------------------------------|
| 01 | 28/06/2023 | Created. |
| 02 | 03/08/2024 | Text and Image changes |
| Enter Ver. No. | Click to enter date. | Click here to enter changes. |
| Enter Ver. No. | Click to enter date. | Click here to enter changes. |

APPROVALS

This document requires the following approvals.

| Name | Signature | Position | Approval Date | Version No. |
|-------------|---|----------------------------------|---------------|-------------|
| Sean Noonan |  | Director | 28.03.2024 | 2 |
| Mike Hall |  | Contracting Development Manager | 28.03.2024 | 2 |
| Elliot Ross |  | Senior Technical Support Manager | 28.03.2024 | 2 |

2. PRODUCT DESCRIPTION



2.1 *Side, Top and 3rd Angle views*

2.2 GROUT RIG FEATURES

Hydraulic Pressure Gauge

Pump Speed Dial

Jet Washer Lever



Above: Grout Rig Operation Panel



Operatives are to familiarize themselves with the above control panel

3. GROUT RIG SPECIFICATION

| RIG SPECIFICATIONS | |
|-----------------------------|--|
| OVERALL LENGTH | 1600cm |
| OVERALL WIDTH | 600cm |
| OVERALL HEIGHT | 1200cm |
| WEIGHT | 400kg |
| BAG WEIGHTS | 20–25kg |
| TYPICAL POWER SOURCE | 20–30litre 140bar Hydraulic Power Pack |
| Hydraulic Fittings (on rig) | 2 x 3/8" Inlet (F) and outlet (M) 1 x 1/4" (pressure motor) |
| Water Flow Max | 100 litre/min |
| Water Flow Typical | 60-70 litre/min |
| Water Pressure Max | 12bar |

SAFETY AND PRECAUTIONS

NOTE: This machine is to be used only by trained Steve Vick International staff.



FULLY READ MANUAL BEFORE USE

4.1 THE FOLLOWING PPE MUST BE WORN AT ALL TIMES



Hard hat



High visibility jacket



Gloves



Steel toe cap footwear



Ear Defenders may be required—see Power Source dB rating



Wear protective clothing (no loose clothing)



Full Fitting Face Mask and Respiratory Device EN136

SAFETY AND PRECAUTIONS

4.2 PREPARATION PRIOR TO OPERATING THE GROUT RIG

- Ensure Safety Zone is established in the area of operation and route taken by the hose lines.
- Isolate area from pedestrians and other plant.
- Carry out daily checks as listed in QP80 for the Grout Rig (Appendix A Page 23).
- Carry out daily checks as listed in QP63 for the Power Pack (Appendix B Page 24)
- A minimum of two operatives are required to operate the Grout Rig and have had relevant training.
- Ensure towing vehicle is suitable for transporting the Grout Rig, Power Source and the Grout Product paying specific attention to the combined weight on the vehicle.
- Ensure all equipment is sound and where required certified, in date and available on request.
- Ensure the appropriate spill kits are present and set out correctly.
- Ensure the Grout Rig is placed on flat/level and secure.

4.3 IMPORTANT POINTS

The Grout Rig is designed for the purpose of mixing Grout product to water and should not be used for anything else. Ensure the following points are adhered to:

- Ensure all guards are present and correctly fitted.
- Do not enter beyond the safety guards when the Grout Rig is running.
- Correctly fitted PPE must be worn without any loose clothing as this could snag in the machine.
- Do not strap ancillary equipment to the Grout Rig that is outside of the purpose of its operation.
- Observe and comply with site specific requirements for instance site speed limits.
- The decibel rating for the Power Pack is **101db**—ear defenders must be worn.
- Although the Grout Rig is significantly quieter than the Power Pack, it is recommended to wear ear defenders due to dust even when the Power Pack is sited away from the Grout Rig.
- Only trained operatives are to use the Grout Rig.

5. OPERATING INSTRUCTIONS

5.1 Check water flow rate

Connect the water supply* using 32mm SDR11 water pipe—ensure the stiffeners are inserted into the water pipe leading end first.

*Refer to site specific method statement in regards to water supply.



5.2 Tighten and secure the water pipe into the fitting using appropriate tooling such as spanners and pipe wrenches.



5.3 Set the water in-line turbine meter by referring to manufacturers instructions *which can be found in the Contracting Services file sub folder Operators Manual.*



Figure 3

5.4 Install a tee-piece valve manifold and pressure gauge onto the outlet of the Mixing Pump. The in-line valve is the feedline for the filling operation. The valve perpendicular to the in-line valve is a relief line and sample point.

Remove Outlet Pressure Gauge in order to check the condition so that it reads correctly during the operation. This is achieved by loosening wing nut and removing the ring bracket.

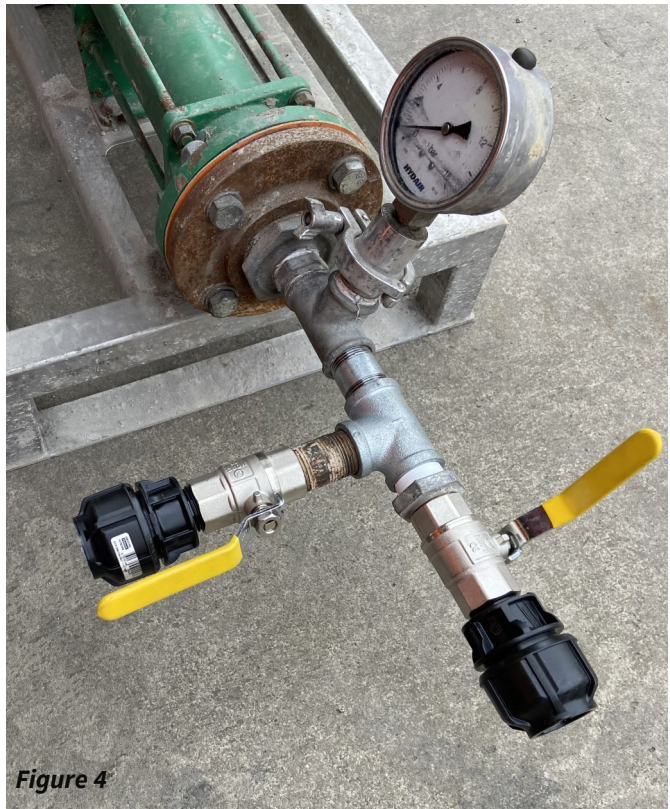


Figure 4

5.5 With the Pressure Gauge and Ring Bracket removed, visually inspect the port ensuring the channel is clear.

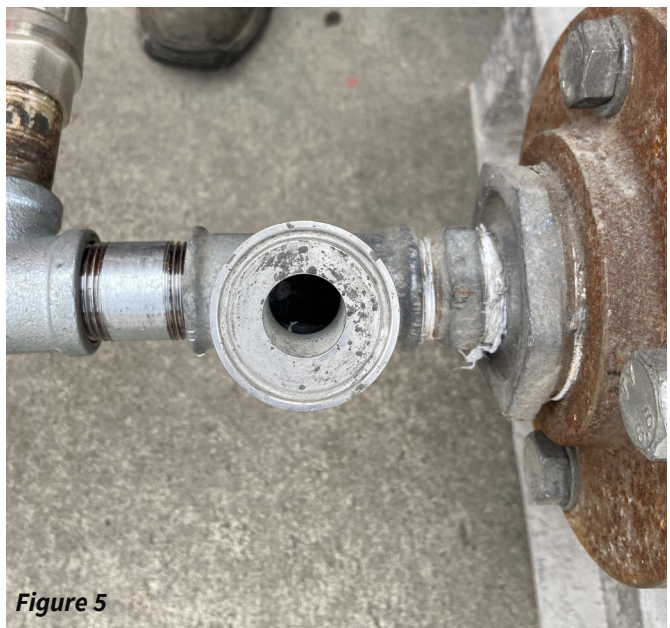
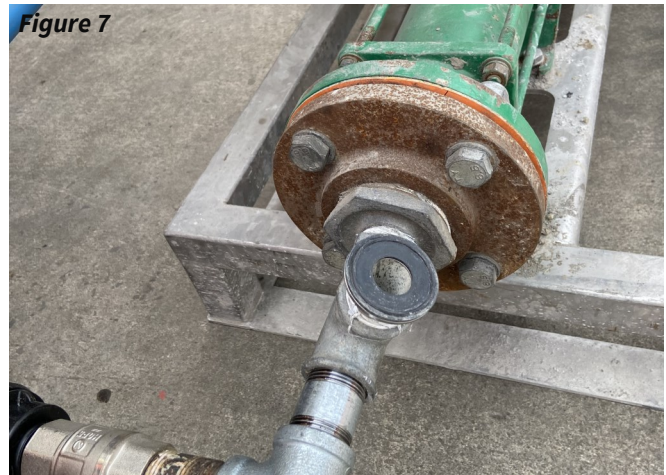


Figure 5

5.6 Check the condition of the rubber seal ensure fit for purpose.



5.7 Refit seal to the outlet manifold as shown in Figure 10.



5.8 Clean the diaphragm and ensure it is undamaged. Refit the gauge to the outlet manifold.



5.9 With the gauge refitted insert a 32mm SDR11 water pipe including stiffener into the valve perpendicular to the outlet. This will be for the relief line and to take samples during the grouting operation.

When using the relief line ensure the run off is disposed of correctly as per site requirements.



5.10 Now attach the feedline with 32mm water pipe SDR11 and stiffener. Length to be determined by the job requirements.

Close the valve to the feed line.



5.11 Engage Power Pack* and run up the Grout Rig using water only to ensure the machine is running correctly by opening the water inlet valve.

**Refer to Power Pack user manual which can be found in the Contracting Services file sub folder Operators Manual.*



Figure 11

5.12 Regulate the flow of water using the Inlet Regulator Valve that leads to the pump. At this point the other gate valve to the pressure washer should be closed.



Figure 12

5.13 Monitor the digital gauge on the water in-line turbine meter. Set flow rate to appropriate product mix ratio.
(example 70 litres per minute)



Figure 13

5.14 Use the relief line for the run off water and keep the feed line closed. Check for any leaks. Ensure the water pressure does not exceed 12bar.

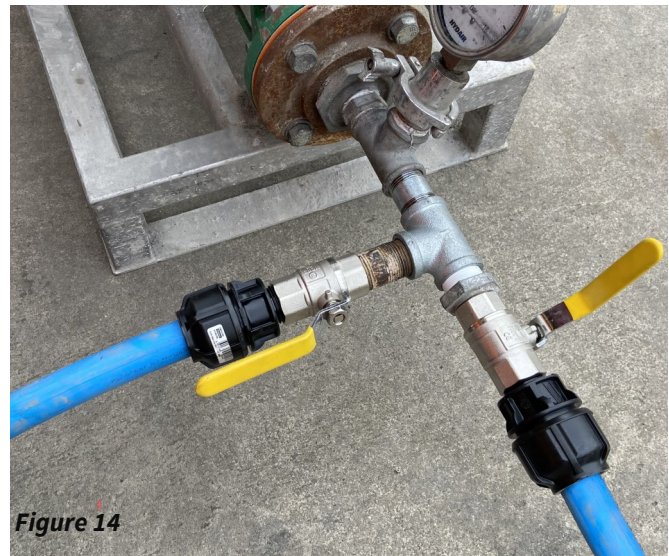


Figure 14

5.15 *With the test cycle complete it is time to begin the grouting operation. Ensure the end of the feed line is at the correct location and the route is unimpeded and safely marked up/barriered off.*

Close water inlet valve and stop the Grout Rig by returning the Hydraulic Pump Lever to the OFF position.



Figure 15

5.16 Remove hopper lid to expose the safety grill and ensure the hopper is dry at all times.



Figure 16

5.17 Ensure the hopper grill is in place, this also acts as a guard so it must be installed.



Figure 17

5.18 Ensure the Feeder Control Lever is OFF and the Feeder Speed Control is set to its lowest output (fully wound in clockwise).



Figure 18

5.19 Observing safe lifting practises place the grout bag next to the hopper on the non slip plate.

Note the weight of bags used can only be 20 or 25 kg,



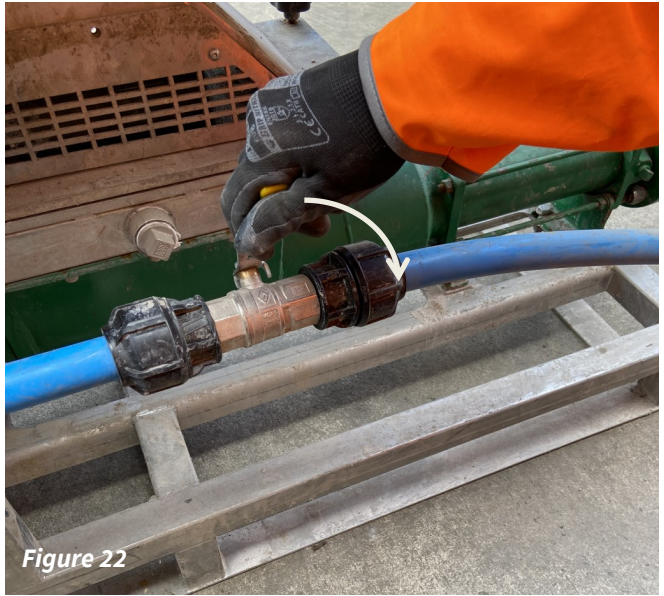
5.20 Relocate grout bag to the hopper and lay as shown in Figure 23



5.21 Lay the grout bag with the cut side face down onto the hopper grill and vigorously shake the bag until all the contents has left the bag.



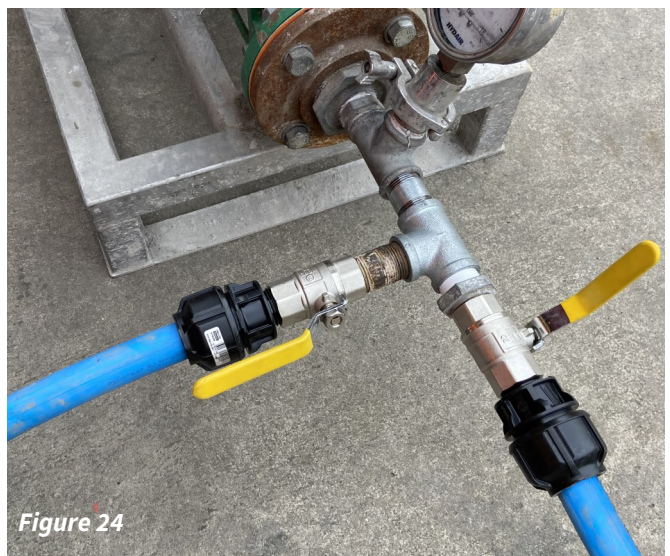
5.22 **Open the Water Feed Valve** with the correct regulated water flow.



5.23 **Immediately** turn the Hydraulic Pump Lever to the ON position.



5.24 The water must flow into the relief line at this stage



5.25 Open the Feed Line first BEFORE closing the Relief Line Valve.

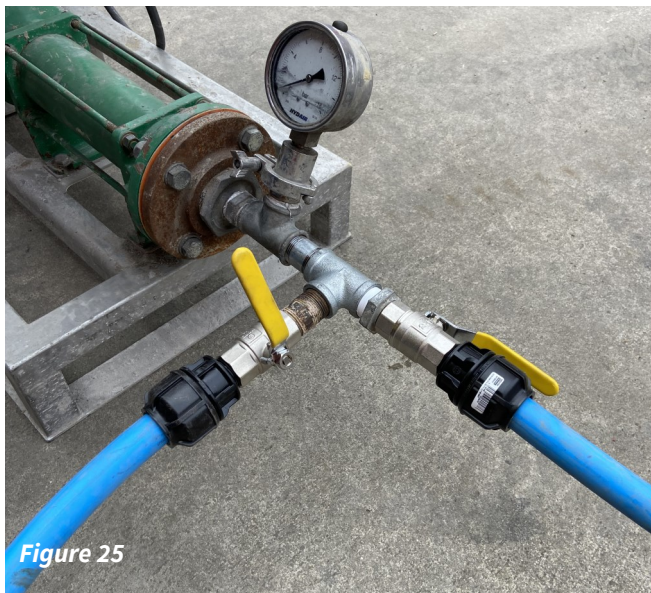


Figure 25

5.26 IMMEDIATELY turn the Feed Lever to the ON position



Figure 26

5.27 Check Feeder Control Valve operates.

This is achieved by checking the flow:

- Anti-Clockwise INCREASES flow
- Clockwise DECREASES flow
- Fully clockwise STOPS flow

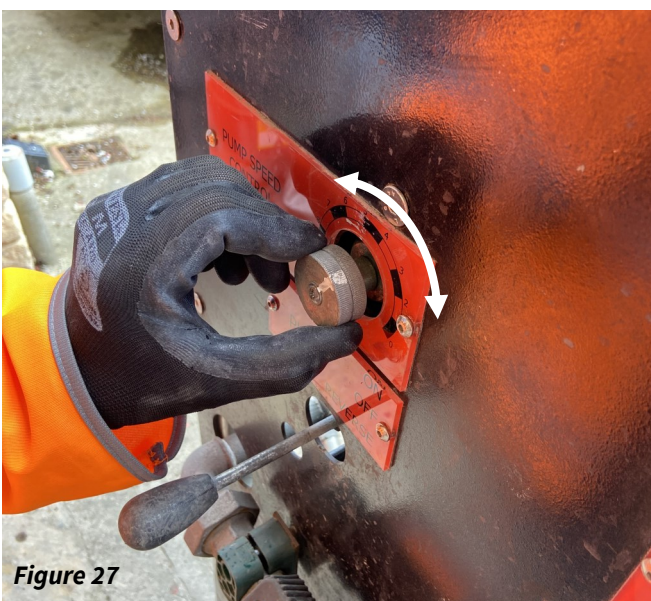


Figure 27

Figure 28



Figure 28a



Figure 28b

5.28 Continue to add grout bags to the hopper at the desired frequency, ensuring the hopper at least half full.

- If required take samples from the relief line during the operation.
- Monitor the pressure throughout the operation—this should be similar to the powerpack pressure which is usually 140bar
- Continue until the operation is complete.
- Open relief valve when clear water is present.
- Close Feeder line to ensure no clean water enters the fill point.
- Keep the grout rig operating until clean.
- Turn Feeder Valve OFF
- Turn Hydraulic Lever to OFF
- Close the Water Inlet Valve
- Turn Power Pack OFF.
- **JOB COMPLETE**

CLEANING THE GROUT RIG

At the **appropriate location** the rig must be cleaned and where possible using the integrated jet washer

5.29 Turn off the rig and the power pack and disconnect the hydraulic hoses.



Figure 29

5.30 Turn on the water jet valve and use the hopper water feed to run water through the pump.

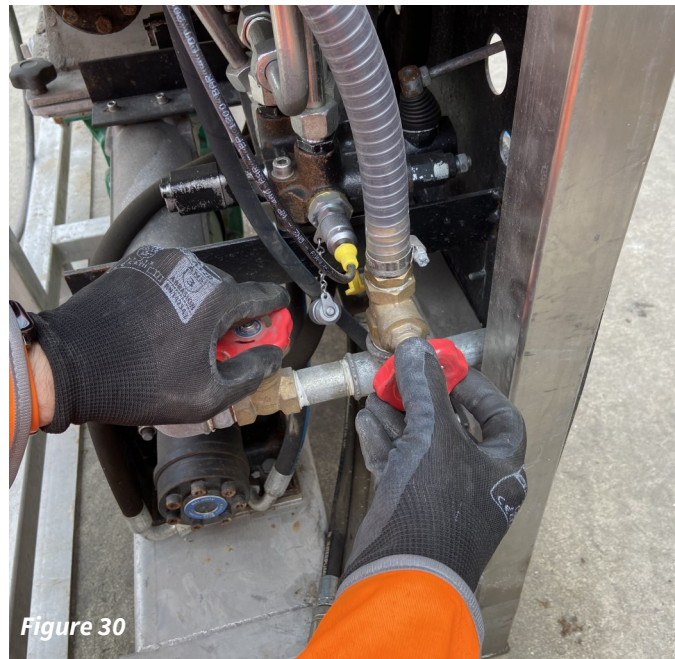


Figure 30

5.31 Turn on the jet washer



Figure 31

5.32 Clean all parts of the rig thoroughly



Figure 32

TROUBLE SHOOTING and TIPS**BLOCKAGE**

5.33 *It is also important to check the reverse flow operation works. This is in case any foreign matter enters the hopper—a piece of the bag etc.*

To do this push down on the Pump Handle and maintain downward force as this is a sprung lever and confirm operation.



Figure 33

5.34 TIP Become familiar with the rotation of the Output Shaft as this will tell you the feed rate is right. Time the number of revolutions the shaft makes over 10 seconds.



Figure 34

6. SERVICE GUIDE

| Daily Checks: Pre Works | Action |
|---|--|
| Leaks on hydraulic hoses and connections | Visual checks prior and during operation |
| Damage to gauges | Visual checks prior and during operation |
| Pressurise auger | Check with water for wear and tear |
| Hydraulic level in Power Pack | Visual check at start and during operation |
| Check hopper operates | Visual check after previous operation |
| General overview of Grout Rig | Visual signs of any damage |
| Weekly Checks | |
| As per daily checks paying special attention to any loose parts, bolts etc. | |
| Clean rig thoroughly as per 5.29 to 5.32 of this manual. | |
| | |

7. ROUTINE MAINTENANCE

- Fully clean Grout Rig and remove any cured grout.
- Check all hydraulic connections and hoses remove any dirt.
- Strip down hopper and rebalance by cleaning the moving parts, greasing and check operation after reassembly.
- Clear mixing port and check operation after reassembly.
- Monitor wear and tear on the auger.
- Refer to Power Pack manufacturers instructions for servicing and maintenance guidance.

APPENDIX A— Example of a QP80 form



QP80 GROUT RIG Pre-works daily check sheet

Project/Job Number..... Date of inspection.....

Powerpack Serial Number.....

The following inspection is to be carried out for all Grout Rigs; all control levers must be in the 'off' position. Ensure correct PPE is being used, dust masks, overalls, gloves, ear defenders and protective footwear are all mandatory.

| | ACTION | COMPLETED? | COMMENTS |
|-----|---|------------|----------|
| 1. | Visually check for any damage, and for cleanliness | | |
| 2. | Ensure machine is on a level surface | | |
| 3. | Ensure adequate bunding/tarpaulin is in place | | |
| 4. | Power pack has been checked in accordance with QP63 | | |
| 5. | Ensure that the hydraulic fittings are clean and undamaged and that the hoses from the power pack are undamaged. Check power pack fuel and hydraulic oil levels. | | |
| 6. | Run the machine for 10 minutes ensuring oil is warm. | | |
| 7. | Check for any hydraulic oil leaks. | | |
| 8. | Ensure hydraulic pressure gauge is working | | |
| 9. | Check the pump speed on/off handle for correct operation and speed control function. | | |
| 10. | Check the feeder speed on/off handle for correct operation and speed control function. Note: the machine must never be run 'dry' as damage will be caused. | | |
| 11. | Check the jet wash unit for leaks and correct operation | | |
| 12. | Ensure flow meter digital display is working & accurate | | |
| 13. | Add powder to the hopper and set the required feed speed, set the pressure speed, and pump material out of the bleed valve into waste vessel. | | |
| 14. | Take samples until the correct specification is met. | | |
| 15. | Record sample data on Programme of Works doc. | | |

By signing below you are confirming that the above checks have been carried out to the best of your ability and that any faults have been reported to your line manager

Signature of Checker.....

Date.....

RETURN THE COMPLETED FORM TO THE OFFICE

APPENDIX B— Example of a QP63 form



QP63 Power Pack

Testing sheet for Petrol Power Pack.

Customer..... Serial Number.....

Order Number..... Date of Despatch.....

| | OPERATION | COMPLETED? | COMMENTS |
|-----|---|------------|----------|
| 1. | Visually check for any damage, and for cleanliness | | |
| 2. | Check Engine Oil | | |
| 3. | Check hydraulic oil level is correct | | |
| 4. | Check air filter | | |
| 5. | Correct flow / pressure test unit | | |
| 6. | Allow unit to run for 10 minutes, turn off for 30 seconds and then restart to ensure warm starting | | |
| 7. | Check the pressure / flow output ensuring that it achieves the performance stated by the manufacturer | | |
| 8. | Record the flow (lpm) & pressure (psi) in comments box | | |
| 9. | Check for any oil / fuel leaks | | |
| 10. | Remove test unit and ensure the pack is clean | | |
| 11. | Ensure that a CE plate and serial number is applied. | | |

Signature of Checker.....

Date.....

RETURN THE COMPLETED FORM TO THE OFFICE