# **Design-In Ergonomics Checklist**

Asia Pacific Population - S. China, S. Korea, Japan, India

79	

Program:			Job/Operation Description	on:		Date:
Phase:	Design	Mock-up	Pre-Production	Other (list):	Analyst:	

	Further information can be found or	n pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @	http://apollo.delphiauto.net/ergonomics/desgn-in.htm	n
	Design Factor	Design Guidelines	Graphic	Check Circle: Outside OK Guidelines N/A
3.1	Repetition Operator Cycle Time (seconds)  *If job is > 30 seconds, indicate the	0 5 10 15 20 25 30 35 40 45 50 55 60  Repetitive Non-Repetitive*	Seconds 0 Repetitive	
	percentage of cycle time where same motion(s) is repeated or sustained:	Non-Rep. Repetitive	30	
3.2	One Hand Force  Neutral Wrist	kg. 0 1 2 3 4 5 6 / 8		0 0 0
	Deviated Wrist (1/2 the force of neutral wrist)		-30°	
3.3	Finger Force/Pinch Grip  Neutral Wrist	kg. 0 1 2 3 4 4.5		0 0 0
	Deviated Wrist (1/2 the force of neutral wrist)	lbs.0         1         2         3         4         5           kg.0         1         2         2.3	-30° +/-5°	0 0 0

# **Design-In Ergonomics Checklist**

Asia Pacific Population - S. China, S. Korea, Japan, India



Date:	

Program:			Job/Operation Descript	ion:	Date:
Phase:	Design	Mock-up	Pre-Production	Other (list):	Analyst:

	Further information can be found or	n pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @	http://apollo.delphiauto.net/ergonomics/desgn-in.htm		Check Circl	٥.
				_	Outside	<u>c</u> .
	Design Factor	Design Guidelines	Graphic	OK	Guidelines	N/A
3.4	Vertical Hand Height - Measured from sta	anding surface to where the work is performed (ha	and height).			
	Heavy Work, > 10 lbs. (5 kg)	cm. 74 76 84 86 94 97 China, S. India S. Korea, Japan, N.India		0	0	0
	Light Work, <= 10 lbs. (5 kg)	cm. 89 91 99 102 109 112  China,S. India  S. Korea, Japan, N. India		0	0	0
	Precision Work, < 2 lbs. (1 kg)	97 102 107 cm. 112 114 117 119 124  China  LIndia  S. Korea, Japan	Precision Light Heavy	0	0	$\bigcirc$
3.5	Horizontal Forward Reach (Measured from	n front edge of table to where hands				
	perform work in front of body.)		Infrequent Reaches Only Optimal Work Area for Repetitive and Infrequent Reaches			
	Non-Rep. cm. 46 33 25 13 S. India Left Hand	Optimal Non-Rep.  13 25 33 46  Right Hand	31 in [79 cm]  27 in [89 cm]  27 in [89 cm]  15 in [38 cm]	0	0	0
	cm. 46 36 33 25 13 S. China, N. India cm. 48 38 25 13 S. Korea/Japan Left Hand	3 0 13 25 33 36 46  Right Hand  Right Hand  Right Hand	6 in, [156]  6 in, [156]  7 in, [186m]			

Program:

# **Design-In Ergonomics Checklist**

Asia Pacific Population - S. China, S. Korea, Japan, India

Step 3: **Equipment** Design

Date:	
·-	

			000, 0 po. a 2 000p	•	
Phase:	Design	Mock-up	Pre-Production	Other (list):	Analyst:
		•			
	Further in	formation can be fou	nd on pages 12 - 40 of the De	sign-In Ergonomics Guidelines	DEG) @ http://apollo.delphiauto.net/ergonomics/desgn-in.htm

Job/Operation Description:

T TIAS		n pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @	http://apollo.delphiauto.net/ergonomics/desgn-in.htm			
	Design Factor	Design Guidelines	Graphic	<u>с</u> ОК	Check Circl Outside Guidelines	
3.6	Horizontal Side Reach (Measured from the perform work left and right.)  Non-Rep. cm. 76 66 45 22  S.China, N. India S. India cm. 79 69 46 23  S. Korea/Japan		Cyclinal Work Area for Repetitive and Introquent Reaches Only  60 in (152cm)  31 in (79 cm)  15 in (86cm)  R25 in (64cm)  Operator  7 in (18cm)	0	Guidelines	0
3.7	Monitors -  Monitors should be easily accessible. Is monitor location adjustable?	Horizontally Not applicable		0	0	0
	* If not adjustable, vertical location of monitor should be 'standing eye height' (measured from standing surface to top of China = C screen).  S. Korea/Japan = SKJ S. India = SI N. India = NI	136 <u>144</u> SI 160	15 15 15 15 15 15 15 15 15 15 15 15 15 1	0	0	0

Program:

# **Design-In Ergonomics Checklist**

Asia Pacific Population - S. China, S. Korea, Japan, India

79	

Date:	

Program:			Job/Operation Descripti	on:	Date:
Phase:	Design	Mock-up	Pre-Production	Other (list):	Analyst:

	Further information can be found or	n pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @	http://apollo.delphiauto.net/erganomics/desgn.in.htm			
	Design Factor	Design Guidelines	Graphic	<u>С</u> ОК	Check Circl Outside Guidelines	
3.8	Clearances for Stand Only  Foot Height	in. 4" Minimum 5 6+	Leg Width	0	Cuidelines	<u> </u>
	Foot Depth	cm. 13cm Minimum 15 18+	Knee Clearance Foot Height	0	0	0
	Knee Depth	cm. 10cm Minimum 13 15+	Foot Depth	0	0	0
3.9	Clearances for Sit/Stand  Leg Width	in. 24" Minimum 25 26+ cm. 61cm Minimum 64 66+		0	0	0
	Knee Depth	in. 20" Minimum 21 22+ cm. 51cm Minimum 53 56+	Knee Depth		0	0
3.10	Noise	See Delphi-A Sound Level Specifications or Industrial Hygiene for further information.	http://apollo.delphiauto.net/health_safety/procedur.htm	····	0	0
3.11	Lighting	Would internal machine lighting aid operator in operation, changeover, set-up, PM, etc.?	No picture	0	0	0
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):		0	0	0

Program:\_\_

### **Design-In Ergonomics Checklist**

Job/Operation Description:

Asia Pacific Population - S. China, S. Korea, Japan, India

Date:	
-	

Phase	e:DesignMock-up	Pre-ProductionOther (list):	Analyst:		
	Further information can be found o	n pages 12 - 40 of the Design-In Ergonomics Guidelines (DEG) @ http://apa	ollo.delphiauto.net/ergonomics/desgn-in.htm		
	Design Factor	Design Guidelines	Check Circle: Outside Graphic OK Guidelines N/A		
3.13	Dual Controls  Vertical Location (Measured from standing surface)	in. 32 33 34 35 36 37 38	Top View  Bench, Rotary Table, Assy Line, Etc.		
	Horizontal Location (Measured from center of controls)		4" 18" min. 4"		
For more information on controls and safety, visit this web site or talk to your H&S rep.    http://apollo.delphiauto.net/h eath safety/					
3.14	Component Placement into Fixture - Visual Access	OK → Not Good Loading Top or Front Side (quided) Side → Not Good Under or Bottom (not arbor pre	a fixture from the top or front is preferable it requires less operator time. When loading er or bottom, like the upper mandrel of an ss, the load is blind and requires additional alignment and placing.		
	Component Alignment Options into Fixture	OK → Not Good the fixt are presented Self Align Locators Judgment the sixt are presented to the	r efficiency factor is the design of ure. Positive or self-aligning fixtures ferred to prevent the operator from to make assessments on proper ucement.		
3.16	Line of Sight Obstructions	without having to stoop or bend? operate or back unload	equipment and locate fixtures so ors do not have to bend their neck in order to load, see, activate, etc. An awkward posture is an sk factor.		