

Introduction of Blade type dresser

On few heavy-duty grinders, especially centerless grinders, often the demands are high both on quality and productivity with the following essential characteristics of wheel dressing :

1. Uniform dressing over the full strength of wheel.
2. Proper abrasive glaze-free surface on the wheel.
3. Wheel edges free of broken edges.

At the same time, from the economic point of view, the dresser becomes expensive when not properly designed to meet all the requirements. However, a combination dresser has been conceived to combine quality with economy.

Brief Description

The dresser consists of three dressing blades set in a bronze shank (like any other blade dressers) in the form of a sandwich. The blades are set with gaps to ensure a proper follow up action during dressing. The middle blade serves as the main load carrying member. The other two blades serve as leading and lagging cutting points to ensure a glaze free dressings.

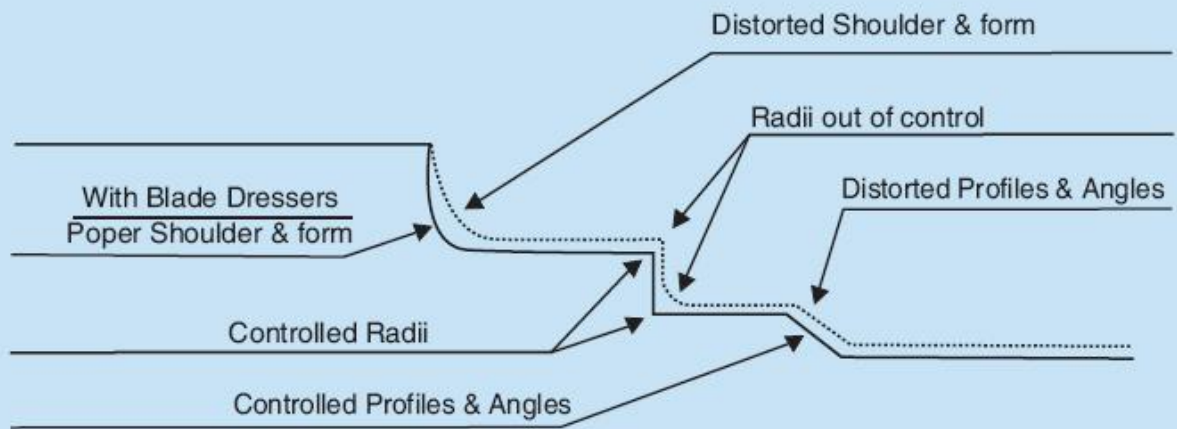
Cost Comparison / Economy

This dresser is supposed to give nearly three to four times the life span with a normal blade dresser, and can be expected to result in a net cost saving of around 40% on tooling cost.

Common Applications

1. Centreless grinding (plain)
2. Cylindrical grinding with wheels (500 mm, and above in dia.)
3. Surface grinding (TOS, BLOHM and Other heavy duty large machines)

A Comparative Case Study Blade Dressers Vs Single Point



Blade Dresser Analysis Economy

Introduction

Blade dressers are basically conceived from the multi - point wheel dressing concept - as an extension to the areas with a stringent control demand on quality & economy.

The basic advantages which have, lead to the extensive use of blade dressers are:

- ◆ They are very economical in comparison to single-point dressers.
- ◆ Higher from retention capability compared to single point dressers.
- ◆ Minimum in-process service attention compared to any other dressers due to their self-wearing property.
- ◆ They are ideally suited for optimum dressing condition and in turn for optimum grinding conditions.
- ◆ Greater flexibility in selection from a wide range of varieties of dressers to suit different grinding wheel specifications and grinding conditions.

The following paragraphs offer in-depth study and detailed analysis of the above attributes.

Economic considerations :

Blade diamonds are composed of thin natural diamond needles which are much cheaper than larger single point diamonds in direct consideration of weight basis. The impact of this economy will be felt to a greater extent when we try to replace the costlier chisel points, single points and indexable crowns dressers.

From retention capability :

A single point or a chisel point has a limitation that in certain special applications like dressing of wheels, within 15 to 20 hours of running. The condition of the dresser tips deteriorate to such a degree that the repeatability of form & related tolerances on the components are adversely affected. This results in the necessity to reset the dressers with fresh cutting points.

Blade dressers are designed to utilize their full life span with minimum deterioration of form and tolerances. Below gives certain typical examples or areas where certain steep angles and sharp internal corners are effectively traced with precision blades in comparison to ordinary single point dressers and ordinary blade dressers.

Minimum in-process service attention :

Normally, when a single point or a chisel point dresser is mounted, the machinist has to "watch" for a number of defects on the component.

- ◆ "Glazing" of the wheel due to "blunting" of diamonds.
- ◆ Loss of form & profiles.
- ◆ "Breaking of wheel corners.
- ◆ Appearance of "unstraightness" due to varying load conditions on the dressers.

Blade dressers have been developed on the "fix and forget" principal - a concept of the right choice of dresser for an operation - when the next attention of the machines is warranted only when the dresser is fully used up.

Optimised Conditions of the grinding wheel :

Modern grinding technology has facilities to optimise grinding process to the barest minimum operational cost-provided. The very starting point of the operation, namely

dressing, is optimised. A proper dressing demands the following conditions on the grinding wheel surface.

- ◆ A pure abrasive action - no "rubbing" action.
- ◆ Proper fracture of individual grains to expose maximum abrasive area for grinding
- ◆ Minimum "filling" of bonding cavities on the wheel surface to minimise friction during grinding operation.
- ◆ Minimum "grain pull out".

Flexibility in selection :

Unlike single point dressers which are more or less independent of the grinding wheel specifications or conditions (except for the weight in carats), blade dressers need to be selected with due considerations to the grinding wheel specification and conditions of dressing.

Conclusion :

Blade dressers have been developed over the last two decades through extensive field trials with renowned engineering industries. The benefits derived have been passed on to the several users, through substantial reduction in their tool costs

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