

Quality Fixture for Final Cover Drive Using Receiving Gauge

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ABSTRACT: A Various type of inspection methods are being used in various industries, from that quality fixture of any production is to be checked. The different types of inspection method involve CMM (coordination measuring machine) and various type of gauge are used. Gauges are the tools which are used for checking the size and relative position of various parts but not provided with graduated adjustable members. Receiving gauges are understood to be single – size fixed –type measuring tools. This project leads to focus on inspections of items. Receiving gauge is a gauge that has an inside measuring surface for testing the size and counter of the male part. The center distance as well as the diameter of holes can be inspected at one go by using a receiving gauge. By this process can quickly measure the huge products dimension and position of the final cover drive.

KEYWORDS: CMM, receiving gauge, quality fixture, final cover drive

I. INTRODUCTION

A gauge or gage, in science and engineering is a device used to make measurements or in order to display certain information, like time. A wide variety of tools exist which serve such functions, ranging from simple pieces of material against which sizes can be measured to complex pieces of machinery. Depending on its usage, a gauge can be described as a device for measuring a physical quantity, for example to determine thickness, gap in space, diameter of material. basic needs of using receiving gauge in mass production industries are ,For 1.accuracy, reliability and repeatability with strong focus on ergonomics.2. To reduce measuring time and its cost.3. For accurate and precise inspection.4. Increase production rate.5. Initial cost low.6. Requires less cycle time.7.Coordinate measurement.

Principle

The receiving gauge is specially designed and manufactured for inspection purpose. It measures the job very accurately and precisely as per the job standards and specification. It can be used in metrology area as well as production floor. They give the operator the possibility to perform dimensional inspection of the part without having to rely on a coordinate measuring system. Receiving gauge used for checking dimensions precisely as per the standards.

Advantages

Improved production quality, Improve decision making, increased productivity, Reducing inspection timing, Improved safety, Improved operation reliability, Increased product yields.

Application

Inspection for final cover drive, Measure the inner and outer diameters, Check the position for the holes and there

PROFILE OF COMPANY

GEE KEY ENGINEERING CO ... Was started in the year 1991 under the aegis of Mr.D.V.Kanagaraj who is the chief executive officer. We are in the business of machine the material of

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Final cover drive for VST trillers and bearing hole for wind mills .Our company has grown by leaps and bounds, clocking a turnover of RS.10crores the FY 2009-2010.Our sister concern is GEE KEY ENGINEERING CO.. it is also involved manufacturing supply for company for VR Foundries, Coimbatore , Sonai casting ,Hydrabad. The expertise that the company holds can surely be capitalized with the launch of the new product. **Awards&achievements** ISO 9001-2000 certified company. Rajiv Gandhi award for human excellence. The best entrepreneur award 2003-2004. Gem of india award 2005 for individual.

Infrastructure

The company has 12000sq.Ft built in area with latest machineries , equipment to cater the needs of the customers with exclusive metrology department for stringent control of quality. We have an excellent machineries to prove our commitment towards preciseness and quality. Some of them are includes, Microstar CMM for quality inspection, Mackron VMC CNC machines Surface grinding machine Turret lathe, HMC CNC machine, Vertical drilling machine,Horning machine.

II. TYPES OF GAUGE

i)Measurement- Measuring can be defined as the determination of a dimension. ii) Gauging- Gauging is defined as the acceptability of a given dimension whether it lies in its specified or allowable limits or not. iii) Gauge tolerance - 10% work tolerance, A clear distinction between measuring instruments and gauges is not always observed. Some tools that are called gauges are used largely for measuring or layout work. Even some are used principally for gauging give definite measurement.

Based on standard and limits Standard gauge.Limit gauge or no go gauge **Based on consistency in inspection** Working gauge Inspection gauge Reference or master gauge **According to the shape or purpose for each is used**

Plug, Ring, Snap, Taper, Thread, Form, Thickness, reduces belt stretch and results in less maintenance for tension adjustments. Belt conveyors can be used to transport product in a straight line or through changes in elevation or direction. In certain applications they can also be used for static accumulation or cartons.

2 .PROBLEM STATEMENT This target is quite difficult to achieve everyday cause of some delays in some processes. Among those processes, the process of repulping the damaged papers is an important one. The delay in this process is due to the manual paper feeding into the finishing house pulper.

OBJECTIVES

Our main aim of the project we have planned to reduce the human effects and processing time by designing a belt conveyor for feeding the damaged papers into the pulper.

III. LITERATURE

1. A Review of Current Geometric Tolerance Theories And Inspection Data Analysis Algorithms.

This report provides an overview of the state of the art in mechanical dimensioning and tolerance theories and CMM inspection data analysis technology. We expect that the information included in this review will benefit CMM software developers, CMM users, and researchers of new CMM technology. This document is the results of a survey of published geometric dimensioning and tolerance theories and post-inspection data analysis algorithms. Both traditional and modern theories have been reviewed. Principles on which current national and international standards are based have been stated. These geometric dimensioning and tolerance principles are commonly used in mechanical design and part inspection. Post-inspection data analysis algorithms, used for extracting features and evaluating tolerances, have also been reviewed. The effects of using different fitting criteria are discussed. From this theory and algorithm review, we recommend directions for future development in these areas. The bibliography covers activities and accomplishments of the

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research in advancing inspection technology. This paper provides an overview of current geometric dimensioning and tolerance theories and post-inspection data analysis algorithms. These theories and algorithms will be the basis of improved CMM technology in the future. As a review paper, we summarize current technology rather than propose solutions to problems in CMM software and engineering metrology.

Gauge repeatability and reproducibility studies and measurement system analysis. A multi method exploration of state method. The effectiveness of a measurement system depends upon accurate gauges and proper gauge use. Common measuring devices such as calipers and micrometers are of particular concern when used incorrectly (Hewson, O'Sullivan, & Stenning, 1996). Measuring equipment and processes must be well controlled and suitable to their application in order to assure accurate data collection.

According to the MSA Reference Manual, MSA defines data quality and error in terms of bias, reproducibility, reliability and stability (AIAG, 2002). Further MSA provides procedures to measure each term, however the phrase Gauge Repeatability and Reproducibility Studies has come to incorporate the procedures recommended for measurement of bias, reproducibility and reliability (Foster, 2006). Following the definitions of MSA, bias is the "systematic error" in a measurement, sometimes called the "accuracy" of a measurement. Repeatability is "within operator" (one appraiser, one instrument) error, usually traced to the gauge itself, and is best considered to be "random error." Reproducibility is "between operator" (many appraisers, one instrument) error, and is usually traced to differences among the operators who obtain different measurements while using the same gauge. Several authors address the use of GRRS to specifically address the management of these errors, especially the human aspects of these errors (Bester field, 2004). Dasgupta and Murthy (2001), for example, addressed the use of GRRS as both an audit tool and as a source of feedback to improve the measurement procedure. Wang (2004) recommended the use of GRRS as feedback for measurement system improvement. Lupan and Bacivarof (2005) recommended the analysis of measurements to detect "the most important causes for process variation and Smith, Callahan, and Strong (2005) demonstrated the practical use of GRRS for improving measurements. In addition to reliance on physical measurements there is an additional and unavoidable reliance on human visual inspection processes, which rely very heavily on subjective judgment of specific product or process attributes. As noted, the researchers determined the need for using GRRS as feedback to improve measurement systems. These findings piqued the researcher's interest in a possible theory-practice gap, leading to the following study on the state-of-practice of GRRS, using an exploratory, regional survey.

IV. METHODOLOGY

For a inspection in a particular jobs as final drive cover have measuring time has in maximum. And the time required for the inspection is high. And the inspection rate of the job will be at a minimum level



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From our project these draw backs are completely solved. By our project a continues inspection process were done at the shot time period, so time is less for machining much useful for the mass inspection. By our project we designed for receiving gauge for final drive cover by providing slot and hole similar to the final drive cover measured the material of final drive cover, have to place about the receiving gauge, that it me hole and the outer dia the placed into the slot. The work piece is passing the test.

PROPERTIES OF MATERIAL

The material selected must possess the necessary properties for the proposed application. the various requirement to be satisfied, can be weight, surface finish, rigidity, ability to withstand environmental attack from chemicals, service life, reliability. The following three types of principles properties of materials decisively affect their selection

The various physical properties concerned or melting point, thermal conductivity, specific heat, co efficient of diffusivity, thermal expansion, specific gravity, electrical conductivity, magnetic purposes etc., The various mechanical properties concerned as strength in tensile, compressive, shear, bending, fissional, and buckling load, fatigue resistance,

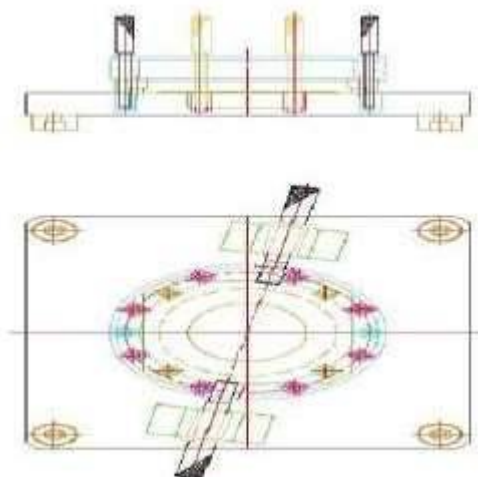
PROPERTIES OF INSPECTION POINT OF VIEW

Quick measurement, Acquirable Less wearing and work life, Time reduction Fixed the center point easily

3.1.3 QUALITY REQUIRED

The general, effects of manufacturing process and ultimately thye material for example it would never be desirable to go a less number of components which can be fabricated much for more economically by welding or hand forging the steel.

AVAILABILITY OF THE MATERIAL



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Some material may be scarce or in the short supply, then becomes obligatory for the designers to use some other material which though may not be a perfect substitute for the material designed. The delivery of material and the delivery date of product should also be kept in mind.

SPACE CONSIDERATION

Sometimes high strength material have to be selected because the forces involved are high and space limitation there.

COST CONSIDERATION

As in any other problem, in selection of material the cost of material plays an important part and should not be ignored. Sometimes factors like utilization appearance and non-maintenance of the gauge are involved in the selection of proper materials.

DESIGN PROCEDURE In design a fixture, a definite sequence of design stages is involved. They can be grouped in to three broad stages of design development. Stage one deals with information gathering and analysis. These include product analysis such as the study of design specification process planning, examining the processing equipment and considering operator safety and case of use. Stage two involves the considering of clamping and locating schemes. A Clamping scheme is devised in such a way that it will not interfere with the tools or cutters and are fully compatible with proposed location surfaces in area.

V. CONCLUSION

By checking the job on receiving gauge we conclude that this is time saving and cost effective method of inspection. also it is one go checking i.e. diameter, depth, coordinates, centroid etc. for the large rate of production. This process make that easy to inspect the job and more profit for the manufacturing company

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