



BIRD DOG INDUSTRIES, INC. PO BOX 97 / 74 MIDWEST DRIVE		PACIFIC, MISSOURI 63069 USA																	
Series/Formula Name	Operation										Metal		Cleaning Method		Hazardous Materials Identification System (HMIS)				
	SAWING	DRILLING	MILLING	TAPPING	BROACHING	GRINDING	Aluminum	Tool Steels	Brass/Copper	Stainless Steel	Carbon Steel	Titanium	Hasteloy	Aqueous	Solvent	Health Hazard	Flammability	Reactivity	Personal Protection
BENCHMARK 1050	5-8:1	5-8:1	5-8:1	5:01	USE 7700	10-20:1	Y	Y	Y	Y	Y	Y	N	Y	Y	0	0	0	A
BENCHMARK 1080	10-20:1	10-15:1	10-15:1	5-10:1	USE 7700	20-30:1	Y	Y	Y	Y	Y	Y	N	Y	Y	0	0	0	A
BENCHMARK 1100	20-25:1	15-20:1	15-20:1	10-15:1	USE 7700	30:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	0	0	0	A
BENCHMARK 1125	20-25:1	15-20:1	15-20:1	10-15:1	USE 7700	30:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	0	0	0	A
SAWLUTIONS 8007	15-25:1	15-20:1	15-20:1	10-15:1	4:1	20-25:1	Y	Y	Y	Y	Y	Y	N	Y	Y	1	0	0	A
BENCHMARK 8015	15-25:1	15-20:1	15-20:1	10-15:1	4:1	20-25:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	0	0	A
BENCHMARK 8025	20-30:1	20-25:1	20-25:1	15-20:1	6:1	25-30:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	0	0	A
BENCHMARK 8030	20-30:1	20-25:1	20-25:1	15-20:1	6:1	25-30:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	0	0	A
BENCHMARK 7030	20:1	15-20:1	15-20:1	10-15:1	5-10:1	30:1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	1	0	A
BENCHMARK 7700	20:1	15-20:1	15-20:1	10-15:1	5-10:1	30:1	Y	Y	Y	Y	Y	N	Y	Y	Y	1	1	0	A
BENCHMARK 7821	20:1	15-20:1	15-20:1	10-15:1	5-10:1	30:1	Y	Y	Y	Y	Y	N	Y	Y	Y	1	1	0	A

ON STAINLESS, ALUMINUM AND EXOTICS USE RATIOS ON THE RICH SIDE.
 ALWAYS USE A REFRACTOMETER AND SCHEDULE FOR MAKING CORRECT DILUTION RATIOS WITH WATER.

RANCIDITY

Action:

- Check fluid concentration
- Check sump levels
- Ask if fluid make-up was added
- Check pH
- Determine extraneous oil levels
- Check for solid contamination
- Look for "dead" areas for fluid stagnation
- Check for fluid discoloration
- Check for staining of parts
- Check emulsion stability
- Check ion levels-high sulfate levels can promote bacterial growth

Remedy:

- Dump and recharge
- Biocide addition
- Aeration
- Keep fluid circulating

EFFECTS OF WATER ON WATER BASED FLUIDS

Because water typically makes up about 95% of the total volume in a metal processing fluid sump, its quality plays a major factor on the life and quality on the fluid. While the water source cannot always be changed the effects of the water can be measured and sometimes problems can be avoided.

Soft water-typically less than 75 parts per million (4.5 grains) can cause foam but contains less ions that can be a detriment to fluid life.

Hard water-typically greater than 200 parts per million (12 grains) reduces foam but can contain high ion levels which can lead to corrosion, residue scums and bacterial problems. Hard water can be "softened" by:

Softening-process by which calcium and magnesium ions are exchanged with sodium ions. This reduces the potential for soap formation and thus residual scumming. It can however promote corrosion.

Demineralization or deionization-removes ions by forcing the water, under high pressure through a semi-permeable membrane.

IONS seen in the water are typically:

- Chlorides-typically any level over 50 ppm can cause corrosion
- Sulfates-typically greater than 100 ppm can cause bacteria and ultimately corrosion
- Phosphates-contribute to alkalinity and stimulate bacterial growth, which can lead to skin irritation and rancidity



machine coolant

trouble shooting guide

FOAM

Action:

- Check fluid concentration-in most case concentration is high
- Check water hardness (soft water causes foam)
- Operation-some operations are inherently high foamers such as double disc grinding, creep feed grinding
- Check for "elbow" or waterfalls in fluid delivery or return pipes
- Check for cracks in pipe-air cavitation
- Check for contamination-such as alkaline cleaners
- Check sump levels-air cavitation
- Check sump capacity-turnover (gallons per minute deliver) versus amount of fluid
- Check filter media-maybe too fine a filter (clogging)
- Check fluid nozzles for constriction

Remedy:

- Adjust fluid concentration
- Add de-foamer oil works in a pinch but can cause other problems. Silicones work well but are taken out by filters and can cause problems with secondary operational problems. silicones are most widely used. Water hardeners work when soft water is the cause.
- Adjust sump levels
- Replace cracked pipes
- Reduce elbow, fluid pressures and waterfalls if possible

CORROSION

Action:

- Check fluid concentration-lean mixes cause corrosion
- Check mix pH, typically pH's lower than 8.5 can effect corrosion control
- Check for contamination-high levels of chlorides can cause corrosion
- Check environment of machine tool-corrosive fumes from local washer and pickling baths can cause corrosion. Concrete dust can also cause corrosion.
- Check how parts are handled or stacked-hands have acids-stacking parts on top of each other can cause corrosion
- Corrosion can sometimes be linked to the time of year hot and humid conditions can cause corrosion
- Check bacterial levels
- Check emulsion stability an improperly mixed fluid may cause corrosion

Remedy:

- Adjust concentration
- Adjust pH
- Treat for bacteria
- Add rust inhibitor if possible
- Remove contamination
- Dump and recharge
- Fresh make-up (selectively depleted rust inhibitors)

Corrosion can have a variety of causes. Some fluids will provide poor corrosion of cast iron while others may cause staining of non-ferrous metals, for example an active sulfur containing product may stain or darken aluminum. It is important to know what metals will be worked before a particular product is recommended.

SKIN IRRITATION

Action:

- Check fluid concentration-too rich may cause irritation
- Check for contaminants
- Check machine tool environment for rust inhibitors, parts cleaners, where parts may be dipped by hands, or operators wash their hands

Remedy:

- Reduce concentration if high
- Apply a barrier cream
- Wash hands with mild soaps avoiding harsh soaps and solvents also minimize the frequency of washing
- Minimize hand wiping with rough shop rags use disposable paper towels
- If gloves are used make sure they are cloth lined and are frequently changed