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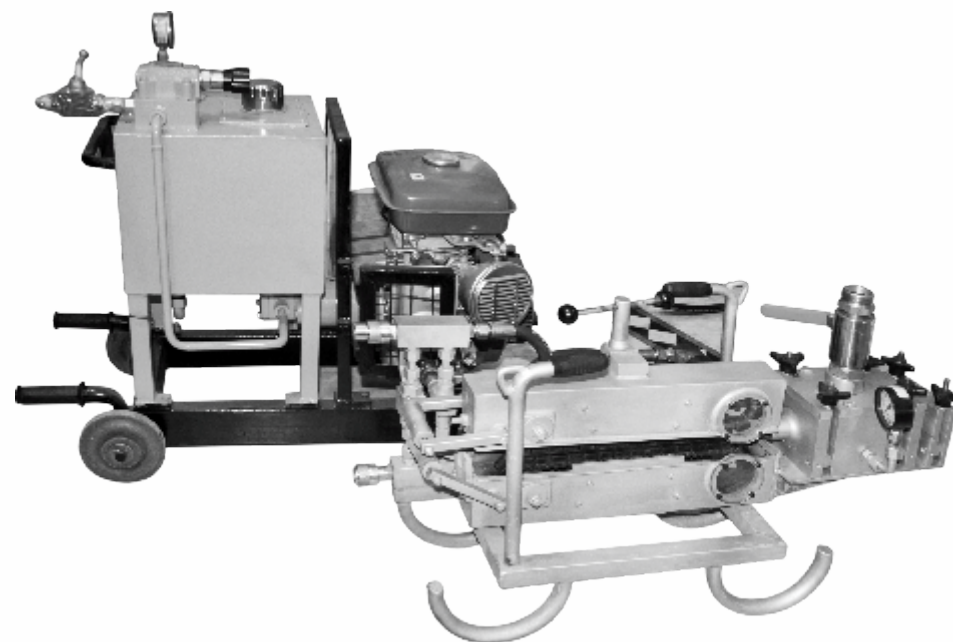
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Operation & Maintenance Manual OFC Cable Blowing Machine with Power Pack



Model: ST-CBM & ST-HPP

INTRODUCTION



Asian Contec Ltd is one of the fastest growing organised manufacturers & distributors in India of engineering and construction equipment & instrumentation product solutions under its brand name Stanlay. Our product suite finds application in Infrastructure, Telecommunication, Building Construction, Utility, Educational, Research, Heavy Engineering and Facility maintenance (MRO). ACL Stanlay provides product solutions for the following application areas.

Underground Utility Locating & Mapping Product Solutions:

- Cable & Pipe Locators to locate buried utility assets before you excavate.
- Cable Fault Locators for telecom cables
- State of the art GPR's for utility detection and mapping. The systems offered are based on dual frequency sensors complete with sophisticated GRED 3D software that allow 2D/3D tomography and export of data directly to AutoCAD allowing generation of maps of buried utility assets.

Underground Cable Installation Equipments:

- Maxi, Midi & Mini duct rodder
- Cable Blowing Machines for installation of optical fiber cables in outside plant telecom networks.

Underground Construction Equipment:

Auger Boring Machines and high thrust directional drills (HDD), exclusively, in association with the worlds most renowned manufacturer American Augers USA.

Geophysical Investigation :

- GPR's for subsurface geophysical /geological investigation.
- Interferometry radars for structural monitoring & remote terrain slope monitoring
- Concrete bridge deck scanning GPR for inspection of corrosion and delamination in concrete
- Rail Ballast condition assessment

Pavement – Road/Highway / Runway testing products :

- Falling Weight Deflectometer for pavement deflection testing
- Sideforce CFT for friction testing
- Laser Profilometer for asphalt Rut, IRI, RN, Texture measurements
- Light weight deflectometer for testing compaction quality of unbound & bound subgrade and soil layers.

Non-Destructive Test Instrumentation for Concrete :

- Ultrasonic Pulse Velocity Testers and Digital Concrete Test Hammers
- Concrete Resistivity Testing and Moisture Measurement
- Ferromagnetic and GPR based Rebar Locators

Laser & smart sensor based distance measurement & leveling solutions.

Electrical test & measurement instrumentation

Material Inspection & Coating thickness gauges

Our corporate headquarters at New Delhi and manufacturing location at Baddi, H.P serve as the nerve centres, supported by our application trained sales & support personnel across 5 locations in North, West and South of India. Products are distributed through a centralized distribution system.

Industry Awards & Quality System :



#1 Manufacturer of Cable Installation Devices in Asia

#1 Award for Centre of Excellence in Underground Locating equipment, Asia Pacific

#1 Worldwide Best Distribution Partner American Augers USA

#1 # Award for Most Functional Products in Building Segment, India



Cable Installation Solutions



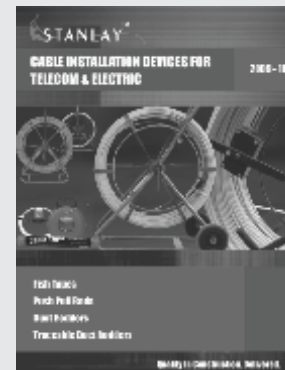
Locate Before You Dig

- Cable Locators
- Cable Avoidance Tools



Detect Non Metallic & Metallic Utilities

- Ground Penetrating Radars



Short Run OFC Installation

- Traceable Duct Rodders

Trace Non Metallic Pipe Route & Blockages

- Maxi Duct Rodders

MONTHLY SERVICE – CHECK LIST :

1. Remove the drive chains from the pusher unit. Check both of the chains for excessive wear. Replace, if required – and lubricate with the spray grease provided.
2. Remove any debris from the housings.
3. Check the chain supports slide bars for excessive wear and lubricate with the spray grease provided. Replace, if required.
4. Check all other moving parts e.g. bearings, shafts, sprockets etc – and lubricate.
5. Check all hydraulic fittings and check for leaks.
6. Check the hydraulic hoses for external damage.
7. Check condition of cable seals and cord seals in the air chamber.
8. Complete service history record.

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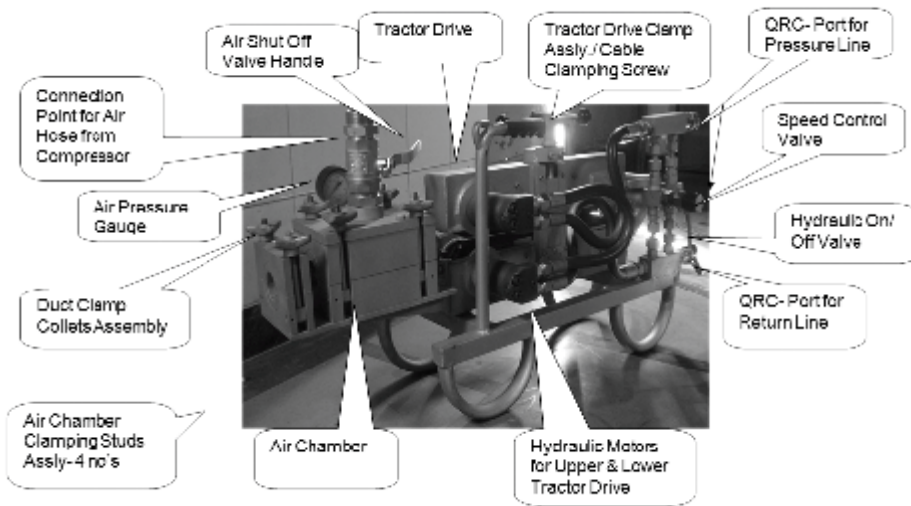
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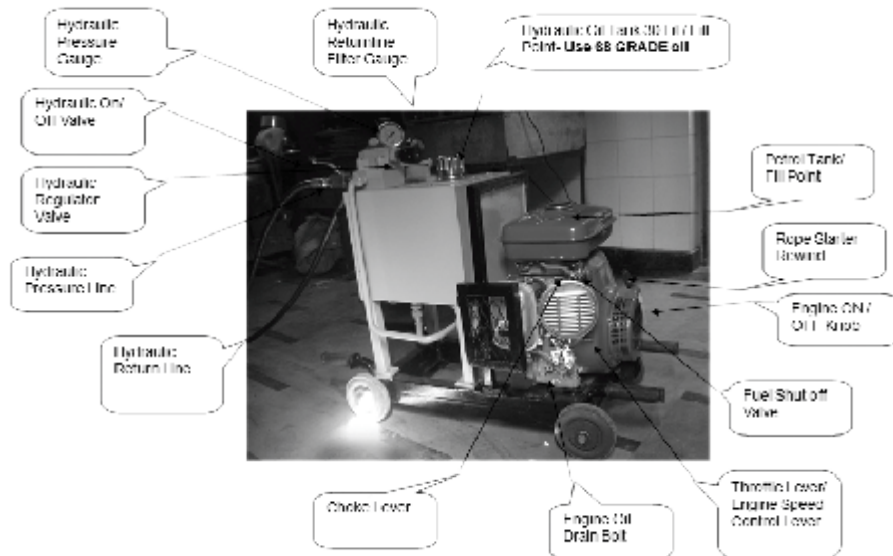
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PUSHER UNIT- LAYOUT



HYDRAULIC POWER PACK- LAYOUT



4. Re-new any worn or damaged radial cord seals always renew both air chamber split cord seals.
5. Close the air chamber.

Note: The main seals in the air chamber consist of a 3mm cord seal, which is cut to the correct length and permanently fixed with adhesive.

PROCEDURE FOR REPLACEMENT OF CABLE SEALS :

ENSURE THE AIR SUPPLY IS DISCONNECTED FROM THE BLOWING MACHINE BEFORE CARRYING OUT THIS PROCEDURE.

Tools Required

No tools are required.

Step 1 : Seal Removal/Refitting

1. Ensure that the air valve is closed and that the air pressure gauge is at zero.
2. Open the air chamber to expose the cable seals.
3. Remove the seals.
4. Refit the required seals. Apply silicone grease to the seal bore and groove, ensure the seal groove is fitted away from the pusher unit (i.e. towards the sub duct). Ensure split in innermost seal faces downwards and offset to one side and the split in the outermost seal faces downwards and offset to the opposite side to the innermost seal. Always fit both new seals.
5. Close the air chamber.

MONTHLY SERVICE – CHECK LIST :

1. Remove the drive chains from the pusher unit. Check both of the chains for excessive wear. Replace, if required – and lubricate with the spray grease provided.
2. Remove any debris from the housings.
3. Check the chain supports slide bars for excessive wear and lubricate with the spray grease provided. Replace, if required.
4. Check all other moving parts e.g. bearings, shafts, sprockets etc – and lubricate.
5. Check all hydraulic fittings and check for leaks.
6. Check the hydraulic hoses for external damage.
7. Check condition of cable seals and cord seals in the air chamber.
8. Complete service history record.

4. Re-new any worn or damaged radial cord seals and always renew both air chamber split cord seals. Ensure there is sufficient cord to butt up to the sub-duct and the cable seal.
5. Close the air chamber.

Note: The main seals in the air chamber consist of a 3mm cord seal, which is cut to the correct length and permanently fixed with adhesive.

PROCEDURE FOR REPLACEMENT OF DUCT COLLETS :

ENSURE THE AIR SUPPLY IS DISCONNECTED FROM THE BLOWING MACHINE BEFORE CARRYING OUT THIS PROCEDURE.

DUCT CLAMP COLLETS :

Tools Required- 4mm allen key

Step 1 : Collet Removal

1. Open the duct clamp.
2. Remove the socket head cap screws (2) – using a 4mm allen key and remove the collet

Step 2 : Collet Refitting

1. Select the replacement collets (refer to Appendix 8).
2. Clean the duct clamp with a dry cloth.
3. Fit the required collets and secure with a socket head cap screws – using a 4mm allen key.
4. Close the duct clamp.

DUCT SEAL COLLETS :

Tools Required- 4mm allen key

Step 1 : Collet Removal

1. Ensure that the air valve is closed and the air pressure is at zero.
2. Open the air chamber to expose the collets.
3. Remove the socket head capscrew (2) – using a 4mm allen key.

Step 2 : Collet Re-fitting

1. Select the collets (refer to Appendix 8).
2. Clean air chamber with a dry cloth.
3. Fit the replacement collets and secure with a socket head cap screw – using a 4mm allen key.

1.0 SAFETY INSTRUCTIONS :

This equipment must only be used by authorised personnel, who have been suitably trained and competent to do so.



These instructions are to be made available to operators of this equipment at all times failure to observe these safety instructions could result in serious personal injury and/or property damage.

WORK AREA AND GENERAL SAFETY :

1. Read and understand the operation and maintenance manual supplied with this equipment. Keep it in a convenient place for future reference.
2. Keep children and untrained personnel away from this equipment whilst in operation.
3. Keep all guards and safety devices in place. Do not operate this equipment with guards removed or damaged.
4. Keep hands, feet and loose clothing away from moving parts, especially at cable entry points.
5. Always stop the machine and isolate, compressed air, electrical and hydraulic services to carry out lubrication and servicing.
6. Check machine before starting for worn or damaged parts. Check that all nuts and bolts are tight.
7. If machine is left unattended, ensure that unauthorised use is prevented.
8. Never leave the machine unattended whilst in use.
9. Consider the use of safety barriers, especially when used in public places.
10. Beware of pinch points involved with rotating components, e.g. screw operated tractor drive lifting mechanisms.
11. Beware of hot surfaces, machine uses compressed air and hydraulic services.
12. When operating machine always wear eye protection, hard hat, safety shoes and leather gloves, machine operates with compressed air at 12 Bar and hydraulic oil at 140 Bar.
13. Some component and assembly parts are in excess of 25kg (55lb). When lifting care must be taken, ensure sufficient man power/lifting gear is available, to prevent personal injury and damage to the machine.
14. Prior to installation ensure the sub-duct route is connected properly.
15. Waste hydraulic oils are to be disposed of via an environmentally acceptable method – e.g.: passed on for re-cycling.
16. Wear ear defenders if noise levels are considered high to prevent ear damage.

WORK AREA AND GENERAL SAFETY :

17. Machine may cause additional fire hazard if involved in an existing fire due to compressed air and hydraulic oils.
18. No personnel are to be in manholes or ducts when the Cable Blowing Machine is being operated.
19. The machine must be operated on firm ground.
20. Stay clear of cables or lines under tension.
21. Stay clear of pressurised line and sub-duct.
22. Only use the machine for its intended purpose, do not use the tractor drive without the air chamber to push or pull cable.
23. Do not place cable drum too close to the Cable Blowing Machine.
24. Do not tamper with pressure relief valves or pressure reducing valves.
25. The compressed air supply must not be allowed to enter the air chamber or sub-duct before the top tractor drive frame has been closed and the cable inserted into the intake cable guide bracket assembly (if fitted).

FAILURE TO DO SO MAY RESULT IN PERSONAL INJURY, AS THE CABLE COULD BE EJECTED FROM THE CABLE BLOWING MACHINE WITH HIGH FORCE AND VELOCITY.

GENERAL HYDRAULIC SAFETY INSTRUCTIONS :

Escaping fluids under pressure can penetrate the skin and cause serious personal injury. Observe the following precautions to avoid hydraulic hazards:-

1. Ensure all hydraulic connections are securely tightened before operating the machine.
2. Check for leaks with a piece of cardboard. Do not use your hands!
3. Do not exceed working pressure of hydraulic hoses.
4. Visually inspect hoses regularly and replace if damaged.

GENERAL PNEUMATIC SAFETY INSTRUCTIONS :

The Fibre Optical Cable Blowing Machine is a pneumatic device, using pressurised air to project cable at high velocities. Please observe the following precautions when operating the Cable Blowing Machine:-

1. Compressed air can cause flying debris. This could cause personal injury. Always wear personal protective equipment.
2. Ensure no personnel are in the manhole at the far end of the cable run. Severe personal injury may result.
3. Never open the air chamber when pressurised.
4. Only authorised, fully trained personnel should operate the air compressor.

PROCEDURE FOR REPLACEMENT OF CHAIN DRIVES :

Ensure The Hydraulic Hoses Are Disconnected From The Blowing Machine Before Carrying Out This Procedure.

Step 1 :

1. Unscrew the main Tractor drive clamping screw and separate the top and the bottom of the pusher unit.

Step 2 : Chain Removal

1. Slacken the chain adjusters – using a spanner.
2. Push the tensioner pin out through the sprocket assembly.
3. Remove the tension sprocket assembly.
4. Remove the chain connecting link.
5. Remove the chain.
6. Check the chain support slide bars for wear and check the tension sprocket rotates freely, prior to fitting the new chains.
7. Clean and relubricate the chain support slide bars.

Step 3 : Chain Replacement

1. Pass the pre-lubricated chain round the drive sprocket. Feed the chain along the unit and reconnect the chain-connecting link.
2. Align the tension sprocket with the chain and locate into position.
3. Insert the tension pin through the tension sprocket, placing the tensioner pin spacer on the tension pin. Refit swing bolt – using a Adjust the chain evenly via the swing bolts, checking free rotation of the chain. Do not over tighten the chain.

PROCEDURE FOR REPLACEMENT OF CABLE COLLETS :

ENSURE THE AIR SUPPLY IS DISCONNECTED FROM THE BLOWING MACHINE BEFORE CARRYING OUT THIS PROCEDURE.

Tools Required- 4mm allen key

Step 1 : Collet Removal

1. Open the air chamber to expose the collets.
2. Remove the socket head cap screw (2) – using a 4mm allen key and remove the collet

Step 2 : Collet Refitting

1. Select the replacement collets (refer to Appendix 7).
2. Clean the air chamber with a dry cloth.
3. Fit the appropriate collets and secure with a socket head cap screw – using a 4mm allen key. The collet with horizontal 'O' ring grooves is fitted into air chamber base.

MAINTENANCE SCHEDULE :

| PROCEDURE | DAILY | WEEKLY | MONTHLY |
|---|-------|--------|---------|
| Clean all assemblies and components thoroughly | ✓ | ✓ | ✓ |
| Inspect hydraulic hoses for leaks and cracks | ✓ | ✓ | ✓ |
| Inspect fasteners, screws and retaining pins/wire | ✓ | ✓ | ✓ |
| Check/Adjust chain tension | | ✓ | ✓ |
| Check tractor drive pads for wear/damage | | ✓ | ✓ |
| Clean Air Chamber | ✓ | ✓ | ✓ |
| Check/Replace cord seals | ✓ | ✓ | ✓ |
| Check/Replace cable seals | ✓ | ✓ | ✓ |
| Clean and lubricate chain * | | ✓ | ✓ |
| Check condition of the compressed air hose | ✓ | ✓ | ✓ |

* Should be more often if subjected to able normal use and/or excessive contamination.

TROUBLESHOOTING GUIDE :

| PROBLEM | SOLUTION |
|---|--|
| Tractor feed does not pull the cable off the drum | Assist the drum by turning it or pulling the cable off the drum by hand. |
| The Cable Blowing Machine stops. Hydraulic pressure gauge reads zero | Machine has tripped out on pressure switch, cable has hit an obstruction or become jammed. Turn hydraulic valve to off position. Turn speed control knob to min and press the reset button. If cable is jammed try restarting the Cable Blowing Machine, if this fails it may be necessary to pull the cable out a short distance and start again. Investigate obstruction in duct. If all else fails it may be necessary to remove the duct and remake the bad connection. |
| It is difficult to keep the cable moving near the end of a duct run | Assist the Cable Blowing Machine by manually pushing the cable into the tractor drive. DO NOT BEND OR CRIMP THE CABLE. |
| The cable is hard to re-start having stopped | Put air to the system with the cable clamped between the upper and lower drive chains. The tractor feed can be restarted after the air pressure has increased and stabilised. If the cable cannot be restarted, this may be due to the weight of cable in the sub-duct, it will be necessary to pull the cable out and restart the installation with the full air pressure applied. |

CRITICAL POINTS THAT DRAMATICALLY AFFECT THE OPERATION OF THE CABLE BLOWING MACHINE :

Tractor Drive To Be Closed At All Times When Cable Is Installed Into Machine.

- Cord Seals In Air Chamber Correctly Fitted To Provide Good Sealing.
- Correct Cable Seals Fitted.
- Duct Fully Connected And Pressure-tested.
- Duct Connecting Fittings Are Suitable For Operating At 12 Bar Air Pressure.
- Compressor Capacity 12 Bar And Suitable For Size Of Duct Being Used.
- Cable Drum Must Be Located Directly Behind And In Line With The Blowing Machine.
- Air Chamber, Tractor Drive Belts/chains, Housing Frames And Cable Guide Intake Assembly Must Be Clean And Free From Debris, Sludge, Dirt, Water And Lubricant.
- The Cable Must Be Hand Guided Into The Blowing Machine Through A Dry Clean Cloth By The Operator Wearing Work Gloves.
- Ensure The Compressed Air Supply Is Not Applied To The Cable Until Approximately 200 Metres Of Cable Have Been Installed Or The Hydraulic Pressure Begins To Rise.

GENERAL DESCRIPTION :

The Cable blowing machine comprising of an air box , Cable pusher and Hydraulic Power Pack has been designed to provide an effective and safe method of fibre optic cable installation. The system installs fibre optic cable of 8 – 32 mm overall diameter at up to 90m/min into pre-installed ducts, employing the viscous drag compressed air principle.

The compressed air is fed into the duct via a venturi principle, and the hydraulically powered cable feed system controls the fibre optic cable.

The system comes mounted on a light weight Frame for ease of site manoeuvrability and is powered by a hydraulic supply system. The unit is supplied with a 1-1/2" BSP for connecting air supply hose (not supplied). The air supply hose should be 25mm (min) bore or more.

The unit is supplied with 2 x hydraulic hoses x 3 metres for connecting between the cable blowing machine and hydraulic power pack (or hydraulic power source).

FEATURES :

- Hydraulic pressure read out dial (mounted On Power Pack).
- Air pressure read out dial (Mounted on Pusher Unit).
- Air pressure control / Shut off lever (Mounted on Pusher Unit).
- Hydraulic on/off control lever (One each on Pusher unit & Power Pack).
- Adjustable speed control for drive belts (Through Speed control valve mounted on Pusher unit & Pressure Regulator Valve mounted on Power Pack)

AIRBOX :

- Manufactured from aluminium.
- Range taking of cables from 8 – 32 mm by means of interchangeable collets with double split cable sealing arrangements. (1 pair of collets included with machine, other sizes available as optional extra's).
- Duct sealing at mouth of box (1 pair of collets included with machine, other sizes available as optional extra's).
- Duct gripping facility with non duct crush and distortion design. (1 pair of collets included with machine, other sizes available as optional extra).

CABLE FEEDER :

- Hydraulically powered.
- Unit lifts and splits to allow insertion of cable between drive belts.
- Drive belts are polyurethane and moulded to unit ensuring long life between replacements.
- Belt tension can be set by means of adjustable chain drive tensioners fitted to back of unit.

SPECIFICATION :

Operating Capacities :

| | |
|----------------|--------------------|
| Pushing Force: | 0 – 100 kg |
| Pushing Speed: | 0 – 90 m/min |
| Cable Size | 8 – 32 mm OD |
| Duct Size | 20 – 50 mm O.D PLB |

Hydraulic Drive System :

| | |
|------------------------|---------------------------------|
| Operating Pressure: | 100 Bar (Max) |
| Engine Type | Honda, 5 - 7 HP Gasoline Engine |
| Hydraulic Oil Capacity | 35 Lit |

Pneumatic System :

| | |
|----------------------|---|
| Air Hose Bore (min): | 25mm (1 ") or more- Not Supplied with Machine |
| Operating Pressure: | 12 Bar |
| Flow: | The air supply should ideally be filtered and de-humidified |

Minimum Flow Acceptable For Ducts with an Inner Diameter of :

| | | | |
|---------------|---|-----------------------|---------|
| 0 up to 25mm | : | 4m ³ /min | 150 CFM |
| 26 up to 30mm | : | 5m ³ /min | 185 CFM |
| 31 up to 35mm | : | 7m ³ /min | 250 CFM |
| 36 up to 40mm | : | 10m ³ /min | 375 CFM |
| 41 up to 44mm | : | 12m ³ /min | 450 CFM |

INSTALLATION PRINCIPLE :

| | |
|-----------------|---------------------|
| Basic Standard: | Viscous Drag Method |
| Optional: | Missile System |

MAINTENANCE :

To ensure reliable service from your Cable Blowing Machine, We recommend the unit be completely serviced every month.

AIR CHAMBER :

The air chamber should be inspected after each operation for seal damage or wear. Seal cord should be replaced if damaged and secured in position with the adhesive provided.

The cable seals should be checked for damage or wear and replaced with new ones if required. Always apply a smear of silicone grease to the seal bore and lip when installing the seal on to a cable.

Clean out any dirt/debris in the air chamber.

TRACTOR DRIVE :

Inspect the chain drive blocks for wear each week.

Check the chain tension weekly and adjust if necessary with the external adjustments screws. (Do not over tension) the chain should slightly lift off the chain guides, when pulled at the centre by finger.

The chain should be lubricated every week by application of Chain Spray.

Do not over lubricate, as this may lead to the drive belts being contaminated with lubricant.

If contamination does result, wipe the belts clean thoroughly before attempting any blowing operation. (This is based on normal use where the chains are not exposed to excessive contamination).

GENERAL :

The machine should be stored under cover when not in use. The machine should be wiped clean after each time used.

Always ensure that there are sufficient cable seals, cord seal, cord adhesive available in the tool box to cover the next installation.

SERVICE CONNECTIONS:

Check the condition of the hydraulic hoses each time used and replace if worn or damaged.

Check the condition of the compressed air hose each time and replace if worn or damaged.

NOTIFY INSTALLATION TEAM :



Notify Installation Team that preparations are complete and cable blowing operations are ready to commence.

NOTE:- Only authorised, fully trained operators should be allowed to operate the air compressor and the power pack/hydraulic power source. Ensure that both services are available and running and have enough fuel for the duration of the blowing operation. NOTE: The air shut off valve is still in the closed position.

- 28) Start Engine by pulling the starter grip lightly until resistance is felt then pull briskly.
- 29) Once Engine Start raise the Engine speed to Full by Throttle lever.
- 30) Turn Hydraulic Control (On/Off) lever on Power Pack to 'OFF' position.
- 31) Turn Hydraulic Regulator Valve on Power Pack Slowly-Slowly in Clockwise direction to achieve Hydraulic pressure 80kg/sq. cm (80 Bar) by looking into Hydraulic Gauge fitted with Regulator Valve.
- 32) Turn Hydraulic Control (On/Off) lever on Power Pack to 'ON' position.
- 33) Turn hydraulic control lever on Pusher unit is in the "ON" position.
- 34) Turn the speed control valve clockwise to blow Cable.

CABLE INSTALLATION INTO DUCT

- 35) Continue to install cable into duct. The operator wearing work gloves should hand guide the cable into the blowing machine through a dry clean cloth, this is to prevent any debris on the cable entering the blowing machine and to ensure the cable enters the machine inline with the tractor drive belt without any bending or deviation.

Note: care must be taken to avoid injury by clothing or fingers being dragged into the machine. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE CABLE FROM THE DRIVE BELTS AND/OR JAMMING OF THE CABLE IN THE AIR CHAMBER.

Procedure for Stopping of Machine/ Engine :

1. Turn speed control knob on Pusher unit is in the "Min" position (fully rotated anti-clockwise)
2. Turn hydraulic control lever on Pusher unit is in the "OFF" position.
3. Turn Hydraulic Regulator Valve on Power Pack in minimum position (Rotate Anticlockwise)
4. Press Engine Speed control lever/ Throttle Lever down fully.
5. Wait for few minutes & Turn the fuel Cock/ Knob to Stop/Off position
6. Turn the Engine Switch/ Knob to the OFF position.

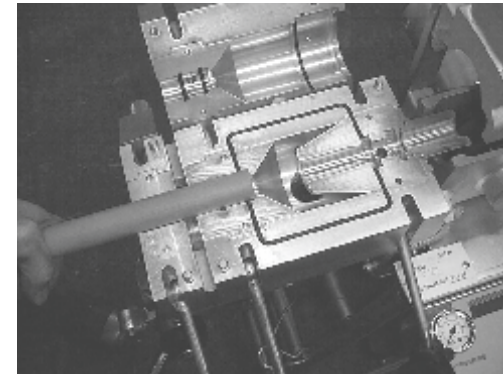
CAUTION: Avoid Engine stoppage on load.

OPERATING PROCEDURE :

It is imperative that all persons using, operating or maintaining this Cable Blowing Machine be fully trained and competent and authorised to do so and have read the entire operating manual.

Manufacturer cannot be held responsible for mis-use of this equipment.

- **Before starting ensure**
 - **Hydraulic Oil level (If low top up with GRADE 68),**
 - **Engine oil level (If low use 20W40) & Fuel.**
- 1) Position the Cable Blowing Machine in a suitable position in line with the proposed duct.
 - 2) Stabilise the Machine on uneven ground.
 - 3) Position The Cable Drum Some 6-8 Metres Directly Behind And In Line With The Cable Blowing Machine. (cable Carrying Device To Be Suitably Levelled And Restrained).
 - 4) Open tractor drive and unscrew retaining knobs on the air chamber.
 - 5) Open/ Remove the air chamber lid. Clean Any Debris, Sludge, Dirt, Water, Lubricant, Etc. From The Air Chamber, Tractor Dive/chains, Frame Housings And Cable Intake Guide Assembly.
 - 6) Unscrew the duct clamp retaining bolts.
 - 7) Open/ Remove the duct clamp, select and fit the correct size cable seal, duct seal collets and duct clamp collets for the cable and duct being used.



- 8) Place the duct into the duct seal collets and duct clamp collet. Ensure the duct is fully engaged into the duct seal collet.
- 9) Clamp the duct and tighten the two retaining nuts. Remove the upper cable seal collet.
- 10) Ensure that the duct is fully prepared for use, i.e.
 - a) Fully connected
 - b) Pressure tested
 - c) Lubricated

- 11) Open the infeed cable roller guide, and adjust the vertical guide rollers such that there is a 2 - 3mm gap between the rollers and the cable to be installed. (ensure the cable is in line with the tractor drive belts and that the top guide roller is in its upper most position prior to inserting any cable).

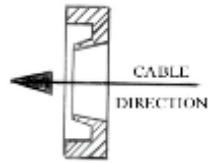
Note: Failure To Adjust The Rollers Correctly May Result In The Cable Being Damaged By The Tractor Drive Belts.

- 12) With the top tractor drive unit in its upper position, guide the cable through tractor drive and feed approximately 2 metres into the duct, by hand.
- 13) Close the tractor drive, ensuring the cable is located correctly in the Vee of both upper and lower drive chains.

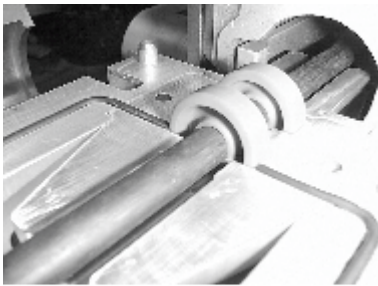
SET THE CABLE CLAMPING FORCE :

The correct cable clamping force is vital to the performance of the machine.

Note:- Ensure That The Compressed Air Supply Is Never Allowed To Enter The Air Chamber Or Duct When The Top Tractor Drive Frame Is In The Upper Position (ie. Not Clamping The Cable). Failure To Do So Could Result In Personal Injury Due To The Cable Being Ejected From The Cable Blowing Machine With High Force And Velocity.



- 14) Install the first cable seal into the groove nearest the duct clamp. Ensure the split of the seal is in the lower half of the air chamber rotated slightly to one side of the vertical, ensure the groove is away from the tractor drive facing the duct.



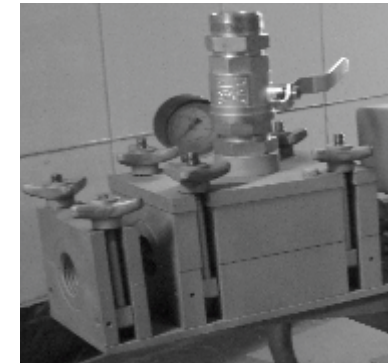
- 15) Install the second seal into the outer groove with the seal split in the lower half of the air chamber rotated slightly to the other side of the vertical (compared to the first cable seal). Ensure the groove seal lip is away from the tractor drive facing the duct.
- 16) Fit the upper cable guide collet in position ensuring both seals are located correctly.
- 17) Re-fit the air chamber lid ensuring correct location on the dowels and tighten down the 4 retaining knobs.

ENSURE THAT:-

- 18) **If not already connected :** Connect the two hydraulic hoses to the power pack (or hydraulic power source).

Note: Ensure Hose coming out from Control Valve with On/Off Valve (Pressure Line) on Hydraulic Power Pack to be connected to upper port on Pusher unit. & Second Hose (Return Line) coming out from Return Filter Assembly to be connect to lower port on Pusher unit.

- 19) Turn Hydraulic Regulator Valve on Power Pack in minimum position (Rotate Anticlockwise)
- 20) Turn Hydraulic Control (On/Off) lever on Power Pack to 'ON' position.
- 21) Turn the Engine switch to ON position
- 22) Turn Fuel Shut of Knob to Start/ON Position
- 23) Use Choke if require
- 24) Engine Speed control lever/ Throttle Lever- press down to ensure minimum position & raise slightly. Ensure that no/ minimum load is connected to engine.
- 25) Turn hydraulic control lever on Pusher unit is in the "OFF" position.
- 26) Turn speed control knob on Pusher unit is in the "Min" position (fully rotated anti clockwise).



- 27) Check the air valve is in the closed position and connect the air supply from the compressor. (if not already connected). Note: Ensure the air valve remains in the closed position until required.