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CAMSAHFT OIL HOLE TESTING DEVICE

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ABSTRACT:

Quality checking is an important process that is used in a wide range of applications. From all the product and necessary equipment of the all systems, we see a major reliance on correctness of product. In this project we focus on quality checking of product.

The understanding of the checking of component and their different factors that contributes to part quality. We acquired primary checking skills that provided us an opportunity to make this project.

For each component, we created a detailed engineering working drawing that helped to shape and construct all the operations and procedures that must be undertaken and controlled to attain component checking without any obstruct the product. Through this project, we discovered many different factors involved in checking and the effects they exhibited on the quality of a part. The main relevant factors that we examined were set-up selection. The extent to which these factors can influence machining is presented.

I. INTRODUCTION:

Quality has different connotations- in health and hospitality it may mean 'hygiene'; in electrical and electronics, it may mean, 'safety;' in services it may mean 'speed' and 'reliability' and so on. In the present context even price is a quality measure! Operationally, however, quality refers to conformance to established standards. Quality control consists of all those activities, which are designed to define, maintain and control specific quality of products within reasonable limits. It is the systematic regulation of all variables affecting the goodness of the end product.

In other words, quality control involves determination of quality standards and measurement and control necessary to ensure that the established standards are practiced and maintained. It does not attempt to achieve the perfect quality but to secure satisfactory or reasonable quality at a reasonable and competitive level of cost through a systematic control over the variables in the manufacturing process, variations in the quality of the product can be kept reasonably stable.

II. DESIGNING OF PROJECT:

PART LIST:

1) Camshaft 2) Camshaft Stand 3) Actuators 4) Actuator stand 5) Indicating circuit

III. PARTS TO BE BROUGHT OUT

1. CAMSHAFT:

Fig 1 - Camshaft

The camshaft provides a means of actuating the opening and controlling the period before closing, both for the inlet as well as the exhaust valves. It also provides a drive for the ignition distributor and the mechanical fuel pump. The camshaft receives its motion from the crankshaft, from which all of the accessories also must be driven. In the case of passenger car engines these accessories usually include a fuel pump, an oil pump, a water pump, a generator, an ignition unit, and a fan. In cars equipped with hydraulic power steering a drive must be provided for an additional pump. On truck and bus engines there may be an air compressor, a governor, and a magneto in addition, though the latter item of equipment is now rarely found on road vehicles. A drive must be provided also for the starting motor. The camshaft consists of a number of cams at suitable angular positions for operating the valves at approximate timings relative to the piston movement and in a sequence according to the selected firing order. There are two lobes on the camshaft for each cylinder of the engine; one to operate the intake valve and the other to operate the exhaust valve. A number of integral bearing journals support the shaft in bearings. Camshaft bearing journals are always larger than

the cam lobes so that the camshaft may be installed in the engine through the cam bearings.

To provide room for lubrication and metal expansion, a clearance of 0.05 to 0.125 mm is usually provided between the bearing journals and the bores.

2. ACTUATORS:

It is a device which converts pressure energy of air into mechanical work that is reciprocating work. When air pressure is acting on the piston of actuator Than is move forward and when flow is cut off than Due to spring tension piston return to its original position.

At the end of piston rod one metallic strip is attached. When piston rod is move forward strip is connected to other strip and compete the circuit And LED is blink

Fig 2 – Actuator's

3. INDICATING CIRCUIT:

Indicating circuit is a heart of this project this circuit is consist of transformer, 7812 voltage regulator, buzzer, capacitor, LED, PCB, Rectifier, resistor. When actuator actuate than it complete the electronic circuit
And LED are blow and buzzer is horn

Fig 3: Indicating circuit

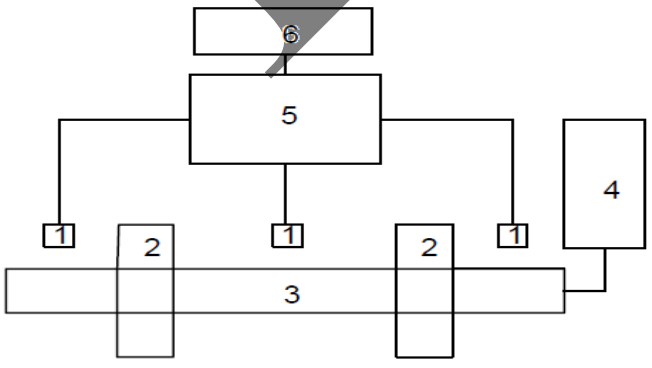


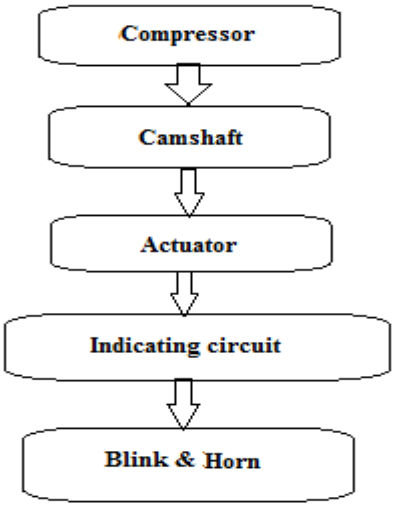
Fig. 4 Block Diagram of Device

1 – Actuator
2 – Camshaft Stand
3 – Camshaft
4 – Compressor
5 – Indicating Circuit
6 – Supply

IV. CONSTRUCTION:

Fig.5 setup a device

The camshaft is placed on the stand of camshaft. This camshaft is made up of cast iron and sometimes is made up of alloy steel material. This stand is mounted on the table. Two stands are used for the placing and positioning of the camshaft. The material of stand is mild steel. It works on pneumatic power so compressor is needed. With the help of hoses the compressed air is supplied to the camshaft through the pressure reducing valve. For linear motion (i.e. mechanical work) spring loaded single acting actuators are used. These actuators are placed with the help of actuators stand at the calculated height in front of camshaft journal bearing hole. This actuator are actuates the indicating circuit . This indicating circuit is consist of transformer, full wave bridge rectifier, capacitor, LED's, zero PCB kit, 7812 voltage regulator, buzzer, electrical cables.



When a compressed air is supplied from the compressor reservoir to the camshaft hole with the help of hoses. With the help of pressure reducing valve can supply the calculated pressure. This compressed air is passed throughout the oil hole of cam shaft after that air comes out from the hole of journal bearing of cam shaft. This compressed air is actuates the spring loaded single acting actuators which moves against the tension spring. This actuatoris act as switch of the indicating circuit. If switch is ON the indicating circuit is indicates the blink the LED's and the buzzer is horn. For each hole separate LED's and buzzer is provided. If anyone hole of bearing is chocked, blocked or due to any reason is not working properly then the in front of this holes is not actuated so the LED's and buzzer are not blink and horn respectively. With the help of this we can find the faulted hole. And finally we can easily inspect the camshaft.

V. ADVANTAGE:

I. LESS COST:

In this project we not use Hydraulic System. Due to that the overall cost of device is less.

II. SIMPLE CONSTRUCTION:

The construction of machine is simple because of very less number of parts as compare to hydraulic device.

III. EASY TO USE:

The device is electrically operated. Therefore It is easy to use.

IV. MORE INSPECTION ABILITY:

Large number of camshaft's can be easily inspected as compare to traditional method of inspection by using this device.

V. PLUS ADVANTAGE:

By using this device we are combining a two processes i.e. oil hole cleaning and testing.

VI. APPLICATION:

1. This project is specially made for camshaft oil hole testing .
2. This can be used at inspected in the foundry of camshaft manufacturing company.,
3. This project is also used for maintenance at the service centers.
4. This is also use full for automobile company who buy the cam shaft from Vender Company

VII. CONCLUSION

To detect accurate hole size of camshaft with short period of time to avoid rejection and other problems which may come in future.

In order to great deal of attention is devoted to the avoid rejection & time decrement of overall measuring process. With based on technical finding this cam shaft oil hole testing equipment is economic.

VIII. FUTURE SCOPE:

1. Future Scope: Such set-up can be designed & manufactured with automation, thus increasing productivity and quality output of camshaft. More suitable and compact mechanisms to enhance efficiency.
2. There are provisions of different accessories to measure different types of camshaft. Overall checking time will be reduced by introducing an automation in the sense of digital identification & error detection etc.

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