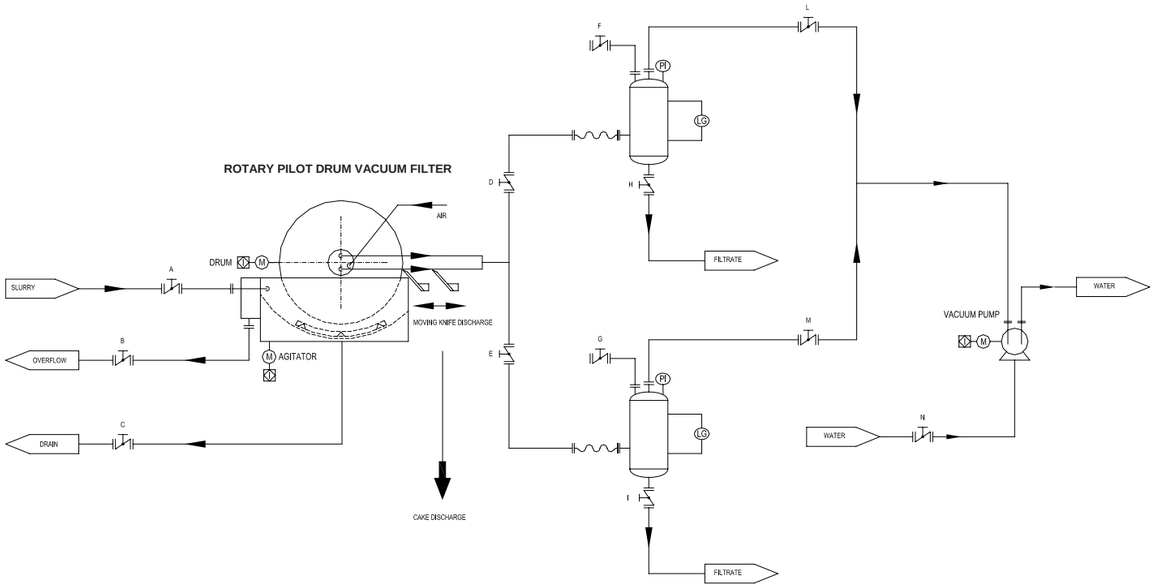
Tecniplant S.p.A
The Filtration and Flotation Solution

# START UP and SHUT OFF PROCEDURE




**START UP and FILTRATION PROCEDURE**

ATTENTION:
Before to proceed with the Rotary Pilot Drum Vacuum Filter Station sequence, verify the following:

- No tension to the Electrical Panel.
- Manual Valves A, B, C, D, E, F, G, H, I, and N : CLOSED.
- Manual Valves L, M: OPEN.
- Connect the overflow and the drain to a recovery tank
- Connect the Vacuum Pump inlet to the water (Valve N)
- Connect the Vacuum Pump outlet.
- Connect the Slurry inlet (Valve A)
- Plug air to the air blow system, if necessary
- Put a container down the cake discharge.
- Check that there aren't any objects in the internal part of the Rotary Pilot Drum Vacuum Filter to avoid mechanical damages.
- Check that all the Electrical Panel switches are off.
- Plug the Electrical Panel.

Rotary Pilot Drum Vacuum Filter Startup and Filtration

- Activate the Agitator
- Activate the Filter Drum regulating the speed through the dedicated converter
- Open the valve D or E (to select the filtrate tank).
- Open the A valve starting filling the rotary drum tank.
- Activate the Vacuum Pump and open the N valve regulating the water flow rate.
- Regulate the A valve to maintain the filter tank level constant.
- Regulate the drum speed to rich the correct cake thickness and the cake moisture required.
- Regulate the sliding knife discharge to obtain the correct separation from the cloth. Use air if necessary.
- Monitoring the vacuum degree, if too high regulate the opening of the F and G valve.
- Monitoring the Filtrate Tanks Level Gauges, if the level is ~ 90% of the pipe indicator, please open the discharge valve (H or I) and open the valves F or G to permit the discharging. When the tank will be empty, close the discharge valves and the vent valves continuing the filtration.

**SHUTOFF PROCEDURE**

- Close the A valve and open the C valve to empty the Filter Tank.
- Discharge completely the filtrate tanks as before explained and then close the discharge valves and the vent valves.
- Close the C valve and fill with water the Filter tank to clean the pipes (~ 5 minutes).
- Open the C valve to empty the filter tank.
- Close the N Valve and Stop the Vacuum Pump.
- Stop the Filter Drum rotation.
- Stop the Agitator.
- Discharge completely the filtrate tanks as before explained.
- Unplugged the Electrical Panel
- Clean the moving knife discharge using a palette knife

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# ROTARY PILOT DRUM VACUUM FILTER STATION OPERATING MANUAL

## ROTARY DRUM VACUUM FILTER STATION DESCRIPTION

The Rotary Drum Vacuum Filter Station is composed by the following parts:

- Nr. 1 Rotating Pilot Drum Vacuum Filter complete with agitator and sliding knife discharge. Filtrating Surface 0,1 $m^2$.
  Material of construction: AISI 316.
- Nr. 2 Filtrate Tanks (~ 30 liters each) complete with level gauges.
- Nr. 1 Liquid Ring Vacuum Pump.
  Impeller Material: Bronze
  Body Material: Cast Iron
  Flow Rate: ~ 24 $m^3$/h at ~ 300 mBarA
  Service Water: 0,2 $m^3$/h
- Nr. 1 Set of valves and pipes for the complete connection and function of the Plant.
- Nr. 2 Vacuum Gauges (one each tank).
- Nr. 1 Electrical Panel to control the liquid ring vacuum pump, the vacuum rotary filter and the agitator.

## HANDLING OPERATIONS AND STORAGE

The Rotary Drum Vacuum Filter Station Handling operations indicated in this paragraph must be carried out by skilled personnel only. The people charged with Rotary Drum Vacuum Filter Station handling by use of cranes must know all the Health and Safety rules to carry out the loading, unloading and transporting of parts under the highest safety conditions.
The Weight of the Rotary Drum Vacuum Filter Station is about 150 Kg and use lifting means of suitable weight capacity and in conformity with safety regulations of the nation where the Rotary Drum Vacuum Filter Station is being installed.
The capacity of the lifting means must consider the max. protrusion allowed in addition to the weight of the parts.
Tecniplant declines any responsibility for damage to property and/or persons in cases of incorrect lifting.
Prevent any other person from standing nearby in order to avoid contact with any accidental falling parts or objects.

All of the area involved in Rotary Drum Vacuum Filter Station handling, including the vehicle's apron and the place that will accommodate the Rotary Drum Vacuum Filter Station must be previously identified and inspected.
Check that the floor does not present exceptionally deep holes.
For correct unloading and handling operations the presence of two operators is recommended equipped with helmet, gloves, overalls and safety shoes.
These operators must pay the utmost attention to all the transport phases and remain at the proper distance from the Rotary Drum Vacuum Filter Station when their presence is not strictly necessary.
The operators involved with the lifting equipment must always follow suitable procedures. Particular care is needed when lifting the Rotary Drum Vacuum Filter Station to avoid it ending up out of control.
In operations of lifting the Rotary Drum Vacuum Filter Station, it must not be allowed to fall or tilt violently.
Care must be taken to stop objects of any kind from hitting the interior or exterior of the Rotary Drum Vacuum Filter Station or from falling onto it.

Never use cables or chains in direct contact with the Rotary Drum Vacuum Filter Station to carry out lifting operations.

Always avoid chains, hooks or the rocker arm oscillating or interfering with the Rotary Drum Vacuum Filter Station.
To unload the Rotary Drum Vacuum Filter Station from the transporter use a fork lift or a rocker arm.
In case of rocker arm use a cable guide by hand to keep the load under control.
Do not cross or stand neither beneath the Rotary Drum Vacuum Filter Station nor on top.

Store the Rotary Drum Vacuum Filter Station indoors inside its wooden case.

## INFORMATION FOR TECHNICAL ASSISTANCE

Email: info@tecniplant.it
Site: www.tecniplant.it
Ph: +39 02 26262144

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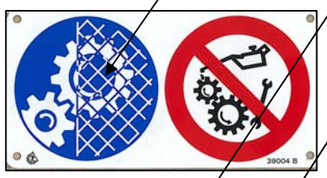
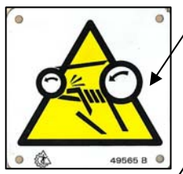
## SAFETY INSTRUCTION




**OBLIGATION TO RESTORE PROTECTIONS**

**FORBIDDEN TO MAKE MAINTENANCE WITH BODIES IN MOTION**




**DANGER OF CRUSHING TO BELT TRANSMISSION**


**KNIFE DISCHARGE**
**DON'T PUT HANDS OR FINGERS**

**CAUTION: CAREFULLY READ FOLLOWING INSTRUCTION**

Strictly adhere to the instruction listed below to prevent personal injuries and/or equipment damage.
Electrical connections must **ALWAYS** be carried out by authorized personnel and in accordance to the local codes.
Any work on the Filter should be carried out by at least 2 people.
When approaching the filter **ALWAYS** be properly dressed (avoid use of cloth with wide sleeves, neckties, necklaces, etc.) and/or wear safety equipment (hard hat, safety glasses, safety shoes, etc.) adequate for the work to be done.
Be **ALWAYS** informed on location of first aid sites inside the Company and carefully read safety and medical first aid prescription force.
**ALWAYS** stop the Pilot Filter and its ancillaries prior to touching it for whatever the reason.
**ALWAYS** disconnect the power to Electrical Panel prior to start to worki or remove protections from the Pilot Filter.
**NEVER** work on the filter when it is hot.
**DO NOT** attempt to remove the safety guards when the Pilot Filter is operating.
After completion of the work **ALWAYS** re-install the safety guards previously removed.
**NEVER** touch Pilot Filter or relevant piping with temperature higher than 80°C.
**ALWAYS** have a fire extinguisher in the vicinity of the Pilot Filter installation.
**DO NOT** operate the Pilot Filter in the wrong direction of rotation.
**NEVER** put hands or finger in the hand-holes with Pilot Drum Filter in operation.

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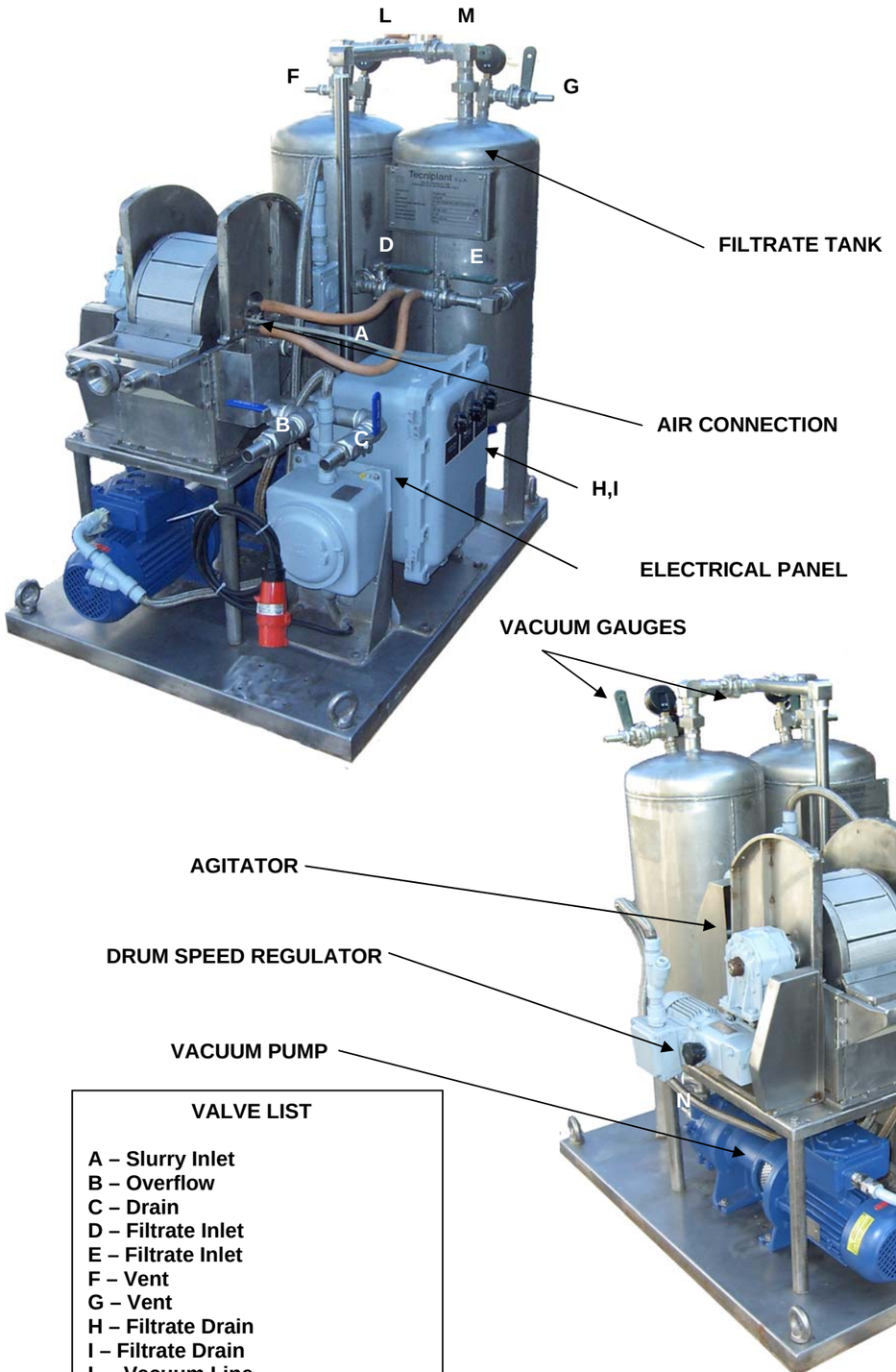
## ROTARY PILOT DRUM VACUUM FILTER STATION




**VALVE LIST**

**A – Slurry Inlet**
**B – Overflow**
**C – Drain**
**D – Filtrate Inlet**
**E – Filtrate Inlet**
**F – Vent**
**G – Vent**
**H – Filtrate Drain**
**I – Filtrate Drain**
**L – Vacuum Line**
**M – Vacuum Line**
**N – Vacuum Pump Water Inlet**