



SUBCONTRACTING MACHINING (MFG)

SCM:MAS:

Dt: 17-10-2013

Sub: Uniform Cutting Plan Norms

Ref: Meeting held on 21-09-2013

Consequent to the meeting held on 21-09-13 on the above subject, the revised cutting plan norms is enclosed for your information and necessary implementation.


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SDGM / SCM / MFG

To

All Expediting & MAS Staff

All Executives

General Cutting Plan Instructions

- a) Cutting Plans are to be made mandatory for all Gate passes.
- b) Cutting Plan are to be followed uniformly for all Products irrespective of the manufacturing process style
- c) Cutting Plans are to be submitted for approval in SCMC with working details within 15 days of Material Collection
- d) For Profile Cut Jobs / Odd Shapes, Cutting Plans are to be submitted in graph sheets. "Profile-to-Profile" Cutting plans should be submitted by vendors for Cams and other intricate shapes.
- e) Materials are to be cut only as per the approved cutting plan.
- f) Exceptions in Cutting Plans are to be separately reviewed by the Expeditors and on physical verification the same may be approved with appropriate reasons.
- g) Big size Scrap Sizes are also to be booked as Excess in the Cutting Plans. SCM may consider scrap as offcut under special circumstances
- h) The Meager quantity difference between the RSV booked by the vendor and the RSVs accounted by Stores, is to be treated as Offcut / Scrap as per the Section wt. norms. Presently the meager difference in quantity is treated as Offcut. .

1.0. Allowances for Plates and Sheets (Squares and Rectangles)

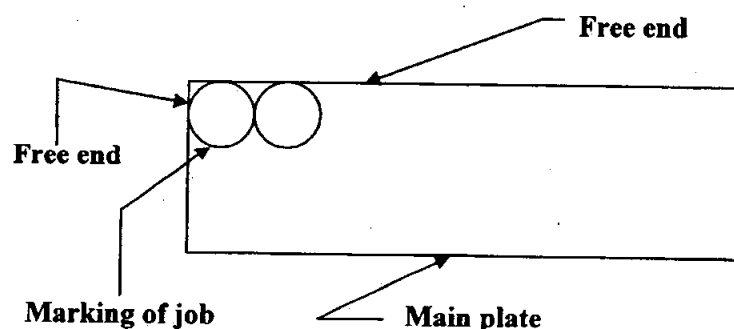
Normally shearing allowances are not allowed for plates up to thickness of 10mm. As a special case, firms which do not have shearing facilities, a gas cutting allowance of 3mm may be allowed.

Size of plates	Cutting allowance only (per job)	Gas cutting + Grinding allowances	Cutting+Machining allowance
Upto 12 mm	3 mm	4 mm	7 mm
Above 12 mm and up to 20mm	4 mm	5 mm	8 mm
Above 20 mm and up to 32mm	4 mm	5 mm	9 mm
Above 32 mm and up to 50mm	5 mm	6 mm	11 mm
Above 50 mm and up to 80mm	6 mm	8 mm	13 mm
Above 80 mm and up to 100mm	8 mm	10 mm	16 mm
Plate 125 and above	10 mm	12 mm	20 mm

Gas cutting of round shapes from plates.

Earlier for getting round plates from the supplied rectangular/square parent materials, double the allowance was permitted assuming the gas torch nozzle negotiates on the already marked circle on both the sides circumferentially.

The above practice may be dispensed with and the same allowance as given for cutting square/rectangular plates may be adopted by following the below mentioned system of marking and gas cutting. Cutting allowance mentioned applicable to one job.

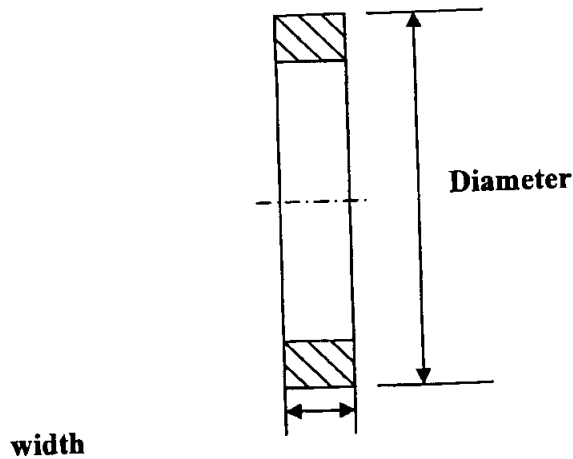


The free ends(left and top sides) of the main plate do not need cutting allowance and become the sides of round job. The gas cut edges(right and bottom sides) on the main plate after cutting the first job, become the 'free ends' for the next job and so on and hence single cutting allowance is enough.

1.1 Prebending/Rolling allowance for plates

In addition to the cutting/machining allowance, prebending/rolling allowance of minimum 20mm to a maximum of 100 mm may be allowed (to be added only in the (developed length) depending upon the thickness and length & breadth of the job. Examples are given below.

For Rings, Collars, Spacers etc. (For plate thickness up to 25mm)



Diameter	Width/Breadth of Job	Prebending/rolling allowance
Upto 250 mm dia	30mm to 50mm	Developed length + 20mm
Upton 250mm dia	Above 50mm & up to 100mm	Developed length + 25mm
Upton 250mm dia	Above 100mm & Upto 150mm	Developed length + 30mm
Above 250 ,up to 500	30mm to 50mm	Developed length + 25mm
Above 250 ,up to 500	Above 50mm & Upto 100mm	Developed length + 30mm
Above 250 ,up to 500	Above 100mm & Upto 150mm	Developed length + 40mm
Above 500 mm	30mm to 50mm	Developed length + 30mm
Above 500 mm	Above 50mm & Upto 100mm	Developed length + 40mm
Above 500 mm	Above 100mm & Upto 150mm	Developed length + 50mm

For plate thicknesses more than 25 mm, 1.25 times of the above allowance may be added to the developed length.

1.2 Allowances for Shells, Skirts, Plate formed pipes etc.

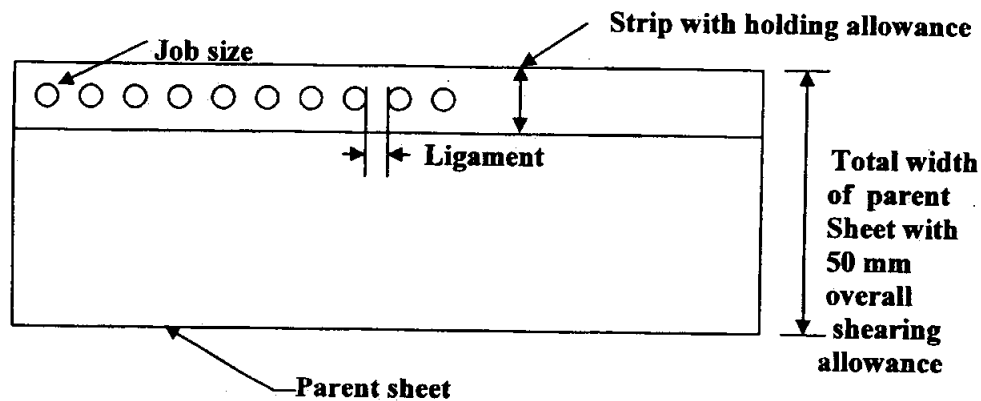
Prebending/Rolling allowance of Minimum 50mm to a maximum of 100 mm and as a special case a Maximum of 125mm may be allowed. Examples are given below:

Diameter	Thickness	Allowance
Upto 750mm	Upto 12mm	Developed length +50mm
Upto 750mm	Above 12mm & Upto 25mm	Developed length +60mm
Upto 750mm	Above 25mm & Upto 40mm	Developed length +80mm
Above 750, upto 1500	Upto 12mm	Developed length +60mm
Above 750, upto 1500	Above 12mm & Upto 25mm	Developed length +80mm
Above 750, upto 1500	Above 25mm & Upto 40mm	Developed length +90mm

Above 1500 mm, 100 mm may be allowed and for thicknesses more than 40mm a maximum of 125 mm may be allowed.

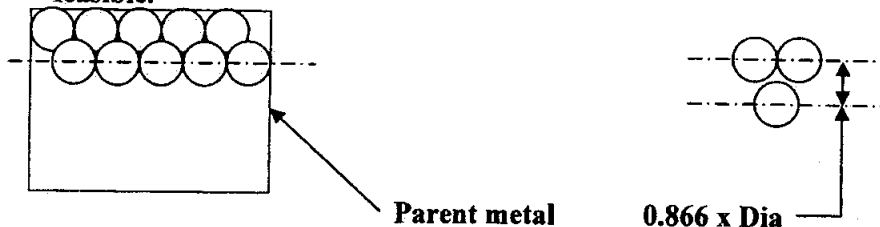
1.3 Allowances for Sheets (Upto 3.15mm)

For All sheets no shearing allowance is allowed. To facilitate further operations after shearing like punching, blanking, piercing, a total of 50 to 60 mm for the whole parent sheet (as end bit after shearing) may be allowed. The ligament thickness between successive blanking a maximum of 0.5mm (Not compulsory) may be allowed.



The round pieces from plates can also be cut by inserting them at the middle as shown in fig. feasible.

→ If this distance is more than half the dia of job, insert cutting is



2.0 Allowances for Rods

Normally, rods having diameters more than 40mm are cut in Hacksaw before machining. But, when operations like internal boring/ internal threading/ internal reaming etc. is/ are involved, the pieces are parted from the main Bar in lathes itself.

Hence either parted in lathes or hacksaw cut, the cutting and machining allowances for rods are given hereunder as guidelines.

Diameter / Rolled Size	Cutting Allowance	Cutting+Machining Allowance
Upto 12mm	2mm	5 mm
16mm,20mm&22mm	3mm	6 mm
25mm &32mm	4mm	8 mm
36mm,40mm& 50mm	5mm	9 mm
56mm to 80 mm	6mm	11 mm
100mm to 125 mm	8mm	15 mm
165 mm	9mm	18 mm
200 mm	10mm	20 mm
250 mm	12mm	22 mm

2.1 Tubes & Pipes

<u>Tubes</u> Diameter	Cutting allow.	Cutting+Machining allowance
Dia 14 to 25.4	2 mm	4 mm
Dia 25.5 to 38.1	3 mm	5 mm
Dia 38.2 to 51	4 mm(Max)	7 mm
Dia 51.1 to 76.1	4 mm	8 mm(Maximum)
<u>Pipes</u>		
Dia 88.9, 108, 114	5mm	10 mm
Dia 127,168	6mm	12 mm
Dia 127,168	7mm	14 mm
Dia 219.1, 244	8mm	15 mm
Dia 323.9,368	9mm	17 mm
Dia 406.4, 457	10mm	20 mm
Dia 508, 558	12mm	22 mm
Dia 615	14mm	24 mm
Dia 711	14mm	25 mm

Note For allowing extra cutting allowances in plates, sheets, pipes and rods while performing operations like prebending,bending,rolling and centering in rods & holding allowances, the same may be determined and allowed in consultation and approval from Head of Dept through concerned expeditors.

Allowances for Coils, Panels and Headers

Coils

Hydro allowance (Including final cutting and EP after Hydro test) 25 – 30 mm (Maximum) at end limbs of coils.

Panels(Manual Welding)

Shrinkage Allowance - 3mm per metre length

Hydro allowance (Including final cutting and EP after Hydro test) 25 – 30 mm (Maximum) per side.

Panels(Machine welding)

Start of Arc allowance - 75 mm (one side only)

Shrinkage Allowance - 6 mm(Maximum) per metre length of Panel tube

Cutting + chamfering allowance – 10 mm (for joints)

Hydro allowance (Including final cutting and EP after Hydro test) 25 – 30 mm (Maximum) per side.

Stubs & Nipples welding on Headers

Upto Dia 76.1mm Tubes	- Cutting+Grinding+Hydro (including EP)	- 20 mm
Above 76.1 & Upto Dia 127 Pipes	- Cutting+Grinding+Hydro (including EP)	- 25 mm
Above 127 & Upto Dia 219 Pipes	- Cutting+Grinding+Hydro (including EP)	- 30 mm
Above 219 & Upto Dia 323 Pipes	- Cutting+Grinding+Hydro (including EP)	- 35 mm
Above 323 & Upto Dia 406 Pipes	- Cutting+Grinding+Hydro (including EP)	- 40 mm
Above Dia 406	- Cutting+Grinding+Hydro (including EP)	- 50 mm

Allowances for any other typical cases, if arises, can be discussed separately and course corrections can be included in consultation with Expediting staff and Dept HOD

Clarifications :-

Query 1- Please clarify the allowances if the job has threaded end at one/ both the ends (job will be made from Rod)

Reply - Cutting + Machining allowance given for the respective sizes of rods itself takes care of threaded end jobs. No need for extra allowance for lengthy threaded rods (more than 70 mm length of thread) machined by "between centres" process as these centres need not be necessarily machined off after threading. If warranted, an extra allowance of 3mm may be allowed.

Query 2 - - Please clarify the allowances for Equal Tee / Unequal Tee manufacturing made out of Pipes .

Reply - Forming / Pressing of pipes are not usually offloaded. Anyway, the processing allowance for Pressing of pipes to form Equal Tee/Unequal Tee may be given as follows.

Length of Run End of Tee + Developed length of Branch End + 150 mm (processing allowance) + 45 mm (machining allowance)

Query 3 - In some jobs, drill holes were made in a plate. Up to what dia, the hole will be made by drilling. If the hole size is bigger, the hole may be formed either by boring, drilling or gas cutting and boring.

Reply - Drilling can be done in plates up to 63 mm hole

Query 4 - The flat materials are issued from stores along with packing materials. The materials' weights are being calculated with packing materials. How we have to calculate the packing material weight. .

Reply - Length of flats can be calculated after deducting the Packing weight from the issued wt. (packing wt. of coiled flats to be ascertained for each case --Earlier, a maximum of 30 kg was deducted as packing wt. from issued wt. for 5mm coiled flat flats).

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