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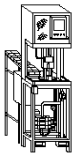
Design-In Ergonomics Checklist

U.S. & Canada Population

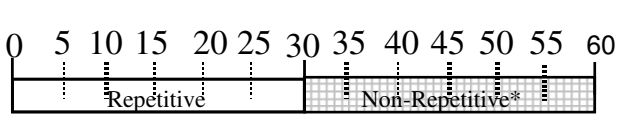
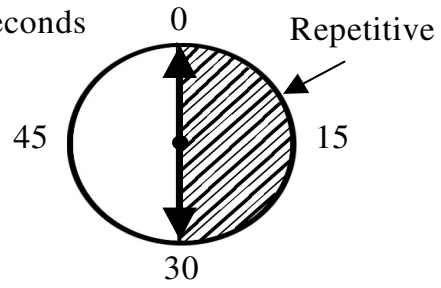
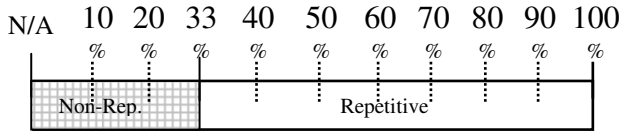
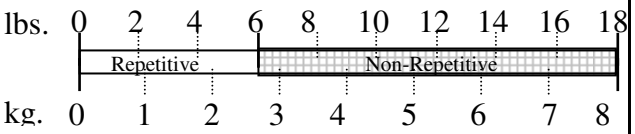
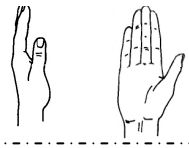
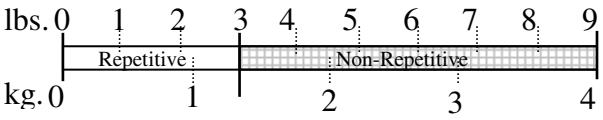
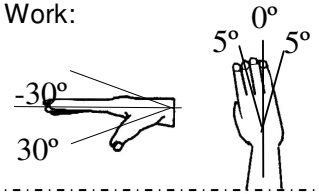
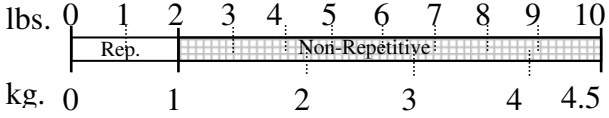
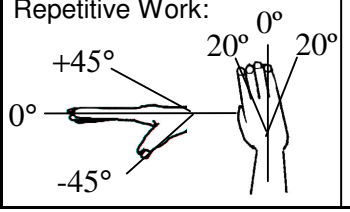
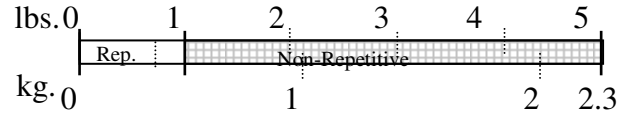


Step 3: Equipment Design

Program: _____ Job/Operation Description: _____ Date: _____

Phase: _____ Design _____ Mock-up _____ Pre-Production _____ Other (list): _____ Analyst: _____

Further information can be found on pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @ http://apollo.delphiauto.net/ergonomics/desgn-in.htm

	Design Factor	Design Guidelines	Graphic	Check Circle: OK	Outside Guidelines	N/A
3.1	**Repetition** Operator Cycle Time (seconds)			○	○	○
	*If job is > 30 seconds, indicate the percentage of cycle time where same motion(s) is repeated or sustained:					
3.2	**One Hand Force** Neutral Wrist		Neutral Posture: 	○	○	○
	Deviated Wrist (1/2 the force of neutral wrist)		Maximum for Repetitive Work: 	○	○	○
3.3	**Finger Force/Pinch Grip** Neutral Wrist		Maximum for Non-Repetitive Work: 	○	○	○
	Deviated Wrist (1/2 the force of neutral wrist)			○	○	○

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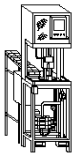
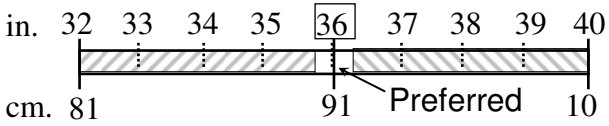
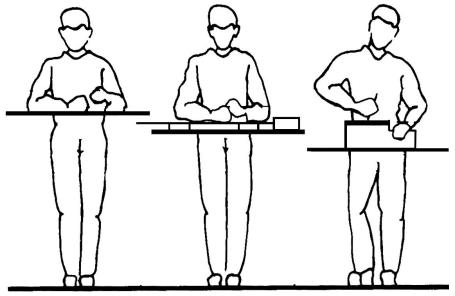
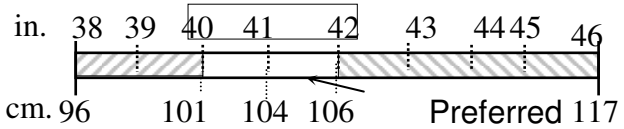
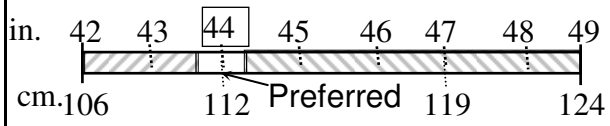
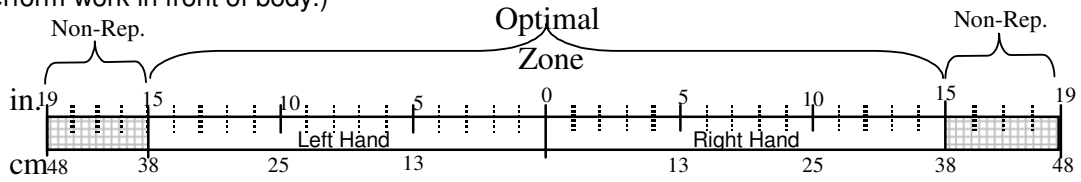
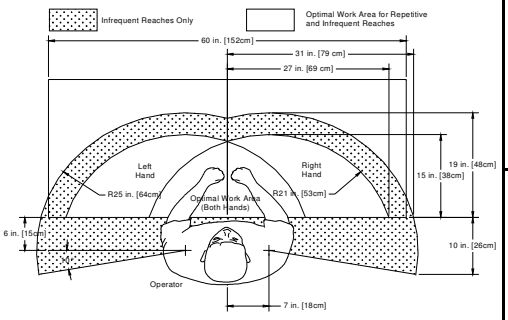
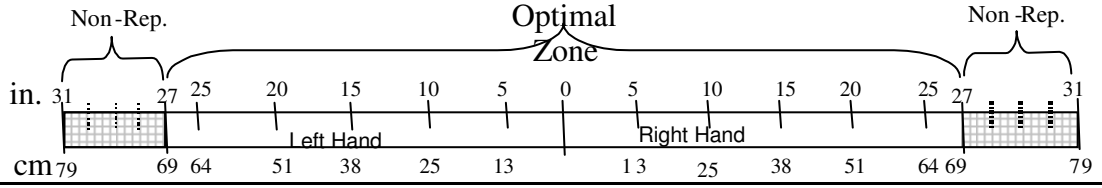


Step 3: Equipment Design

Program: _____ Job/Operation Description: _____ Date: _____

Phase: _____ Design _____ Mock-up _____ Pre-Production _____ Other (list): _____ Analyst: _____

Further information can be found on pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @ http://apollo.delphiauto.net/ergonomics/desgn-in.htm

	Design Factor	Design Guidelines	Graphic	Check Circle: OK	Outside Guidelines	N/A
3.4	**Vertical Hand Height - Measured from standing surface to where the work is performed (hand height).**					
	Heavy Work, > 10 lbs. (5 kg)			○	○	○
	Light Work, <= 10 lbs. (5 kg)			○	○	○
	Precision Work, < 2 lbs. (1 kg)			○	○	○
3.5	**Horizontal Forward Reach** (Measured from front edge of table to where hands perform work in front of body.) 			○	○	○
3.6	**Horizontal Side Reach** (Measured from the center front edge of table to where hands perform work left and right.) 			○	○	○

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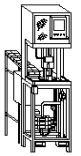

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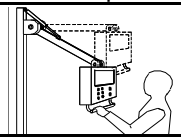
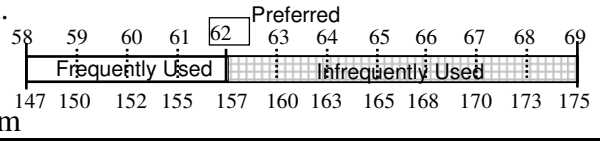
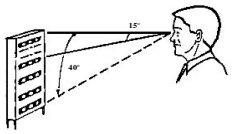
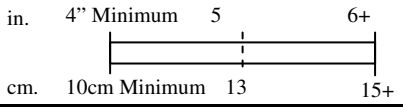
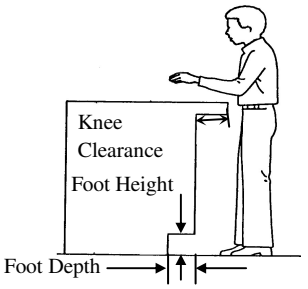
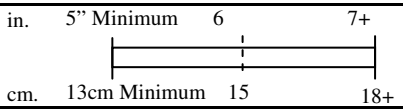
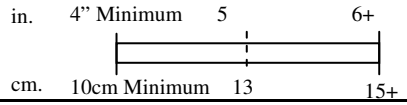
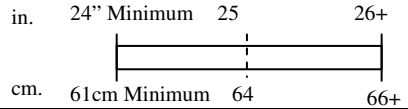
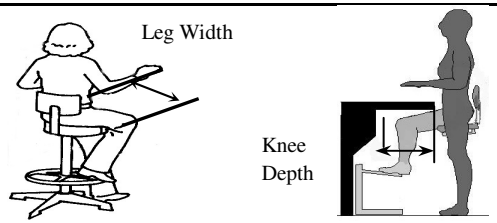
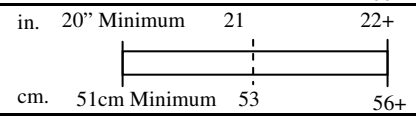
	Design Factor	Design Guidelines	Graphic	Check Circle: OK	Outside Guidelines	N/A
3.7	**Monitors -** Monitors should be easily accessible. Is monitor location adjustable?	_____ Vertically _____ Horizontally _____ Tilt _____ Swing Arm _____ Not applicable _____ Not adjustable*		○	○	○
	* If not adjustable, vertical location of monitor should be 'standing eye height' (measured from standing surface to top of screen).			○	○	○
3.8	**Clearances for Stand Only** Foot Height			○	○	○
	Foot Depth			○	○	○
	Knee Depth			○	○	○
3.9	**Clearances for Sit/Stand** Leg Width			○	○	○
	Knee Depth			○	○	○
3.10	**Noise**	See Delphi-A Sound Level Specifications or Industrial Hygiene for further information.	http://apollo.delphiauto.net/health_safety/procedur.htm	○	○	○
3.11	**Lighting**	Would internal machine lighting aid operator in operation, changeover, set-up, PM, etc.?	No picture	○	○	○

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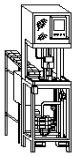

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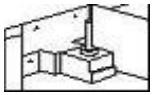
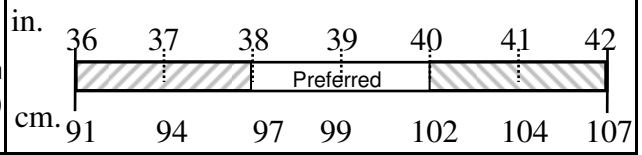
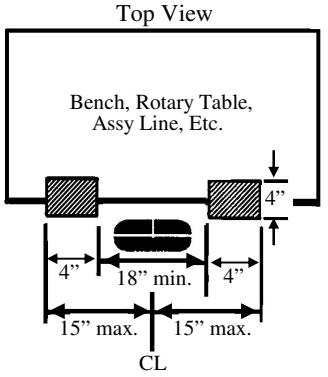
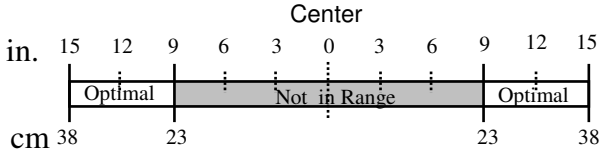
	Design Factor	Design Guidelines	Graphic	Check Circle: OK	Outside Guidelines	N/A
3.12	**Single Controls** (whisker switch, wobble stick, etc.)	Should be placed at approximately the same vertical location as where hands are performing work. Vertical hand height (in/cm):		○	○	○
3.13	**Dual Controls** Vertical Location (Measured from standing surface)			○	○	○
	Horizontal Location (Measured from center of controls)			○	○	○
	For more information on controls and safety, visit this web site or talk to your H&S rep.	http://apollo.delhiaut.net/health_safety/				
3.14	**Component Placement into Fixture** - Visual Access	OK → Not Good: Top or Front | Side | Under or Bottom (guided) | Under or Bottom (not guided)	Loading a fixture from the top or front is preferable because it requires less operator time. When loading from under or bottom, like the upper mandrel of an arbor press, the load is blind and requires additional time for alignment and placing.	○	○	○
3.15	**Component Alignment Options into Fixture**	OK → Not Good: Positive/ Self Align | Guided/ Rough Locators | Operator Judgment	Another efficiency factor is the design of the fixture. Positive or self-aligning fixtures are preferred to prevent the operator from having to make assessments on proper part placement.	○	○	○
3.16	**Line of Sight Obstructions**	Is it possible to see the fixture or perform the task without having to stoop or bend?	Design equipment and locate fixtures so operators do not have to bend their neck or back in order to load, see, activate, unload, etc. An awkward posture is an injury risk factor.	○	○	○