

CINGINNATI®

CUSTOMER _____ DATE OF INSPECTION _____

SERIAL # _____ RSF # _____ UI Rev # _____ PLC Project # _____

SERVICE REPRESENTATIVE _____

Daily Operator Checks

- Verify that all safety guards are in place.
- Verify that all safety signs are in proper location and undamaged.

Monthly Maintenance

Transporter

- Inspect the Y-axis cable carrier for damage and remove any debris from the cable trough.
- Verify that the Y-axis encoder is tightly secured to the motor shaft.
- Verify that the Z-axis encoder is tightly secured to the motor shaft.
- Confirm that the Z-axis proximity switch flag is set to clear the switch at 37".

Z-frame

- Clean thickness detection rail guide and bearing assembly.
- Verify that thickness detection hardware is securely fastened.
- Inspect the condition of the stripper fingers and replace as needed. (if applicable)

Pre-stage

- Inspect material contact sensor rod for proper positioning and damage. Clean and adjust as necessary.
- Clean all vacuum cup material contact surfaces.

Forks

- Inspect fork fingers. Ensure they are all properly fastened, square and level with other fingers. Replaced damaged forks as necessary.

Over/Under Carts (where applicable)

- Verify that cart axis encoders are tightly secured to the motor shafts. (if applicable)
- Verify cart active/hold switches or cart light curtain resets are functioning properly. (as applicable with O/U carts, system will have one or the other)
- Verify the cart lights and sirens are functioning correctly. Cart/active hold=orange. Light curtains=red, yellow, and green.

Main Electrical Cabinet and Safety Enclosure

- Verify air pressure regulator is set to 90 PSI. ON pressure set to 80 PSI and OFF set to 100 PSI.
- Verify that all Emergency Stop switches operate correctly.
- Verify that all door latches and interlocks operate correctly.

Notes/Comments

Semi-Annual Maintenance

Transporter

- Lubricate Z-axis shaft bearings.
- Lubricate, inspect and verify proper tension of Z-axis drive chain. (Z frame should be level with the laser load frame at all four corners)
- Verify that the Z-axis jam nuts at the turn buckles and four ends are properly secured.
- Inspect Z-axis gearbox lube level, fill as necessary.
- Lubricate the 4 Y-axis wheel bearings.
- Lubricate, inspect and verify proper tension of Y-axis drive chain.
- Clean round and flat rails with scrubbing pads.
- Verify rail fasteners are properly secured and there is a smooth transition from one rail section to the next.
- Verify plastic wipers fully contact the rails and will move up and down in their holder.
- Inspect Y-axis gearbox lube level, fill as necessary.
- Inspect and clean transporter electrical enclosure. Verify wiring shows no signs of rubbing or wear. Verify fan is operational, both lights and the siren are operating.

Z Frame

- Lubricate, clean and verify Z-axis roller guide channels and rollers properly secured. (x4)
- Lubricate, clean and inspect fanning magnet cylinders and verify fasteners properly secured. Verify that both magnets are in sync with one another, position cylinders are secured, properly located and adjust as necessary.
- Verify that the stripper bar is square to the laser pallet for correct edge detection and maximum use of pallet space.
- Inspect for air leaks at and around the vacuum ejector.
- Verify that the 4 optic sensors are set to the correct range and in proper alignment.
- Inspect for any loose cables or air lines; secure as necessary.

Pre-stage

- Lubricate, clean and inspect air cylinders. Verify fasteners properly secured. Verify that all cylinders are in sync with one another, position cylinders are secured, properly located and adjust as necessary. (x4)
- Inspect and verify that there is no rubbing on any stationary part of the Z-frame, on air lines or cables.
- Lubricate, clean and inspect X and Y crowding cylinders. Verify that the position sensors are properly located.(4 total)
- Lubricate, clean and inspect X and Y crowding guide pins, bearing assemblies, and slide rails. (4 total)
- Lubricate, clean and inspect peeler cup cylinder and guide shaft. Verify all hardware properly secured and that cup has approximately .50" threaded rod visible.
- Clean and inspect all vacuum cups and mounts for damage. Verify all hardware properly secured and that cups are set to the same height.
- Inspect condition of air lines and fittings. Verify there are no leaks.

Forks

- Lubricate and inspect drive shaft bearings.
- Inspect and verify that slip couplers are torqued to 175 inch pounds.
- Inspect and verify taper lock sprockets are torqued to 167 foot pounds.
- Inspect and clean roller guide channels. Verify mounting hardware properly secured.
- Clean, inspect and lubricate drive chain. Verify proper tension and that hardware mounts are properly secured. (x2)
- Lubricate and inspect idler bearings.
- Inspect and verify lube level of gear box.
- Verify that fork tubes are properly secured to the fork arms and square to Z frame at both ends within .25".

Over/Under Carts (when applicable)

- Inspect and lubricate wheel bearings. (4 per cart)
- Inspect, clean, lubricate and set proper tension for drive chain. Verify that mounting hardware is properly secured. (1 per cart set)
- Inspect and verify lube level of gear box.
- Inspect and verify material stops are in place.
- Inspect rolling wheel surface and clean with scrubbing pads.
- Clean the cart rails with scrubbing pads, and remove any debris from the track and plastic chain guides.

Main Electrical Cabinet and Safety Enclosure

- Inspect and clean inside of main electrical cabinet. Verify wiring show signs of rubbing or wear.
- Verify that low pressure sensor is set to max.

Calibration and Position Verification

- Verify and correct if necessary. Y-axis calibration, and positions. (Laser, retrieve, and carts.) (or equivalent if not equipped with carts)
- Verify and correct if necessary. Z-axis calibration and positions. (Upper and lower laser pallets, and carts (or equivalent if not equipped with carts) Confirm that all other Z positions are acceptable based on their function.
- Verify and correct if necessary; fork axis calibration, and in/out positions.
- Verify and correct if necessary; thickness detection caliper.
- Verify and correct if necessary; Laser edge detection, including running the edge detect calibration program.
- Verify and adjust Cart positions if necessary. (where applicable)
- Verify that material is crowding to the X and Y material stops, adjust as necessary.
- Verify that the material is being placed at X0/Y0 position on both pallets, adjust as necessary.
- Verify that positions and edge detect are set up correctly by running the edge detect only program.

Software

- Record PLC IP address ____ . ____ . ____
- Verify that UI software is up to date based on PLC and CPU model.
- Verify Nord drive configuration files are the most current versions. (Y, Z, forks and carts. (where applicable)
- Perform an Acronis backup when complete. Save a copy to the F drive and encourage customer to keep a copy on either a network folder or some type of external storage media.
- Verify that the backup/restore wizard includes the MMHS folder.
- Zip and email a copy of MMHS folder, and this document to

Laserforms@e-ci.com.

- Record customer location of new backups. _____

Notes/Comments

Annual Maintenance

- Replace transporter Y-axis gear lube.
- Replace fork axis gear lube.
- Replace cart axis gear lube. (1 per set where applicable)
- Verify that the Z-axis slip couplers are torqued to 175 in/lbs.
- Replace inlet pneumatic filter.
- Replace PLC backup battery.

Notes/Comments

PM Parts list

CI Part#	QTY	Description	Semi-Annual	Annual
843512	6	LPS CFC-Free Electro Contact Cleaner	X	
780087	6	White Lithium Spray Lubricant	X	
921695	2	Lubrication Grease (400g Cartridge)	X	
921916	1	Teflon Dry Lubricant Spray	X	
927097	1	MMHS Air Regulator Filter		X
925768	2	Shell Omala HD 220 Gallon		X
848332	1	PLC Battery for #833481 CJ1W-BAT01		X
848333	1	PLC Battery for #847266 CPM2A-BAT01		X