



# IO EXTRACTOR

## MAINTENANCE SCHEDULE



### WARNING

MAINTENANCE INTERVALS SHOULD BE SHORTENED IN HARSH WORKING ENVIRONMENTS. IF ANY SYSTEM SHOWS SIGNS OF EXCESSIVE WEAR OR DEFECTS, ADDRESS THE ISSUE IMMEDIATELY

PERIOD	COMPONENT	OPERATION	PROCEDURE
PER PROCESS-CYCLE	Reactor Vessel	Inspect	Between each process cycle, inspect the inside of the reactor for moisture buildup. Wipe away any moisture to prevent ice clogs.
DAILY	Molecular Sieve	Remove and Regenerate	Remove both molecular sieve cartridges and place in a vacuum oven at 400°F and 29inHg until dry.
	Solvent Pump	Inspect and Replace	Per Master Vapor Pumps MVP150 Manual: before each use, check all hoses for wear or damage and replace as necessary.
		Inspect and Replace	Check level of Solvent Pump CO2 cylinder and replace as necessary.
		Purge and Charge	Purge and charge the solvent pump with CO2 once per Master Vapor Pumps MVP150 Manual.
	Reactor Vessel Filter Spool	Remove	If not operating the IO Extractor for more than 4hrs, remove the filter spool at the bottom of the reactor to prevent water buildup which can create ice clogs during the process cycle.
WEEKLY	Braided PTFE Hose	Inspect and Replace	Inspect the reactor vessel vent hose for signs of excessive wear or damage. Replace if necessary.
	Reactor O-Ring	Inspect and Replace	Inspect the reactor vessel o-ring for signs of wear or damage. Replace if either exists.
	Chiller HT Fluid	Inspect level	Inspect level of heat transfer fluid in each chiller. Fill if the level is low.
MONTHLY	Quick Connect	Inspect and Replace	Visually inspect o-rings for damage. If damage is found, replace o-rings following the procedure in section 8.4.2 of IO Extractor Operating Manual.
	Vacuum Pump	Inspect and Replace	Inspect the oil level and color. If oil is black, brown, smells burnt, or is at a low level please reference Appendix D: Welch CRVpro4 Maintenance and Servicing for procedures.
	Solvent Pump	Inspect and Replace	Per Master Vapor Pumps MVP150 Manual: check mounting bolts, check fasteners, and tighten or retorque as necessary.
	Water Cooling Tower	Drain, clean, refill.	If equipped, drain and clean the water cooling tower reservoir and remove and clean the wye strainer.
	Water Heater	Partial Drain	Drain 2-3qts of water from the bottom of the hot water heater to flush hard water deposits and other debris.
ANNUALLY	Instrumentation	Inspect and Calibrate	Using calibrated measurement equipment, inspect the accuracy of each thermocouple, pressure transducer, and pressure gauge across the operating temperature/pressure range.
	Vacuum Pump	Inspect and Replace	Follow vacuum pump manufacturer procedures to inspect and replace the shaft seal if excessive oil leakage is found.
	Quick Connect	Replace	Follow the procedure in section 8.4.2 of IO Extractor Operating Manual.
	Sanitary Gaskets	Replace	Replace all sanitary fitting gaskets.
	Sanitary Fitting Hardware	Inspect and Replace	Inspect all sanitary fitting nuts, bolts, and lock washers for damage. Replace effected hardware if damage or excessive wear exists.
	Ball Valves	Inspect and Replace/Repair	Inspect ball valves for excessive wear or damage and for smooth actuation. Repair or replace as necessary.
	Air - Cooled Chillers	Inspect and clean	If equipped with air-cooled chiller models, remove side panels and clean accumulated dust/debris.
	Pressure Relief Valves (ASME Vessels)	Inspect or Replace	RECOMENDED: inspect by designated pressure system inspectors only per NBIC or replace.
	Pressure Relief Valve (Water Heater)	Test	Lift and release the lever of the water heater pressure relief valve to verify that the valve operates correctly.
2 YEARS RECOMMENDED	Pressure Vessel	Inspect and Replace/Repair	To be performed by designated pressure system inspectors only. Follow National Board Inspection Code (NBIC), American Petroleum Institute (API) code, or Compressed Gas Association (CGA) code.

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