

## DIE DESIGN CHECK LIST



PART NUMBER:	PROJECT:	ASSIGNED PRESS:	QUOTED PRESS:
PART NAME:	DIE PROCESS:	SHUT HEIGHT:	FEED HEIGHT:
FINAL BLANK SIZE:	QUOTED BLANK SIZE:	PRESS BED SIZE:	

1	SIMULATION REVIEW	YES	NO	NOTES
1	Did supplier use Yield and Tensile strength values given by MatcorMatsu?			
2	Does the FLD graphic show all point in safety zone?			
3	Does the tonnage calculation ensure the die can work on assigned press?			
4	Is the blank size equal or less than the quoted ?			
5	Can the part be made with the quoted material spec without danger of splitting or are there needed design modifications to the part geometry needed			
6	Is the part at the latest engineering level ?			
7	Do critical zones are in the range less than 20% of thinning?			
8	If formability simulation shows splits, wrinkles, thinning, or another issue, does supplier have an action plan?			
2	DIE PROCESS / LAY OUT	YES	NO	COMMENTS / NOTES
9	Are all dimensions and components in metric system?			
10	Has supplier confirmed that received the latest die standards?			
11	Are the shut height and feed height the correct for the assigned press?			
12	Is the bolster printed behind the strip layout?			
13	Does the Process ensure projected production volume ?			
14	Are the french stop and sensor fingers (cut-off and initial sensor) showed?			
15	Is the start line indicated?			
16	Isn't coil width wider than max coil feeder opening?			
17	Do pilot holes are made before start line?			
18	Are mating trims, datum and tight tolerance holes made after re-strike station?			
19	Are the datum holes pierced perpendicular to cad date surface ?			
20	Are estimated tonnage showed station by station and total tonnage?			
21	Is date stamp showed at the begining of the process and each station?			
22	Does process layout shows:			
	a) Material spec.			
	b) Material thickness			
	c) Coil width			
	d) Pitch			
	e) Primary press			
	f) Auxiliary press			
	g) Feed direction			
	h) Lifting height			
23	Are Forming, trim and pierce indicated with different colors?			
24	If process has a center carrier, is it wide enough and guided with U flange 10mm height?			
25	Is de process developed to achieve tolerances and requirements according the GD&T?			
3	DIE DESIGN REVIEW	YES	NO	COMMENTS / NOTES
GENERAL REVIEW				
27	Is the die size and weight correct according the press?			
28	Is the shut height and feed height ok according the press?			
29	Is the blank size equal or less than the quoted? (same used in process layout)			
30	<b>Die location:</b>			
31	Is die locating system according the press?			
32	Do centering holes, V-Blocks or keys match on the bolster?			
33	Is the total die weight less than maximum crain capacity?			
34	Are the lifting bars machined on the die shoes? (∅45-50mm, window 100x100mm)			
35	Are the scrap chutes designed to avoid scrap jump to the bolster?			
36	Is the die guided as follow?			
	<b>Small dies</b> = guide post and bushing ∅63mm + 2 heel blocks			
	<b>Medium and large dies</b> = guide post and bushing ∅80mm + 4 heel blocks			
37	Is the die parallels thickness as follow?			
	<b>Clamping parallels</b> = 80mm			
	<b>Flat parallels</b> = 60-80mm			
38	Is the die shoe thickness 90mm? (80mm can be used for small dies)			
39	Is a guide post/bushing misaligned as error proof?			
40	Do clamping slots match with bolster and ram slots?			
41	Does the die has storage cylinders?			
42	Does the die has quick change date stamp holders?			
43	Is the Control Panel protected between parallels and have a safety guard?			

44	Does the die show process flow arrow, part number, total weight, operation number, (this information must be placed on front and rear side of the die)?			
45	Is 10% clearance being used for trim, pierce and cuts?			
46	Is the conveyor represented in die design?			
	<b>CASTING DIES</b>			
47	Are all walls inside with fillets 20 x 45 degrees?			
48	Are ribs size according 40mm thick working areas and 30mm non working areas?			
49	Are casting coupons available?			
<b>4</b>	<b>LOWER DIE.</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS / NOTES</b>
50	Is start line showed in lower die?			
51	Are coil guides as follow?			
a	Adjustable guides (+/- 8.0mm) at rear side of the die.			
b	5mm gap between sheet and guide, cap 11mm thick.			
c	Initial guides extended out for easy coil loading			
52	Are forming steels and blades pocketed?			
53	Are button dies used for easy maintenance?			
54	For button dies with non-round holes (slot holes, square holes, etc..) is a flat face as error proof?			
55	Are limit blocks located over parallels? Is there a 1.0 mm lead check slot present?			
56	Does the die have bushing holders bolted, pocketed and welded?			
57	Do Lifter bars use 2 retainers GK120 and one safety retainer GK105 (DADCO brand can be used)?			
58	Is french stop located at rear side of the die? And pitch sensor at fixed guides side?			
59	If there is no way to use french stop, is it replaced by fad away stop?			
60	Are initial and final sensors represented? (Make sure is the correct type)			
61	Is there a backing wear plate each open trim, flange or re-strike?			
62	<b>Cams:</b>			
a	Cam body pocketed			
b	Adjustable guides (bottom side, lateral sides)			
c	Are Gas springs being used?			
d	Are true strips installed on cam pierce?			
63	Are adjustable inserts on forming steels?			
64	Are there blades with inner corners? (use at least 1.0mm radius)			
65	<b>Parallels:</b>			
a	Are Clamping parallels bolted from top face with 8 screws M16, 4 screws each side, free of interferences?			
b	Are flat parallels bolted with 4 screws M16, 2 screws each side, free of interference?			
66	Are parallels or Ribs positioned under all forming stations?			
67	If there is no space for lifting holes in forming and trim steels, are counterbored holes threaded to be used as lifting holes?			
68	Does exist bottoming mark insert ?			
69	is there at least 20mm from coil to back up plate on trim just before french stop?			
70	Minimum distance allowed from holes to trim edge is 10mm. I there any hole closer?			
	<b>TRANSFER DIES</b>			
71	Is transfer motion simulation approved?			
72	Is possible to avoid lifters? If not, Are magnets inserted on lifters?			
73	Are the grippers the correct style and connectors are represented too?			
74	Does the die have adjustable guides for blank and part location?			
<b>5</b>	<b>UPPER DIE</b>	<b>YES</b>	<b>NO</b>	<b>COMMENTS / NOTES</b>
75	Do trim punches have shear angle (at least 1 thickness height)?			
76	Are forming steels pocketed?			
77	Are stripper pads holded by standard lifters GK180 or bigger? (For DADCO brand GRS.50 (light duty) and GRS.50HD (heavy duty) can be used) and guided by square blocks with AMPCO guides?			
78	Are stripper pad Thickness 50mm or thicker?			
79	Are stripper pad windows pocketed, and using M10 screws or bigger?			
80	Are forming steels bigger than 300mm splitted?			
81	Is there a clearance at least 5mm between coil guides and the relief of the stripper?			
82	If aerial cam mounted on stripper pad is needed, Are centering cones being used?			
83	Are stripper pads backed up with limit blocks?			
84	Are trim punches and punch holders cut by Wire EDM?			
85	Are trim punches screwed from top face or shank for easy maintenance (allowed distance from holes to trim edge is 10mm)?			
86	If there are not space for counterbored hole, are punches screwed from the bottom?			
87	Are pilots with ejectors being used (standard lifters brand)?			
88	If Spring plunger is needed, is it hexagon Tipe and M10 minimum?			
89	Do aerial cams have positive return?			
90	Are shoulder punches used when material thickness is thicker than 3mm?			
91	Do stripper pads have a window plate and relief that allows to remove ball lock, shoulder punches and retainers?			
92	Are "U" forming steels splitted for easy adjustment and maintenance?			
93	Do forming and re-strike steels have ejectors?			
94	<b>TRANSFER DIES</b>			
95	Are 2 antibouncing cylinders installed in each station?			
96	Do the Forming Inserts Have a "Fuse" to avoid damages in case of double blank.			

