

## Approved usage of Nuts & Bolts instead of Lockbolts



The nuts & bolts have to be of the same or better quality than the originally used lockbolts

### Min. strength requirements for lockbolts:

#### **aluminium lockbolt** (locations refer to IPL)

Min. tensile strength = 9560 N / 2148 lb

Min. shear strength = 7300 N / 1640 lb

Min. clamp force = 6670 N / 1499 lb

#### **steel lockbolt** (locations refer to IPL)

Min. tensile strength = 15540 N / 3492 lb

Min. shear strength = 11770 N / 2645 lb

Min. clamp force = 8000 N / 1798 lb

1. The diameter of the nuts & bolts has to be  
1/4" for US-system or  
M6 for metric system

2. The nuts & bolts have to have a proper grip range according to the material thickness in the area where used.

**At least min. 3 threads have to protrude**

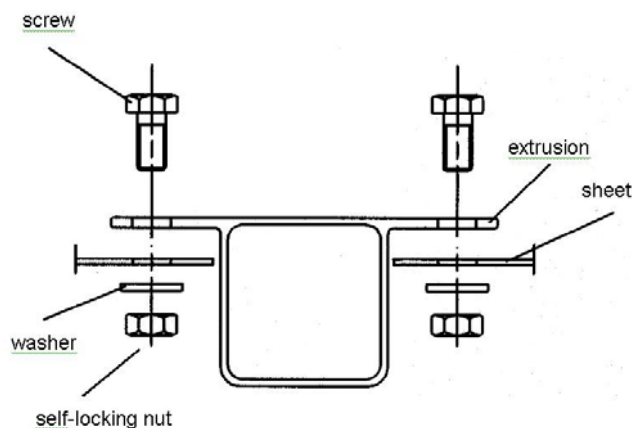
3. Nuts & bolts are allowed only in connection with washers. In any case there must be a washer underneath the nut, whereas a washer underneath the screwhead is optional.

If 1 washer is used only, nut & washer must be placed onto the sheet, **see pictorial**

5. The usage of self-locking nuts is recommended

6. All materials should be corrosion-resistant

7. **All nuts & bolts have to be fixed properly**



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