

Fusion Machine Operation Checklist

Check	Acceptable	Action Required
Before operating equipment, confirm that the equipment safety guards are in place, safety features are fully functional and operating personnel are wearing the appropriate personal protective equipment. Also confirm that oil levels are correct, moving parts are lubricated and the equipment is in a safe location. Operate gasoline-powered equipment only in a well-ventilated location.		
Confirm the hydraulic pressures on the system to be within acceptable operating limits. Refer to your operator's manual for these pressures.		
Carriage movement should be smooth with no delay in movement on hydraulic units. A delay on hydraulic units may indicate air in the system. Cycle the carriage forward and back through the full range of movement at least ten times.		
Check for hydraulic leaks under full system pressure. DO NOT check for leaks with a bare hand. High-pressure fluids can cause injury.		
Facer functions properly – a) no wobble in face plates, b) blades are clean and sharp, c) blades are tight, d) motor runs smoothly, e) no grinding noise from facer, f) on electrical facers the plug and wiring should be in good condition		
On electric facers, the motor should run freely with a small temperature rise under no load condition.		
Confirm that the hydraulic or manual pipe lifter functions properly. Bottom out the hydraulic cylinder in both directions and confirm no hydraulic leak.		
Hydraulic controls are set properly to set the desired pressure during all phases of operation (facing, heating and fusing).		
Some machines have a drag adjustment. Be sure this feature works correctly. The carriage should have a resisting load to properly test the drag compensation.		

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Hydraulic cylinder rods should be clean with no damage (pits, gouges, scratches or scoring). There should be little to no oil on the rods after carriage movement. Excessive oil on the rods may indicate worn or damaged seals.		
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Use round, straight pipe or a calibration test pipe to check for proper alignment of the clamps. A facer test should also be conducted to confirm that the pipe ends are square and smooth after facing. Facer blades should cut easily with relatively light contact pressure. Check the thickness of the chip cut by the facer. A chip that is too thick may be caused by a loose blade and a chip that is too thin may be caused by a dull blade or debris stuck on the facer.		
Slide facer forward and backward and confirm smooth operation.		
Check the facer latch to be sure it grabs the side rod properly.		

Heater System

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Confirm that the heater will reach the desired temperature, the controller cycles power on and off to the heater and that the temperature is uniform across the face of the heater and on each side of the heater.		
Use a surface pyrometer to confirm the calibration of the controller setting.		
Heaters with multiple controllers, e.g. more than one thermostats, can behave erratically, if one controller is faulty. To check these heaters choose a measurement location in 4 quadrants on the face of the heater. Measure the temperature at each location at 5-minute intervals during heat up. All temperatures should rise uniformly. A lag in temperature rise in one quadrant may indicate a faulty heater element or controller (thermostat).		

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Check the operation of the thermometer. Note: Generally the thermometer reading will not match a surface temperature measurement.		
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Electrical System

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Confirm that the proper voltage is supplied to the machine.		
If the machine has an emergency stop, confirm that it operates properly.		
Use a ground fault interrupt or high precision volt/ohm meter to confirm that there is no electrical short to the frame.		
All switches should work smoothly and should be checked for proper operation.		

On Models With Gasoline Engines

Check	Acceptable	Action Required
WARNING: Always turn off all electrical loads before shutting down the engine/generator. Failure to do this will damage the generator.		
Confirm that all protective guards are in place and attached correctly to prevent contact with moving parts of the motor and pump.		
Engine should start quickly and run smoothly.		
Throttle operation should be smooth.		
Confirm that the muffler is functioning properly and no exhaust gases are escaping past the gasket. The spark arrestor should be installed.		
Generator output voltage should be steady after engine speed stabilizes.		