Article

ROLLFORMING - BASICS

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In this Thirtyseventh series of articles on Rollforming we will discuss about still further aspects of rollforming basics. When enquiries are sent from customers for the development of Roll Toolings to produce rollformed sections on their existing rollforming machines of different makes several machine parameters are required to be provided. Fig. 1 (end view)and Fig. 2(elevation) show the sketches of a typical rollstand indicating the different parameters

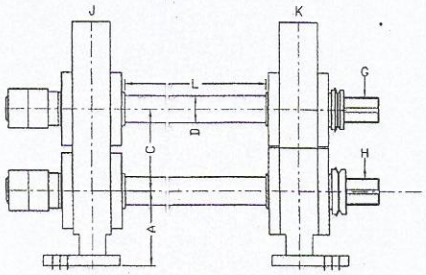

Fig. 1

They are rollshaft diameter 'D', maximum roll width possible 'L', distance from the bottom rollstand to the centerline of bottom rollshaft 'A', Vertical center distance between top(G) and bottom(H) roll shafts 'C', horizontal center distance between one rollstand to another 'E' and passline height 'F'. The rollstand 'J' on the operator side is called the outboard stand and the rollstand 'K'on the drive side is called the inboard stand. The other parameters required are Horse Power and RPM of the drive motor, speed ratio between top and bottom rollshafts and the RPM of the rollshafts.Another important parameter required to be given is the number of forming stages available on the rollforming machine. Let us go into some more details on the required parameters.

Rollshaft diameter: Thicker and wider sections require bigger diameter rollshafts so that deflection of the shafts under load is kept within reasonable limits.

Maximum Rollwidth possible: This will decide the maximum strip width that can be rollformed on the machine.

Dimension 'A': This distance will decide the maximum bottom roll diameter that can beused on the machine.

Vertical center distance 'G': This is an adjustable rollshaft center distance(using screw down system) with maximum and minimum distances. As the machines are universal type ones, sections with different depths and shapes could be produced on the same machine by simply changing the Toolings with different vertical center distances.

Horizontal centerline distance 'E': For different sizes of rollforming machines these distances vary. Smaller capacity machines have smaller horizontal center line distances and bigger machines have larger centerline distances and they depend also on the drive systems used. This will also limit the maximum diameter of the rollers that could be used on the machine.

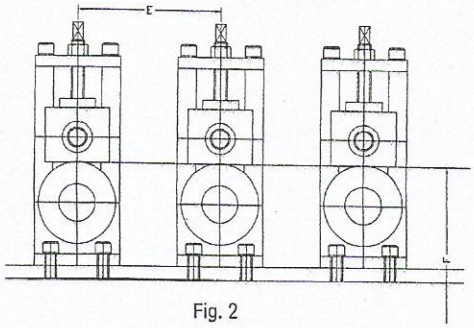

Fig. 2

Passline height 'F' : This decides the operating height of the machine. It should not be too low or too high leading to straining the operator during operating the machine

Rollstand 'J' and 'K' : These house the rollshaft and supporting bearing assemblies on the operator and drive side of the machine. The drive side of the rollstand will always be fixed and would be located on the alignment keys. For quick roll changing, the operator side stands are pulled outwards and the new rollers are mounted on to the rollshafts.

Horse Power and RPM of the drive motor : Heavier machines require higher Horse Power and also if one has to run the machine at higher speed more horse power is required.

Number of Forming stages: Simpler sections require less number of forming stages. If the section to be produced is complicated or deep or very thick or of high tensile strength or the material is pre-painted steel more number of forming stages would be required.

Speed ratios between top and bottom roll shafts: For shallow sections the speed ratios between top and bottom roll shafts is kept 1:1. For deeper sections it is generally 1.3:1. Many a time it is enough if only bottom shafts are driven depending upon the thickness and shape of the sections to be rollformed.

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