INTERNAL FLUSHING

Purge and clean the inside of copper pipework

EndoFlush®

Internal coil & system cleaner



READY TO USE

- For use after burnouts, before component changes or when retrofitting
- Effective will flush away sludge, carbon residues, acids, oils and water
- Low viscosity flows easily around the system

EndoFlush® is an internal system cleaner ideal for use after a burnout or retrofit.

Its low viscosity allows it to be circulated freely around a system to remove contaminants and physical debris, using a flushing pump. On contact, **EndoFlush®** will break down all carbon, tar, oil and sludge deposits. These contaminants are flushed out of the system, leaving internal surfaces clean and ready for re-commissioning. **EndoFlush®** is CFC-free and is not a regulated substance.

Available in

4 x 5 Litre S010190GB 1 x 20 Litre S010004GB 1 x 205 Litre S010124GB



Flushing pump and pump spare parts

 Flushing Pump
 110V
 \$010005

 Flushing Pump
 240V
 \$010006

 Electric Box
 1
 \$070173

 Replacement gauge
 1
 \$070174

 Service kit
 1
 \$010090





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EndoFlush APPLICATIONS

USE EndoFlush TO CLEAN

- A COMPLETE SYSTEM,
- SECTIONS OF A SYSTEM
- REFRIGERATION COMPONENTS.

AFTER

- 1. COMPRESSOR BURNOUT.
- 2. TO REMOVE MINERAL OIL PRIOR TO A RETROFIT.

Introduction

1. Recover all refrigerant in a legal manner.

Ideally any system should be flushed section by section. This is important as EndoFlush cannot be removed using a vacuum pump.

3. The only viable way for removing EndoFlush is to blow

through with nitrogen.

4. Before starting a flush first record how much EndoFlush is available. At the end record how much EndoFlush is removed from the system. The difference (i.e what is left in the system) must not exceed 5% of the oil charge.

5. EndoFlush is not a refrigerant.

 While tests show that EndoFlush will not harm materials most commonly found in compressors, it is not intended for use in an operating system.

Directions

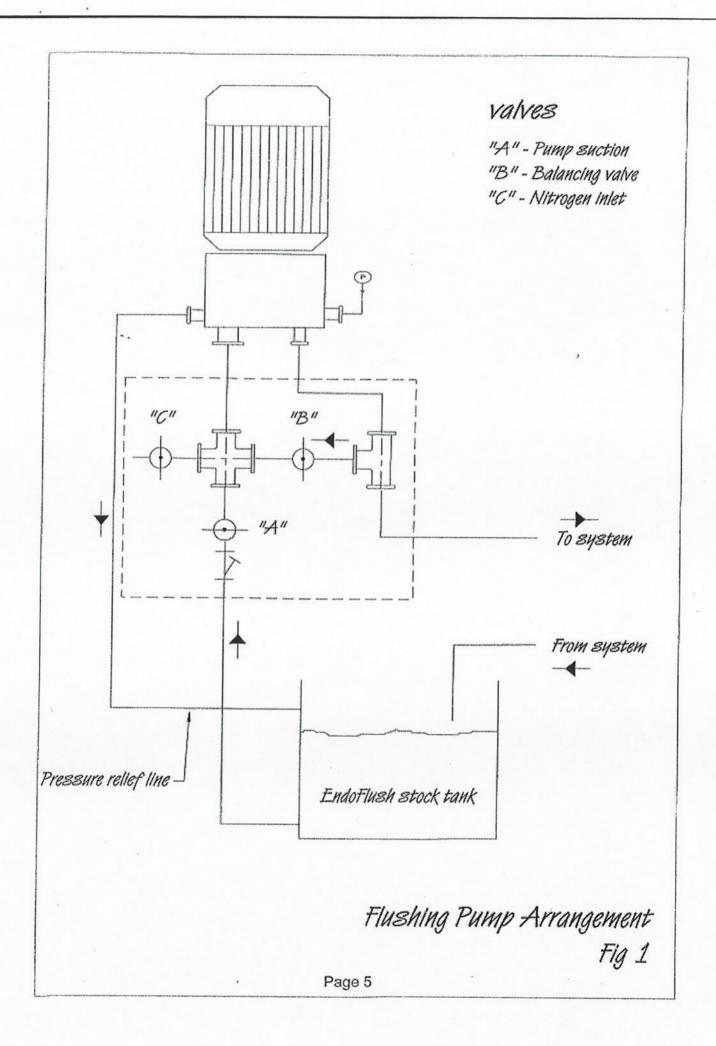
- Using a refrigerant recovery unit remove all the refrigerant from the system.
- Disconnect the compressor, dryer, accumulator, receivers, expansion valve or capillary tube. Solenoid and check valves should have a bypass fitted or be removed.
- Connect the flushing pump to the condensing coil as indicated in Fig 1. (Do not forget the pressure relief line). If using conventional refrigeration hoses to connect the pump to the system ensure that all schrader valves have been removed from the ends of the hoses.
- Pour into the tank sufficient EndoFlush to fill the condenser leaving enough in the tank to ensure a flooded pump suction.
- For normal flushing ensure valve "A" is open, valve "C" is closed. Then start the pump. As the flow increases open valve "B" which is a balancing valve to obtain sufficient flow to the system without too much pressure. The normal pressure to achieve at the pressure gauge will usually be about 2 – 3 bar.

- Allow the pump to circulate EndoFlush for about 10 -15 minutes. At the start observe the solution returning from the condenser to monitor contamination pickup.
- If the system was only slightly contaminated and only one flush is considered necessary close Valves "A" and "B" and connect a nitrogen cylinder to valve "C".
- Blow nitrogen through the pump and system until all EndoFlush has been removed or until what remains in the system is less than 5% of the system oil charge. EndoFlush cannot be removed from a system using a vacuum pump.
- The used EndoFlush may then be pumped back into the original containers by opening valve "A", closing valves "B" and "C" disconnecting the hose that connected to the system and use it to discharge into the original containers. Start the pump but be careful as the discharge rate can be considerable.
- Now close valve "A" and open valve "C" and allow nitrogen to clear the pump of the last possible EndoFlush.
 Manually drain all last traces of EndoFlush from the stock tank back into the original containers.
- If the contamination pickup was considerable another clean flush is recommended. This second flush should be carried out in line with steps 4-8 as above. At the end of this second flush the EndoFlush should be clean enough to be used as the next dirty flush.
- It is advisable to check and clean the strainer that is provided before the inlet valve "A" following the flushing of each section.
- Repeat steps 4-9 for the evaporator. If a capillary is suspected as being blocked it is vital that it is first removed.

- Repeat steps 4-9 for all the interconnecting refrigeration pipework.
- Suction line accumulators, oil separators and liquid receivers should be flushed as individual components due to their potentially large volumes.
- Reconnect system. Fit new filter drier or cores. As with normal practice complete final purge with dry nitrogen followed by evacuation.
- A further filter drier or core change may be necessary once the system has been working. It is likely that a small amount of EndoFlush (always less 5% of the oil charge) will be remain the system and continue to clean any remaining residues. If present in the system these residues will be retained by the filter drier and should be removed as soon as possible.
- At the very end ensure that NO EndoFlush remains in the pump. The life of the pump will be maintained if the pump is cleaned out with water.

Note: The above procedures are to be considered as a general guideline only due to the variations of each and every system.

If in doubt please check with the manufacturer of the unit or Advanced Engineering Ltd prior to use for additional procedures or precautions regarding the use of EndoFlush. Advanced Engineering Ltd and its distributors assume no liability for the misuse or misapplications of this product.



FLUSHING DUMP

CONNECTIONS

The pump is supplied with a manifold and a 19mm hose barb inlet for connecting to a plastic flexible hose from a holding tank.

The user may then select from the two discharge connectors supplied with the manifold.

 1/4" flare when flushing small systems or components like evaporators condensers.

13mm hose barb when flushing larger systems that require a greater flow.
 A bypass valve is also supplied, this to be used when flushing small systems or components to allow the user to vary the amount being circulated through the system or component without detrement to the pump,

(see attached flow diagram).

START UP

Ensure that there is sufficient flushing product in holding tank to flood system being treated. Follow guidelines with respect to components in the system and the requirement for bypasses (ie for expansion valves etc). Switch on pump. Flow will become steady as air is bled from suction inlet pipe and pump. This pump is self priming. The maximum discharge pressure is 5 bar. **Do not exceed this pressure.**

The pump has a pneumatic vibration damper. On the end of the pump head you will find an air schrader. Always ensure there is approx 1.25 bar of air in the head.

USAGE

Any external valves or restrictions must always be on the pump discharge. At all times ensure that the integral filter is clear. If it starts to get blocked up, stop pump and clean filter element. Filter element may be removed by unscrewing end cover of filter housing. When refitting element ensure that the inside of the filter housing is free of debris. Do not operate pump against a closed valve.

Follow flushing instructions indicated in this manual paying special attention to the requirement to remove the flushing product from the system.

After use, flush pump out with clean water. It is not recommended that the flushing product be allowed to remain the pump for long periods of time.

TROUBLESHOOTING

Failure to prime - motor operates but pump fails to discharge
Restricted suction or discharge line
Air leak on suction pipe
Punctured pump diaphragm
Debris under flapper valves
Crack in pump housing

TROUBLESHOOTING - Continued.

Low flow and pressure
Debris in pump or pipework
Air leak in suction pipe
Worn pump bearing (excessive noise)
Punctured diaphragm
Defective motor
Entrapped air in pump

CLEANING

In normal operation it is not expected that the pump will require cleaning as the action of the flushing product should always ensure that the diaphragm and valves are adequately kept clean. If it is suspected that cleaning is necessary contact Advanced Engineering Ltd for further advice. On completion of each system flush, the pump and filter should have clean water pumped through. The operate the pump on air only for 15 - 20 seconds. It is not advisable to store the pump with the flushing product in the filter and pump.

WARRANTY

The pump motor and gearbox are gauranteed for 12 months from date of purchase. The diaphragms and valves in the pump are excluded from the warranty and are considered to be consumable items. Spare diaphragms and valves are available as a service kit.

REMEMBER -

Pump is self priming.
Ensure inlet filter is clean
After use pump through with clean water and then air.
Do not pump abrasive liquids.
Maximum discharge pressure is 5.0 bar.
Pump operates on 240 volts.
Read pump manufacturers instructions.

ADVANCED ENGINEERING LTD