Maintenance Job Planning/Estimating Worksheet

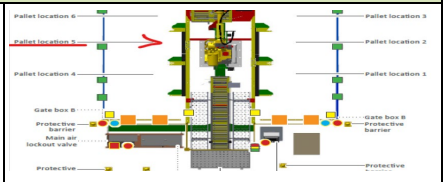
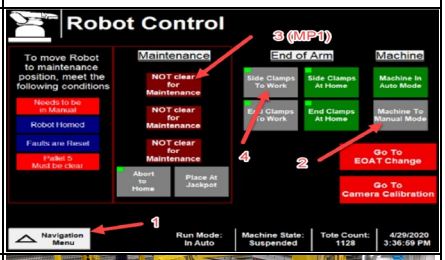
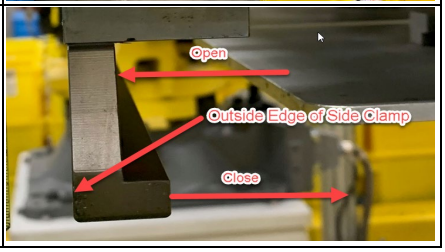
Planner:	WO#:	Date:
Job Contact:	Location:	Asset ID#:

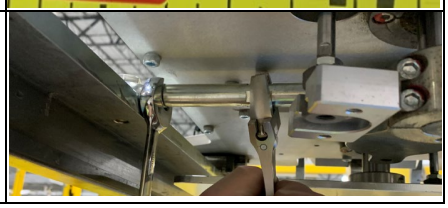
Job Description: RWC4 EoAT Side Clamp adjustment

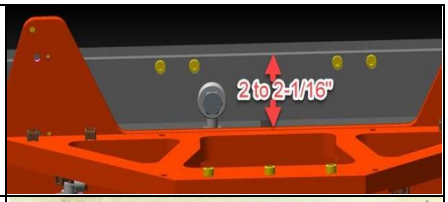
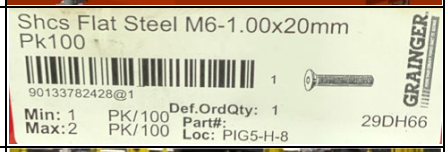
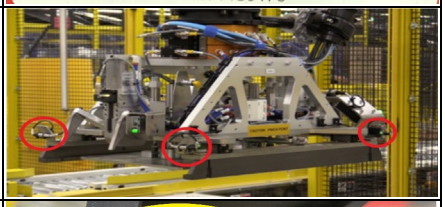
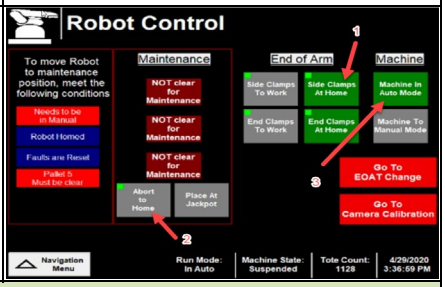
Technicians Required: 2

Elapsed Time: 0.75 hours

Job Scope

Job Plan Seq.	Task Description	Task Duration	Technicians Required	Estimated Labor Hours	Reference Pictures
10	Create a project work order and populate the equipment field with the EoAT asset of the specific workcell. The asset should have profile JRWCV5 applied.	0.02	1	0.02	
20	Always follow OSHA, LOTO, PTP, NFPA, and Amazon Safety Policies before placing hands on equipment.	0.01	2	0.02	
30	"Take 2 for Safety". Review the area you will be working in, inspect for potential barriers or unsafe conditions.	0.03	2	0.06	
40	Use required PPE as needed to complete the job. Gloves, safety glasses, etc.	0.01	2	0.02	
50	Ensure there is a minimum of 50 full, unprocessed totes offstacked or at the infeed for adequate testing after the job is complete.	0.02	1	0.02	
Visual Inspection					
60	Request access to the cell, apply the coil wristband, remove pallet 5, and return the robot to operation.	0.01	2	0.02	
70	Select Navigation Menu (1) on the HMI and select Login. Enter the username MAINT and the password 1234, and select Login. Tap Login in the popup menu. Select Setup and access the Robot Control screen. Press the cycle stop and fault reset pushbuttons on the HMI pedestal. Place the machine in Manual Mode (2), move the robot to Maintenance Position 1 (3), and press Side Clamps to Work (4).	0.02	2	0.04	
80	The work cell and EoAT should appear as in the photo. Press the e-stop pushbutton at the trap key interlock, request access to the cell, apply the coil wristband, and enter the cell.	0.01	2	0.02	
90	Notice the play in the side clamps as you manually attempt to open and close them, as if you are gripping and releasing a tote. Pull the side clamps fully apart, in the open direction, until they stop. Make an accurate and precise measurement using a measuring tape from the outside edge of the side clamp to the outside edge of the other side clamp. Ensure that the measuring tape is level and that the tension of the measuring tape does not pull the side clamps together.	0.02	2	0.04	

100	If the measurement is greater than or less than 16 9/16, you will need to make a side clamp adjustment. Proceed to line 110 of this task plan. If the measurement is exactly 16 9/16", proceed to Line 200 for corner sensor re-calibration.	0.01	2	0.02	
Lock Out Tag Out					
110	**Note: Two technicians are required to make an accurate adjustment.** Ensure that the side clamps are in the closed (At Work) position. Turn the air supply to EXH to remove the air from the system. Turn off the main power switch on the Fanuc controller. Apply LOTO to the air supply and the Fanuc controller.	0.04	2	0.08	
120	Use 4 mm hex socket with a 3/8 drive ratchet to loosen the 12 screws from the overheight tote detection plates. **DO NOT STRIP OUT THE SCREWS. DO NOT USE ANY RATCHET EXTENSIONS. ENSURE THE SCREW HEADS ARE CLEANED OUT AND THAT YOU HAVE FULL ENGAGEMENT BEFORE ATTEMPTING TO LOOSEN.** Lower the overheight plates from the EoAT and store your ratchet and socket. Re-installation will be performed with a 4 mm T-handle wrench. Retain the fastener that threads into the center of the main shaft. Discard the remaining five fasteners.	0.06	2	0.12	
130	Determine which clamp to adjust first by measuring the distance from the frame truss to the outside edge of the side clamps on both sides. If one is greater than the other, adjustments must be made such that both sides are equal when complete.				
140	Locate the four jam nuts on the two tie rods that connect the rotary toggle to the side clamps. Using an adjustable wrench on the flat portion of the tie rod and loosen all four jam nuts with a 17 mm open-end wrench. **NOTE: SOME NUTS ARE REVERSE-THREADED**. Run the jam nuts out as far as possible so they do not interfere with adjustments. Ensure the side clamps are fully spread apart in the "At Work" position. Prepare to make an accurate and precise measurement of the side clamps. Ensure your tape measure is not measuring at an angle while hooked on the other clamp. Ensure that the tension of the tape measure does not pull the side clamps together.	0.06	2	0.12	
150	Note the original dimension. As one technician makes an accurate and precise measurement of the side clamps, the other technician will gently rotate the tie rod with their fingers. The measuring technician will guide the other technician if the dimension is getting larger or smaller. If you are reducing the side clamp dimension, rotate the tie rod such that you remove 1/16" of overall length. If more reduction is necessary, rotate the other tie rod by 1/16". Alternate tie rods until the overall dimension is 16 9/16". **NOTE: MAKING ALL ADJUSTMENT ON ONE SIDE WILL OFF-CENTER THE SIDE CLAMPS AND COULD CAUSE CRASHES AT THE PICK POSITIONS.** Final adjustments should be made by verifying equal distance as measured in step 130.	0.06	2	0.12	
160	Gently finger-tighten the jam nuts such that you do not disturb the tie rod adjustments. Repeat the finger-tightening process while attempting to use more force to seat the adjustment securely. Gently use an adjustable wrench on the flat portion of the tie rod and a 17 mm open-end wrench to lock the jam nuts into place. Verify your dimensions.	0.03	2	0.06	

170	Check that the side clamps are centered on the EoAT. Measure from the frame trusses to the edge of the side clamps as performed in step 130. The approximate measurement should be between 2 and 2 1/16". Ensure that two measurements do not vary more than 1/16".	0.02	2	0.04	
180	Use a 4 mm T-handle allen wrench to re-install the overheight tote detection plates. Replace the five discarded fasteners with Shcs Flat Steel M6-1.00 x 20mm screws. Use removeable threadlocking adhesive (Ex. Blue Loc-Tite). Do not over-tighten.	0.04	2	0.08	
190	Remove the LOTO from the Fanuc controller first and restore power to the unit. Remove LOTO from the air supply and restore pneumatic pressure. It will take approximately three minutes after restoring power to be able to clear faults, regardless of HMI functionality. While waiting, perform corner sensor recalibration.	0.03	2	0.06	
200	Clean the horizontal surface of the side clamps to prepare for corner sensor re-calibration. Press the up/down arrows to determine if the sensor is locked. If the sensor is locked, hold both arrow buttons simultaneously for three seconds to unlock the sensor.	0.05	2	0.10	
210	Hold "SET" for three seconds until it blinks. When it stops blinking, look at the display and subtract 50 from the number. (Ex: if the sensor reads 453, the new setpoint will be 403.) Each sensor will read a different value. Press the up/down arrows until the sensor shows the setpoint. The setpoint will not remain on the screen, but will revert back to the original reading. Press an arrow button once more to ensure the set point is still your calculated value.	0.02	2	0.04	
220	Hold both arrows for three seconds to lock the sensor. Return to step 180 until all four sensors are calibrated.	0.02	2	0.04	
230	Place a new pallet in pallet location 5. Pull the estop(s) on the trap key interlock panels, re-insert the trap key(s), ensure the request access buttons are not illuminated, press the blue safety reset buttons in the correct order, (infeed, jackpot, HMI), and press the fault reset button on the HMI pedestal. Press the Side Clamps At Home button (1), press the Abort to Home button (2), press the Machine In Auto Mode button (3), and press the Cycle Start button on the HMI pedestal. Log out of the HMI.	0.03	2	0.06	
Return To Operations					
240	Before returning machine to operation, ensure all guards are in place and all safety devices are functioning properly. Ensure none of these were removed or damaged during machine service.	0.02	2	0.04	
250	Remove all tools from area and ensure they are all accounted for	0.02	2	0.04	
260	Make sure the area is clean and free of any debris	0.02	2	0.04	
270	Remove Lock Out/Tag Out	0.02	2	0.04	
280	Restart equipment, verify proper operation, no unusual noises or vibrations	0.02	2	0.04	
280	Watch the robot process the totes previously offstacked or stored in the upstream conveyance. Ensure proper picking and placing.	0.03	2	0.06	
Total Job Plan Duration:		**0.75**	**Total Backlog Labor Hours:**		**1.46**

Safety Requirements						
Permits:	Confined Space Entry		Hot Work		Lockout/Tagout	X
Tools and Materials:	4 mm T-handle wrench, 4 mm hex socket, 3/8 drive ratchet, measuring tape, adjustable wrench, 17 mm open-end wrench, (5) Schs Flat Steel M6-1.00 x 20mm screws, removeable thread locker (Ex. Blue Loc-Tite).					