

CONTROLLING THE FORMATION OF RUST IN THE ROCKER PANEL USING CAVITY WAX

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Abstract - This work mainly focusses on prevention of formation rust in the rocker panel, which is the skeleton part of the car. Rocker panel should not get affected as it is the integral part of the vehicle. As there are various processes to control the rest formation in the automobile, the best and effective way to practice to treat the rocker panel is using the cavity way. The methodology used to solve this problem by using DEMINGS CYCLE.

Keywords - PDCA CYCLE, CAVITY WAX, ROCKER PANEL, PUMP, PLASMA WELDING.

I. INTRODUCTION:

To overcome corrosion in the inner part of the "Rocker Panel".

Currently, there is no problem faced with rocker panel but in future forecast if the paint is not applied properly in the rocker panel it will lead to corrosion. It may also lead to major safety problem as it is skeleton structure of body.

II. ROCKER PANEL

Rocker panel is also known as rock deflector. It is a stamped steel piece which is located in the bottom portion of the vehicle. It is skeleton part of the body. The structural reinforcement of the vehicle body is provided by the rocker panel.

III. WHAT IS DEMINGS CYCLE?

Deming's cycle is also known as **PDCA** cycle. **PDCA** refers to **Plan- Do- Check- Act**. These four are the phases of PDCA technique which are the stages to completed one after the other in order to achieve the required results.

IV. TO CONTROL THE FORMATION OF RUST IN THE ROCKER PANEL BY CAVITY WAX USING PDCA CYCLE.

To control the formation of rust in the rocker panel by cavity wax can be done by following the four stages of PDCA and steps involved in each stage one after another.

The four stages are:

- Plan
- Do
- Check
- Act



PDCA CYCLE

PLAN

1) Selection of body:

The body has to be selected, whose rocker panel has to be inspected.

The body of a car is selected for inspection.

2) Rocker panel cutting:

Rocker panel should be cut from the body with these dimensions:

Rocker panel should be cut in such a way the 2mm is left in breadth and 5mm is left in length.

3) Checking:

An interval of 10mm markings are made on the rocker panel so that the thickness of paint can be measured accurately.

If the thickness of the paint is greater than 10 microns (> 10 microns) then the status is "OK".

If the thickness of the paint is lesser than 10 microns (<10 microns) then the status is "NG".

If the status is “NG” it is selected for waxing process.

4) Cavity waxing process plan

Equipment required

1. GRACO MERKUR MOTOR PUMP
2. HOSE PIPE
3. NOZZLE
4. PLASMA CUTTING MACHINE
5. CAVITY WAX TIN
6. PLASMA CUTTING EQUIPMENT
7. BODY

The cavity wax is filled into the motor pump, then the hose pipe is to be connected with nozzle to a pump. Then the pump is ready for waxing process.

- Maximum pump air inlet pressure =0.7 Mpa
- Ambient air temp =2 *C to 49*C
- Maximum fluid temperature =71*C
- Weight =45kgs
- Maximum fluid working pressure =33Mpa
- Ratio = 48:1

PLASMA CUTTING MACHINE

Plasma cutting is a metal cutting process that cuts through electrically conductive materials in the form of an accelerated jet of hot plasma. Typical materials cut with a plasma torch include although other conductive metals may be cut as well and it is an effective way of cutting thin and thick materials. Since plasma cutters produce a very hot and much localized "cone" to cut with and they are extremely useful for cutting sheet metals in curved or angled shapes.

DRY FILM THICKNESS MACHINE

Dry film thickness (DFT) or coating thickness is arguably the single most important measurement made during

the application and inspection of protective coatings. Coatings are designed to perform their intended function

When applied within a tight DFT range as specified by the manufacturer.

CAVITY WAX

Cavity Wax is:

- Non – Hardening
- Corrosion Resistant Chemistry

Cavity Wax is applied to:

- Internal portion of auto body panels
- Both replacement and repaired panels
- Unprotected bare metal areas
- Self-healing, corrosion protection for inner body panels, frame rails and structural enclosures.
- When used according to directions Inner Cavity Wax delivers the right amount of flow and wicking, providing consistent and uniform protection for your repair.
- Eliminates the need for using antiquated and messy bulk spray technology to apply corrosion protection to a vehicle.

Provides access to inner body structures with tight tolerances.

CAVITY WAX

PDCA METHODOLOGY

DO

The cutting process of the rocker panel is done by using plasma cutting in such a way that 2mm is left in breadth and 5mm is left in length of rocker panel.

Rocker panel is considered and dots are marked on the rocker panel with 10 mm intervals using marker and tape. By using DFT meter, the marked dots on the rocker panel are measured thrice on each dot and readings are noted. The thickness of paint on rocker panel is lesser than 10 microns (<10 microns) then the status is “NG”. If the status is “NG” it is selected for waxing process. Prior to the process the wax is filled in the merkur bellow pump. The cavity wax is sprayed through the nozzle on the surface of the rocker panel.

CHECK

To check the evenness of the rocker panel which is cut using plasma cutting operation.

Check list

1. To find whether cuts are of required dimensions.
2. Whether cut is even along the surface with smooth finish.
3. Visual inspection is done to check the deposition of cavity wax on through the surface of rocker panel. To check the reweld work of rocker panel.
4. Visual inspection is done to check whether the rocker panel is welded correctly to the body of vehicle.
5. Deposition of welded metal is checked.
6. Finally the grinding process is verified to obtain smooth finish.
7. To check the deposition of paint on the inner surface of the rocker panel.

Check list using DFT meter

1. The thickness of the paint is measured and verified at interval of 10mm on rocker panel.
2. To check the deposition of wax on the surface of the rocker panel.

ACT

Using proper equipment to get a smooth cut using plasma cutting to avoid the irregularities in cutting process.

Continuous improvement of waxing techniques to cut down working time and increasing the quality of wax deposition on rocker panel, which cuts down amount of wax used. Necessary precautions to be taken while re welding to avoid formation of uneven welds which damages rocker panel.

Continuous improvements are to be made in every aspect of the process to cut down both cost and time.

PLASMA CUTTING EFFECTS

The arc is a combination of intense visible and invisible ultraviolet and infrared light rays. The produced arc of a plasma cutter is very hot and powerful. The arc is fatal for unprotected body parts like eyes and arms. It can burn skin and eyes, too. It's also a severe fire hazard.

RESULT

The work obtains optimistic results summarized as, The rusting of the rocker panel can be prevented. The cavity wax is sprayed on the surface of the rocker panel by following the methodology to avoid rust in the surface of the rocker panel.

By Currently there is no problem faced with rocker panel but in future forecast if the paint is not applied properly it will lead to corrosion of rocker panel. It may also lead

to major safety problem as it is skeleton structure of body. Therefore the by spraying the cavity wax on surface of the rocker panel rust of the rust can be prevented.

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