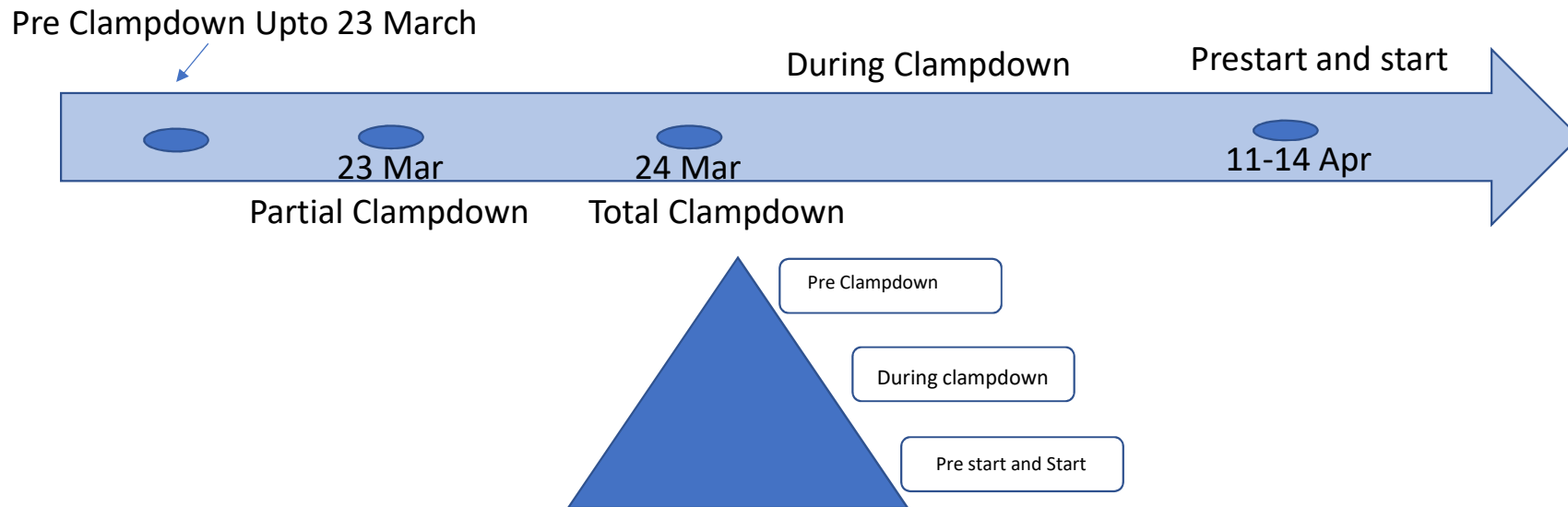


## Maintenance activities prior to restart Production activities in Machining centres, Welding machines, Painting robots/booths

1. Machine tools, Robots – Keeping them Idle is a major slow killer. We may not know the impact when we restart them. Hence Precaution is needed.
2. Similarly Paint Plant – Highly Challenging to maintain- especially when not run
3. Welding Guns, Copper wires, Argon gas... are also key for successful start



## ISSUES DUE TO NON-RUNNING OF THE MACHINES

- + It is never safe to keep machines in OFF condition for long time
- + The current circumstance with COVID-19 forces shutdown

### **Possible damages due to shutdown:**

- + Loss of crucial data like machine backup, NC. PLC. Parameters, Programs, tool offsets, work offsets, macro variables etc
- + Electronic hardware failures due to rodent entry
- + Rusting of machine parts which are unpainted and exposed
- + Damage to coolant that develops bacteria, fungi and bad odor

HAVE A CLEAR PLAN FOR – RUN CHECK THE MACHINE DURING THE SHUT DOWN

## DURING THE CLAMPDOWN PERIOD

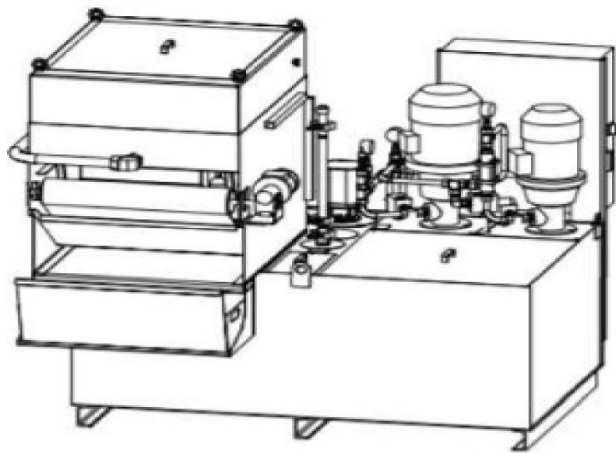
- + Check input power
- + Check and drain out moisture in pneumatic line at compressor for 5 mts before connection to machines
- + Run the machine for min 1 hr
- + Warm up program should include
  - Axes movement over full stroke
  - Rotary axes movement
  - Spindle rotation
  - Tool changing and pallet changing
  - Coolant function

### **Benefits:**

- No risk of battery drain out and subsequent data loss
- Rodent entry risk minimized
- No rusting due to lubrication cycles
- Healthy coolant due to circulation

**Note:** please make sure of fixture / components on the machine table are cleared while running warm up cycle to avoid crashes

## DURING CLAMPDOWN



+Check filter fleece position and move out the dirt position. Clean up the waste box

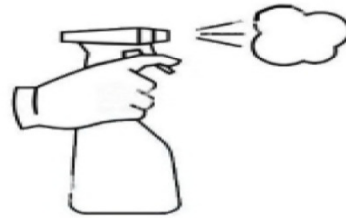
+Change the coolant water (see chip conveyor)



## DURING THE CLAMPDOWN



+Do not forget to clean the spindle and the tool cone, the table plate and the pallet cones. Apply Oil/Grease for every part

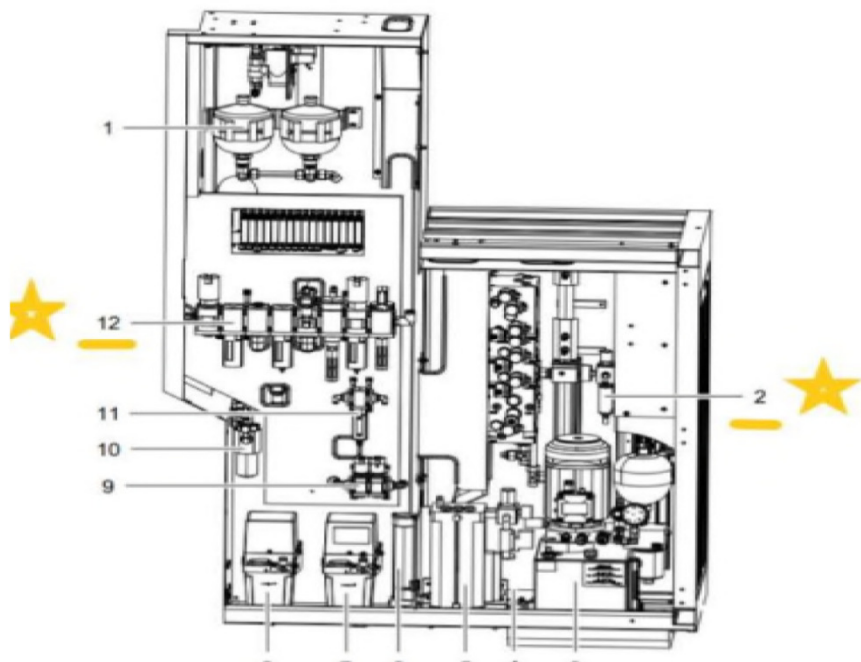


## DURING RE-STARTING AFTER CLAMPDOWN

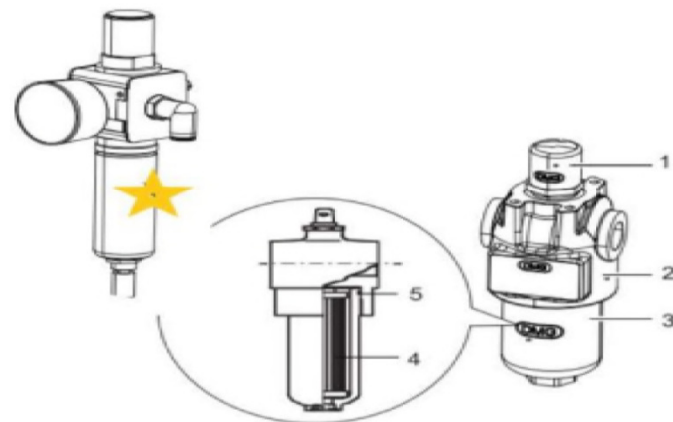


- + Check at compressor source before supplying Air to machine
- + Risk of moisture in line due to condensation !
- + Risk of damage to critical parts of machine including spindle

## DURING STARTING



Check the air - water - separator  
and renew the filter



## FIRST Hour of the Startup

### **Precautions after the machine is powered on :**

- + Always start up the machine at a low speed for at least 45min to an hour.
- + Check for any Alarms upon start up. Please note these down.
- + The ball Screw of each axis of the machine cannot be started directly and run at high speed. Manually move each axis back to the zero point of the machine and observe the operation and load of each axis
- + Spindle cannot be rotated at high speed at the beginning. Run at low speed doing a long spindle warm up for 5 minutes first and follow instructions from MTB
- + Tool change: Whether the tool change is normal
- + For Turning machines, check Tailstock operation, manually refuel before running.
- + Always advised to run a warm up program for at least one hour before running full Production
- + When the machine resumes production, the first part inspection is required



## PAINT SHOP – PRETREATMENT, PAINTING, PAINT KITCHEN AND ROBOTS – ON RESTARTING

- BEFORE CLAMPDOWN, DURING CLAMPDOWN AND ON START”
- 1. Check all programs and have a back-up
- 2. If the Robot are in power off conditions, it is necessary that we take Robot CMOS backup are taken and move the Robot to second home position( 0-position)
- 3. Cleaning of all Heat Exchangers before shutdown
- 4. Circulation of chemical tanks in Pretreatment stage – once a day for 10 Minutes
- 5. Operate the blowers for 10 minutes every day
- 6. E coat circulation to done as holiday mode but have circulation every day
- 7. Water to be drained from the leak testing machine
- 8. Cleaning of paint booth for sludge before shutdown.
- 9. Draining of the sludge pit water

## PAINT SHOP – PRETREATMENT, PAINTING, PAINT KITCHEN AND ROBOTS – ON RESTARTING

- BEFORE CLAMPDOWN, DURING CLAMPDOWN AND ON START”
- 10. No paint / thinner to be kept in open condition. Keep all paint and thinner drum in shade. Don't keep outside.
- 11. Closure of the entry and exit points of the booth/oven
- 12. Check the earthing and other safety points in the paint plant
- 13. Ensure Fire safety system is in ON condition before starting
- 14. Check the condition of the battery of Robot and replace them
- 15. In the powder coating booth, purge all the powder from powder spray guns, clean the spray guns
- 16. During shutdown, there are chances of bacterial count increase in sludge pit water. To prevent bacterial growth, if possible circulate for 1 hour daily, if not possible, add Sodium hypochlorite – 50 to 100 ppm of water volume with circulation.

# Precautions:

Wash hands regularly  
with soap for at least  
20-30 seconds.



Avoid shaking hands.



Keep your hands  
away from your face.



Wear gloves if necessary.  
Change and wash  
them daily.



Cough and sneeze  
properley.  
Use tissues only once.



Keep your distance  
and avoid crowds.



Protect wounds.



Meetings only by video  
conference.



## NEW 5 S working to be followed on starting

- 1 “S” - Safe distancing
- 2 “S” - Safety PPE
- 3 “S” - Sanitisation
- 4 “S” - Self Isolation
- 5 “S” - Self Discipline

- Thanks

- # Stay Healthy, # Stay Safe.., # Safe distancing