



## **MACHINE CLEANOUT PROCEDURES**

A good cleaning of an existing cutting fluid system extends fluid life. This results in increased productivity for you and improved working conditions for your employees.

A good cleanout:

- reduces bacteria counts
- removes slime and solid buildup (hard water soaps, etc.)
- reduces odor problems
- reduces blockage and clogging of pipes, nozzles, etc.
- prevents cross contamination of fluids (especially important where different biocides are used)

The overall result of a clean system is:

- longer tank life
- better tool operation
- improved work environment
- lower operating costs

A good cleaner is the key to a good cleanout. The use of an alkaline cleaner during cleanout significantly enhances the initial cleanliness of a freshly charged system. It is known that a system heavily contaminated with bacteria when simply dumped and recharged, will return to the original bacteria count in approximately four days. The answer to extending fluid life is to remove as much dirt and contamination as possible and kill any bacteria before the new fluid is added. The use of an alkaline cleaner will do this.

An alkaline cleaner will:

- soften and remove hardened chips, swarf and aged cutting fluid
- impart some degree of rust protection to machine surfaces after cleaning and before rinsing with cutting fluid solutions
- be compatible with the cutting fluid to be charged into the cleaned equipment
- be non-corrosive to the surfaces it will contact during the cleanout cycle



## **CENTRAL SYSTEM CLEANOUT PROCEDURES**

Following is a general outline for cleaning a central system. However, circumstances may dictate that these procedures be changed due to unforeseen problems.

### ***Prepare System for Cleaning***

1. All loose and foreign materials must be removed from the central system flumes and tanks. Welding rods or pieces of plastic or cardboard may be caught in the dragout conveyors, causing maintenance problems before the system can even be used.
2. Inspect all flumes and auxiliary tanks for cracks, open seams and dead areas which may lead to pockets of stagnant cutting fluid that may later be sources of contamination.
3. Upon inspection and repair, operate all central system equipment to see that it is functioning properly prior to adding fluid to the system.
4. All machines on the system, and those to be added to the system, must be inspected to assure that they have no dead areas holding stagnant fluid. Machines on central systems should be designed or modified so that upon shutting off the fluid supply, all fluid and chips are washed from the machine into the central system. If machines have fluid in their sumps from run-in or previous use, it must be removed so it will not contaminate the central system.

### ***Clean System***

5. Charge the central system tank to pumping capacity with a 3% solution of the recommended Castrol Industrial cleaner. If the machine tools are quite dirty, it may be advisable to wash down the machines, using a richer solution for more effective cleaning.

The cleaner should then be pumped throughout the central system flumes and machines. If possible, a thorough cleaning of the surrounding areas such as floors, machines, etc., should also be completed. The cleaner should be circulated with the central system drag-out operating for at least four hours, or until all machines and floors are completely cleaned and free of possible contaminating materials.

6. Dump the system upon completion of recirculation of the cleaning solution. Drain the tank as completely as possible. If all material cannot be removed from the bottom of the tank, the remaining solution should be diluted with clean water. Add to the tank approximately the same amount of water that is in the bottom of the tank. Then drain the tank back to that original level.

### ***Rinse System***

7. Fill the tank to pumping capacity with 1% solution of the recommended Castrol Industrial metalworking fluid. This is done to prevent corrosion of the system during the rinse cycle. This solution should be circulated for a minimum of two hours through both the flumes and machines.



8. The 1% solution should be dumped upon completion of the circulation of the rinse water. When all the solution is drained from the central system tank, the flumes and walls of the tank should be rinsed with clean water. If all the solution cannot be drained from the tank, it should be drained or pumped as low as possible, then diluted with at least four times the amount of water left in the bottom of the tank.

***Charge System***

9. When the previous step has been completed, the tank must be charged with metalworking fluid at the recommended concentration. Once the bottom of the tank is covered with water, the concentrate should be added as slowly as possible. When the system reaches pumping level, the material should be pumped throughout the flumes and machines. Keep adding concentrate until the recommended concentration is reached.
10. When the system is at operating level, it should be checked for concentration, pH and other appropriate tests. At this time, an addition of a biocide may be necessary. However, one should not be added unless indicated by test results.

**INDIVIDUAL MACHINE SUMP CLEANOUT PROCEDURES**

For cleanout of individual machine sumps, follow the same procedures as above using the recommended Castrol Industrial machine sump cleaner. Disregard reference to flumes and auxiliary tanks. Individual sumps should be cleaned more often than central systems since dirt levels build more quickly in them. A typical cleaning schedule would be every 2 - 3 months depending on the effectiveness of the filtration system.

***Special Note***

When shutdown and cleanout time are short, the following steps may be used to facilitate a good cleanout:

1. Twenty-four hours prior to dumping, add 1% concentration of the recommended Castrol Industrial cleaner and continue to operate the system as normal.
2. After normal system operations have ceased, but prior to dumping, the cleaner concentration should be increased to 4%. This solution should be circulated through the system and/or machines for 2 - 4 hours while the necessary scraping and scrubbing are being done.
3. Dump, rinse and recharge the system.



**CLEANOUT PROCEDURES FOR STRAIGHT OIL SYSTEMS**

1. Drain spent oil from tanks and lines. Remove all types of filters.
2. Scrape sides and bottom of holding tank, then remove loose residues.
3. Using a brush, scrub down holding tank, filter chamber and lines. Then rinse and flush lines with a suitable solvent.
4. Remove solvent from holding tank, filter chamber and lines.
5. Repeat steps 3 and 4 with high flash kerosene.
6. Refill with high flash kerosene to pumping level, circulate through the system 15-20 min.
7. Drain as much high flash kerosene as possible. Wipe excess from the bottom of the holding tank and filter chamber.
8. Replace filters and recharge with Castrol Industrial oil.
9. Run system for 2 - 3 hours prior to resuming production.

***Note of Caution***

When cleaning with solvents, all safety precautions supplied by the vendor and listed on the Material Safety Data Sheet must be observed. Protective equipment such as goggles, OSHA approved vapor masks, rubber gloves, boots and protective clothing should be worn.

Because of potential fire hazards, we advise that welding not be done in an area containing, or surrounded by, low flash oils and solvents.

If any questions arise concerning the procedures mentioned in this *Technical Bulletin*, contact the Castrol Industrial Technical Support Department.