JOB ROLE – AUTOMOTIVE SERVICE TECHNICIAN

Sector: Automotive
(Qualification Pack Code : **ASC/Q01402)**

PSS Central Institute of Vocational Education
Shyamla Hills, Bhopal – 462013, Madhya Pradesh, India

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UNIT 2 : Fasteners

Session-3: Automotive Studs

Content

Session Objectives

1. The student will be able to understand importance of studs as fasteners
2. Able to identify different types of studs.
3. Able to loosen and tighten different types of studs using hand tools .

Introduction

Studs are mechanical fasteners which are threaded on one or both ends. One end is secured to an object. The other end is used typically with a nut. Automotive studs are commonly referred to as a double ended automobile fastener. Automotive studs are fastened at both the ends with the help of an unthreaded shank. With the growing automotive parts industry, various automotive fasteners manufacturers & suppliers are coming up with new materials to manufacture a variety of auto studs.

Wheel Studs

Wheel studs are the threaded fasteners that hold on the wheels of many automobiles. They are semi-permanently mounted directly to the vehicle hub, usually through the brake drum or brake disk. Lug nuts are fastened over to the wheel stud, To secure the wheel. When a wheel is removed for tire changes etc., the stud remains in the hub. Many automobiles instead use bolts to do this, where removable bolts screw into the wheel hub.

Types of studs

Screw-in

Screw-in studs, simply screw into the existing threaded bolt hole in the hub. The end that screws into the hub is usually either threaded with a higher tolerance fit or installed with a chemical thread-locking fluid to keep it from backing out from the hub when the lug nut is removed.

screw-in type stud

Press-in

Press-in studs, are installed from the back side of the disk or drum hub and may require removal of the hub from the vehicle for installation or removal. They consist of a threaded portion and a larger diameter section, called the knurl, which is splined to prevent rotation. The diameter of the knurl is larger than the hole in the hub requiring a press fit to seat the stud. The stud is prevented from being pulled through the hub by a larger diameter stop on the end

press-in type stud

Engine studs

For a performance or heavy-duty application, the use of studs is preferred whenever possible instead of main cap bolts, in those instances where a choice is available. Studs provide the ability to obtain much more accurate torque values because the studs don't twist during tightening as do bolts. Because the studs remain stationary during nut tightening, the studs stretch in one axis alone, providing much more even and accurate clamping forces.

Main studs in engine block

Cylinder head studs

The use of head studs, will aid in cylinder head installation, simply from a standpoint of gasket and head alignment. This is especially helpful in an application where frequent head removal will occur.

In terms of function, the use of studs provides much more accurate and consistent torque loading.

Cylinder head studs

Summary

In this session you have learnt about, Studs are mechanical fasteners which are threaded on one or both ends. One end is secured to an object. The other end is used typically with a nut. Automotive studs are commonly referred to as a double ended automobile fastener The tensile strength of cast iron is very low, and excessive tightening of a set screw into a cast iron thread may cause the thread to crumble, thus permanently damaging the casting.

Wheel studs are the threaded fasteners that hold on the wheels of many automobiles. They are semi-permanently mounted directly to the vehicle hub, usually through the brake drum or brake disk.

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