

Additional Shot Peening for Workshop

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PREFACE

In one normal size manufacturing shop for different types of springs, gears, wheels, car parts, shafts etc necessary to have special room for shot peening. As indicated on the fig. 1. after collection some quantities on the transport chain going on the further workmanship - shot peening. Shot peening plant enables to get the improvement of mechanical properties of that items.

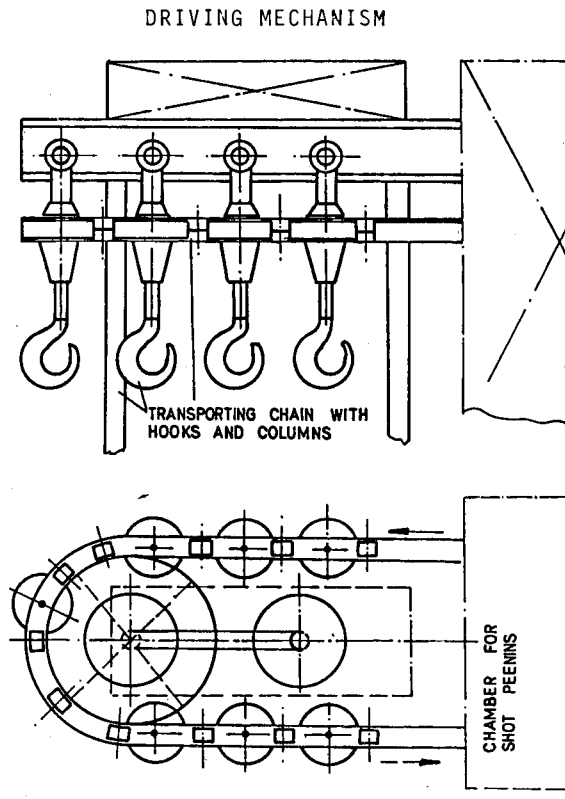


FIG 1 SHOT PEENING AREA FOR WORKSHOP

Charged hooks transporting above said items with one moderate speed of 0,3 - 3,0 m/min. Transporting chain pulling them in shot peening chamber. In accordance with needs of workshop is designed the height of hoisting hook loading with available number of wheels. For that purpose exhaust air quantity is for example 40 000 cubic/h or so with compressed air connection 3/4" or 1/2". Most modern workshop has one suction floor. Internal chamber for shot peening with projected carriage load capacity and loads on axles has one power of 20 kW.

Auxiliary-Additional Shot Peening

All items after going out from the chamber come on the checking area. It is easier immediately to see that some surfaces have not been shot. Always is better to put the transport chain going in the chamber on one hook ONE MINIMUM NUMBER of items to have on this way more possibility to be all surfaces of items treated. If we put big bundles leave to go in chamber for shot peening, we will find after treatment more items INNOCENT. It is problem and shot peening travel by chain to be repeated. This is one manner to get satisfied results after shot peening. If we often repeating shot peening in chamber because we have found some INNOCENT ITEMS that is not convenient because saving energy and other expenditures making this plant very costly. We must provide also one device for manual shot peening as indicated on figure 2.

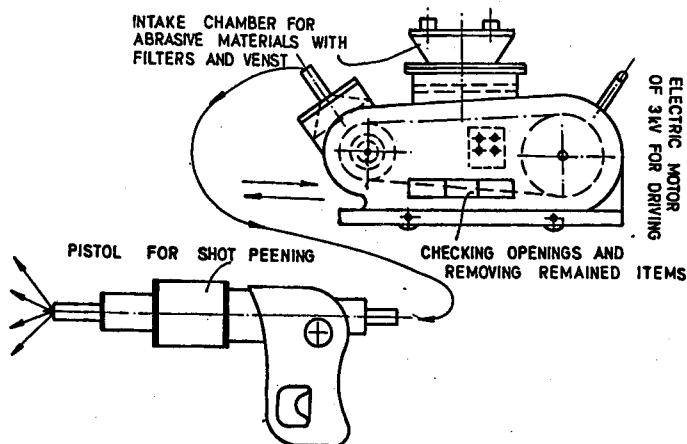
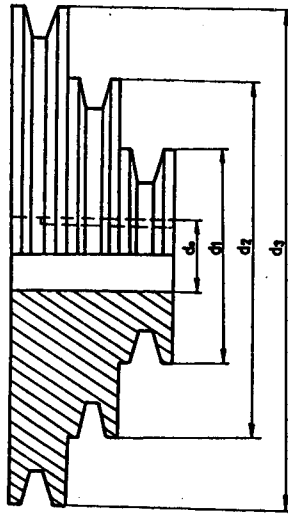


Fig.2: Auxiliary Shot Peening plant for metallic and non metallic abrasives



**FIG.3 BELT SHEAVE FOR
DIFFERENT SPEEDS (RPM)**

On the figure 3. is visible sheave belt with different diameters what can give us different speeds of shot peening. We can have three speeds because we will get three revolutions per minut. For metallic puposes is recommended to have round and finer shots more convenient. We can determine most suitable shot by testing. This method of testing and measurements of deformation of metallic surfaces is very known and it is not necessary to mention here, because we are no considering in this paper.

As well to get absolute values is to test prolongation of working life of that plate what was peened in relation with this metallic plate was not peened.

Figure 5. shows us that is comparison between procedure of shot peening on one metallic surface and combination with stresses relieving by Heat Treatment. It is evidently that we getting the best quality if we apply STRESS RELIEVING by HEAT TREATMENT with SHOT PEENING. Residual Stresses what accompanying both these processes to be decreased what is visible on the figure 5.

That means after SP= Stress Relieving by Heat Treatment. For normal usual carbon steel procedure is known and performed as technical requirements say. Time for heating arriving one point of 625 °C and keep it on the same temperature 625 °C two three or more hours depending of thicknesses of heated steel pieces. Practically on this way is possible to reach on the point with minimum Residual Stresses quasy annullated.

On the same way is possible to proove of the increament of Hardness only with growing depth below surface.

But as well is necessary to keep that Hardness of Metallic Parts BECOMING LOWER AFTER 2 mm.. On the depth of 3 mm. Hardness is inferior of that on the 2 mm..

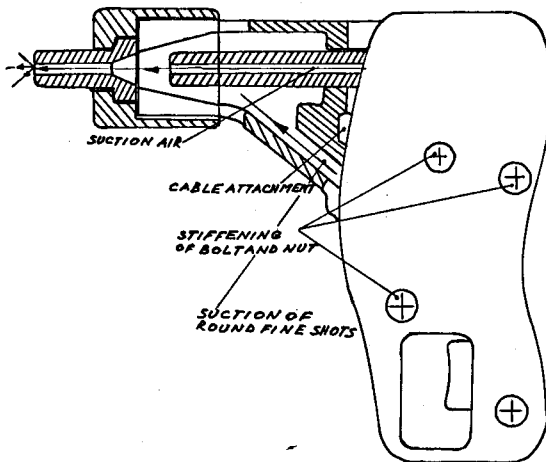


Fig.4: Pistol for metallic abrasives peening

It is not costly so as driving chain transportation with chamber and ventilation system. As visible on the figure 2. is indicated one mobile plant to go on each area of shops for additional shot peening of some items not sufficient treted in previous mentioned plant with chamber.

This is mobile plant, it is connected with pistole for using metallic and non metallic abrasives for this process. Another shape of pistole for metallic abrasives is visible on figure 4. Additional room to be provided for this auxiliary shot peening. Personnel safety rules and natinal standards to respected.

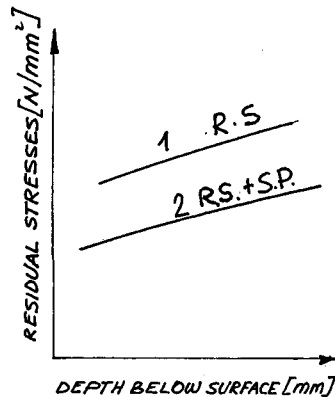


Fig.5: Relation between RS, SP and only RS

General Purposes of Auxiliary Peening

Shot peening treatment is used in such cases, where we wish the working life of machine parts to be prolonged. Especially good results can be achieved with parts which are loaded with alternating stresses. Applying this treatment of shot peening is possible working life prolong for some cases 10 times and more. Normal some items regarding their size cannot in process some of them not possible on this way. In any case shot peening is one procedure in production metallic industry very important where we have increase time of duration really increasing. This is way for to have high and guarated quality of vital elements of manufaturing. Essential characteristics of machine is that they are equipped with abrasive throwing wheels of high efficiecy with concentrated jets and high speeds.

GENERAL CONCLUSION: Non metallic abrasives are exclusively aimed for some auxiliary peening after passing in shot peening chamber. If the shots are so soft as to deform on striking the work some of the shot energy will be lost. THE SHOT WILL ALSO PRESENT GREATER AREAS OF CONTACT AND THEREFORE THE UNIT PRESSURE AND PEENING INTENSITY WILL BE REDUCE UNLESS VELOCITY IS INCREASED. That is purpose of auxiliary plant for peening.