

utile

**INSTALLATION
OPERATION
MAINTENANCE INSTRUCTIONS**

**MD220 - MD270
WATERCOOLED
BLOWER/EXHAUSTER**

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This booklet has been written to enable you to obtain the best possible service from your Rotary Blower/Exhauster. We ask you to give it to the person responsible for the installation and operation of this machine and not just file it away.

The normal routine of running the machine is very simple. If it is carried out strictly at all times, many years of trouble free service can be expected. We emphasise three points of paramount importance :

1 : FILTRATION OF THE INCOMING AIR

2 : LUBRICATION

3 : COOLING WATER SUPPLY

To satisfy oneself that the machine is maintaining a consistent performance we suggest that a logbook is maintained with weekly readings recording the following data for both intake and discharge :

A : COOLING WATER TEMPERATURES

B : AIR TEMPERATURES

C : AIR PRESSURES

Any decline in performance will be apparent and enable planned maintenance. From these readings the following deductions can be made :

- 1 : Rising water temperature indicates lack of coolant (Check filters) or rising discharge temperature.**
- 2 : Rising air discharge temperature without corresponding increase in air inlet temperature or air discharge pressure could indicate dirty air intake filter or machine wear.**
- 3 : Fall in air discharge pressure could indicate dirty intake filter and/or machine wear.**

STORAGE :

If the unit is not used immediately, the machine and all adjoining equipment should be placed in a clean, dry storage area protected from the weather. The intake and discharge connections must be kept covered at all times, as foreign matter could enter and cause serious damage.

INSTALLATION :

LOCATION :

Ample space and facilities should be provided for ease of servicing and inspection.

PIPEWORK :

Suction and discharge piping should incorporate flexible pipe couplings, be adequately supported and aligned correctly to prevent strain being transmitted to the machine.

Connecting pipework on the intake side of the machine must be thoroughly cleaned to remove internal rust and scale. Use PTFE tape for making joints since surplus from jointing compounds will damage the blades if drawn into the machine.

It is essential to fit a non-return valve in the pipework, preferably on the intake side to prevent the machine running in reverse direction when shutting down.

When connecting the cooling water pipeline, make provisions to drain down the machine for maintenance.

COOLING SYSTEM:

An ample supply of clean water is required. Dirty, scale forming cooling water coats the water passages, thereby reducing cooling efficiency. Where freezing conditions are likely to be experienced, extreme care must be taken to prevent frost damage to the machine and cooling system.

START-UP

Pre start-up manually rotate machine shaft through a few revolutions to ensure free running. Open cooling water supply valve and throttle the flow to a moderate rate. Regulate the waterflow so that a temperature rise of 10° C maximum is achieved. Check all protective devices or controls to ensure they are working correctly.

SHUTTING DOWN

STOP THE COOLING WATER IMMEDIATELY.

If the machine is to be shut down during freezing conditions protect the cylinder and coverplates to prevent ice forming the water jackets, and drain down if considered necessary. Use anti-freeze with closed circuit cooling systems. Where unit is on standby service, run every week for a few minutes.

OPERATING AND MAINTENANCE

Daily, check the oil bottle level.

Regularly inspect any filters fitted to the intake pipeline. Failure to carry out this simple maintenance will result in loss of performance and overheating.

Check blades for wear every 2,000 running hours. (See **INSPECTION AND SERVICE**)

A sudden increase in the discharge temperature could mean inadequate cooling, insufficient or dirty filters. The unit should be stopped and thoroughly inspected to identify the cause of the problem.

Should there be a loss of cooling water, stop the machine immediately and do not restart until the unit is completely cool and full water flow is resumed.

LUBRICATION SYSTEM

LUBRICATION :

Fill the oil tank with SHELL CORENA P150 oil or equivalent.

MAINTENANCE :

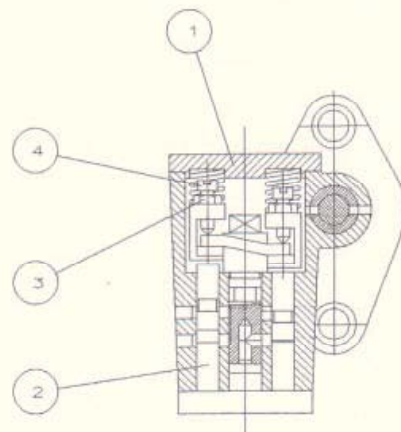
At least every year, or if the machine has been out of use for a long period , the oil pump must be thoroughly flushed out with petrol/kerosene to clear any oil residues which may have solidified in the control ducts.

ADJUSTMENT :

The pump is adjusted to the correct flow rate when despatched from our works. If it is found necessary to alter the oil feed, then proceed as follows:

- 1: Remove the cover (1) to expose the two pistons (2).
- 2: Slacken off the locknuts (3) and adjust the feed as required.

To increase the flow, turn the two adjusting screws (4) clockwise, or anti-clockwise to decrease.



1 : INSPECTION AND SERVICE

The unit should be inspected internally when checking for blade wear after 4000 hours of operation. From this inspection it can be determined how long the machine can be operated before new blades or other new spare parts are required.

Inspection commences with the dismantling of the drive end.

- 1.1 Remove the oil feed pipe (29).
- 1.2 Undo four screws (25) and remove end cap (3) complete with shaft seals (17).
- 1.3 Measure and note the thickness of the gasket (11) fitted between the coverplate (2) and the end cap (3).
- 1.4 Undo and remove the locknut (19) and tab washer (20).
- 1.5 Take off eight nuts (24) and washers (23) and remove drive end coverplate (2) complete with outer race of roller bearing (15). The coverplate can be removed by lightly tapping the outer rim.
- 1.6 Measure and note the thickness of the gaskets (10) fitted between the coverplate (2) and the cylinder (1).
- 1.7 Remove the blades (6) for inspection. Blades should be checked for laminating, chipping or charring on their rubbing edges and also for concave wear on their sides. For any wear other than polished surfaces or if the blade depth has been reduced to MD220 - 55mm and MD - 58mm then renew the blades.
When fitting new blades make sure they slide freely in their slots and if necessary remove high spots with fine emery cloth. Lightly smear all surfaces of the blades with oil before re-assembly.
- 1.8 Inspect the visible part of the cylinder bore and rotor for any signs of excessive wear or scuffing and for excessive slot wear. If there is any sign of cylinder rubbing completely dismantle the machine. Factory reconditioning is recommended, but if the work has to be carried out on site, we advise you most strongly to consult our Service Department for advice.
During the inspection, determine if the correct oil is being used. Bearings, cylinder wall, rotor/shaft assembly and blades should show a polished surface with a light film of oil. Hard baked deposits indicate inferior oil, dirt or excessive temperature.

RE-ASSEMBLY AFTER BLADE INSPECTION/RENEWAL

Re-assemble in reverse order taking note of the following points :

- 2.1 If coverplate gaskets have been replaced it is essential that they are the same thickness as the originals, otherwise clearances will be affected and could cause serious damage.
Lightly smear with oil before replacing.
- 2.2 Replace coverplate over cylinder studs. Tighten retaining nuts to a torque of 80lbs/ft (12kg/m).
- 2.3 Secure bearing locknut and tab washer and replace remaining parts.
- 2.4 When assembled make sure the compressor turns freely by hand.
- 2.5 Before fitting oil pipes, prime with correct grade of oil.

3 : FURTHER DISMANTLING OF THE DRIVE END

After removal of the drive end coverplate (2) as described in 1 , dismantle further as follows :

- 3.1 Renew the roller bearing (15) if there are any signs of pitting, wear or other damage.
To remove bearing inner race from the shaft use a two leg pulley drawer.

- 3.2 At this stage examine and renew the two shaft seals (17) if the wiping lip is damaged. Also examine the seal sleeve (7) for any signs of wear and replace if necessary. Should the seal sleeve (7) be worn where the seal lip makes contact and require replacing, remove by machining.

4 : DISMANTLE THE REAR END

- 4.1 Remove oil feed pipes (30 & 31).
- 4.2 Undo two screws (27) and remove oil pump (22) taking care not to lose the coupling (9).
- 4.3 Remove four screws (25) and release end cap (4) complete with shaft seals (18).
- 4.4 Measure and note the thickness of the gasket (11) fitted between the coverplate (2) and the end cap (4). Do not lose any shims fitted against the outer race of the bearing.
- 4.5 Take off eight nuts (24) and washers (23) and remove complete rear end coverplate assembly together with rotor/ shaft assembly (5) from the cylinder (1).
- 4.6 Measure and note the thickness of the gaskets (10) fitted between the coverplate (2) and the cylinder (1).
- 4.7 Remove locknut (19) and tab washer (20).
- 4.8 Using a two leg pulley drawer pull the coverplate (2) complete with ball bearing (16) from off the shaft (5).
- 4.9 The ball bearing (16) can now be removed and inspected for wear. Renew if there are any signs of pitting, wear or other damage.
- 4.10 Remove the shaft seals (18) from the end cap (4) and inspect the wiping lip for wear.
- 4.11 The machine is now completely dismantled and all parts can be cleaned, inspected and renewed were necessary.

5 : RE-ASSEMBLY PROCEDURE

Before commencing re-assembly, it is essential that all parts are perfectly clean. Ensure all oilways are clear.

Commence at rear end

Reset clearance after :

- a) Renewal of spacing ring.
- b) Refacing of coverplates
- 5.1 Press ball bearing (16) into coverplate (2).
- 5.2 Assemble coverplate onto shaft assembly (5).
- 5.3 Secure with locknut (19) and tab washer (20).
- 5.4 If bearing shims are fitted, place these against outer race of bearing (16).
- 5.5 Assemble shaft seals (18) in end cap (4).
- 5.6 With gasket (11) in position fit end cap (4) onto coverplate.
- 5.7 Assemble onto cylinder (1) ensuring the correct thickness of gaskets (10) are in position. Locating the coverplate on the dowels (28). The nuts should be tightened using a torque wrench set at 80lbs/ft (12kg/m).

Re-assemble drive end

- 5.8 Press inner race of roller bearing (15) onto shaft (5).
- 5.9 Re-fit outer race into coverplate (2).
- 5.10 With correct thickness of gaskets in position assemble coverplate onto cylinder locating on dowels (28). As with the rear end the nuts should be tightened to 80 lbs/ft (12kg/m) with a torque wrench.
- 5.11 Secure bearing with locknut (19) and tab washer (20).

MACHINE SERIAL NO. _____

NOTES AND RECORDS :

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