

Precautions for Using Bullman Clamps (A)

1. Cleaning of Tightening Area



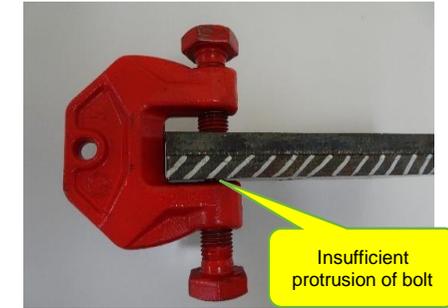
Dust and oil on a joining area must be removed. If foreign matters adhere to the area, the proof strength will decrease. Remove them before joining.

Joining after cleaning

2. Mounting Method



Tightening in the middle between 2 bolts



One bolt is retracted too much. Make it protrude 3 mm or more before tightening.

3. Final Tightening



[Final tightening with a ratchet wrench]
Be sure to finally tighten the bolt with the special torque wrench.

Tighten the bolt on one side.



[Final tightening with the special torque wrench]
Tighten until you hear a clinking sound.

Special torque wrench

★Impact strictly prohibited★
This is a precision tool. Do not handle it roughly. Store it in a storeroom, locker or other appropriate places after use.



We calibrate the special torque wrench to 300 N · m using a digital analyzer before shipment.

★Strictly adhere to the specified tightening torque for work [300 N·m]★

4. Marking



Be sure to put a mark on the bolt on one side.
[The side that can be easily checked]

[Bolt bite mark]



Using the special torque wrench



Tightening by hand

5. Inspection and Management



No misalignment of marks



If you find the marks out of alignment, re-tighten the bolt with the special torque wrench.

* We request the prime contractor to check after the work.

Precautions for Using Bullman Clamps (B)

6. Prohibited Matters



Clamping of 3 or more steel plates strictly prohibited

It is prohibited to tighten 3 or more steel plates.



Do not leave a space.

Tightening with some space left strictly prohibited

It is prohibited to tighten with some space left between a steel plate and a Bullman clamp.



Bullman clamp

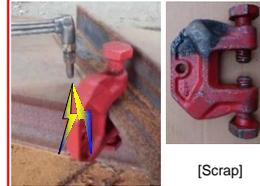
Hoisting a steel beam strictly prohibited (Pulling in the axial direction strictly prohibited)

It is prohibited to use a Bullman clamp for purposes other than its original purpose, for example hoisting the steel beam on which the Bullman clamp is mounted.



Strike strictly prohibited

After mounting a Bullman clamp, do not strike it with a hammer or the like to correct its position. If a large impact is applied, the tip of the bolt breaks and the proof stress will decrease.



[Scrap]

Fire strictly prohibited

The original performance of a Bullman clamp cannot be exhibited, and the proof strength of the joining area will decrease. The clamp will be scrapped.



Use in slope portions of a gantry strictly prohibited

It is prohibited to tighten 2 sheets of steel material in a slope portion, etc. in the state where their surfaces are not overlapping.



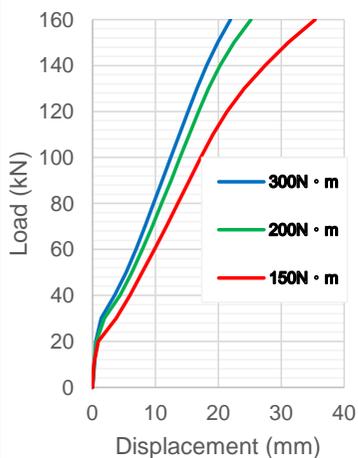
Bullman clamp

High-cycle vibration strictly prohibited

It is prohibited to use a Bullman clamp in the area where a vibratory hammer or the like acts directly on the clamp.

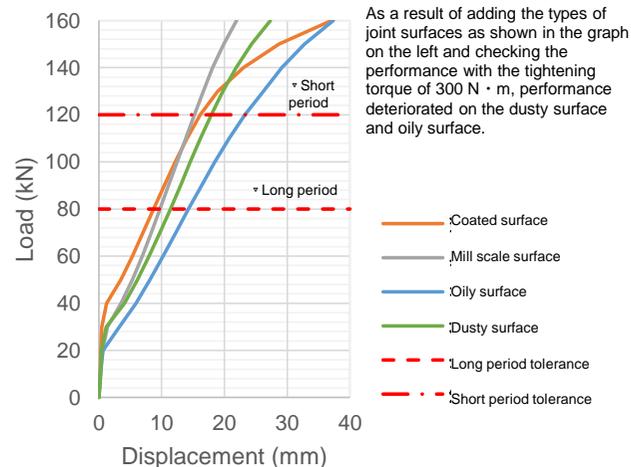
Reliability of Bullman Clamps

(1) Compression test: C50 type (difference in torque)



As a result of changing the tightening torque value and checking the performance of the product using steel material having a mill scale surface as shown in the graph on the left, there was almost no difference between the specified torque values of 300 N·m and 200 N·m, but the displacement increased with 150 N·m. Therefore, we have set the initial torque to 300 N·m in order to always apply 200 N·m.

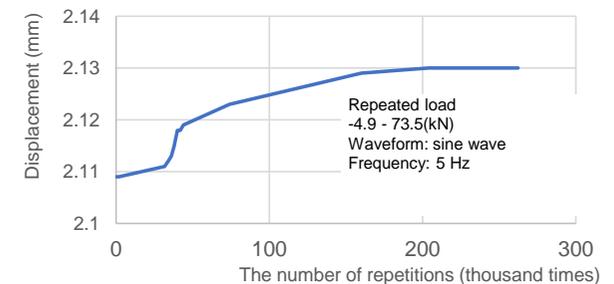
(2) Compression test: C50 type (difference in surface)



As a result of adding the types of joint surfaces as shown in the graph on the left and checking the performance with the tightening torque of 300 N·m, performance deteriorated on the dusty surface and oily surface.

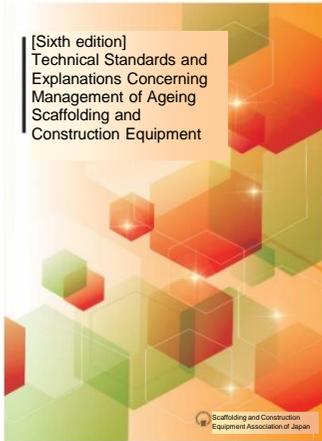
(3) Vibration (fatigue) test

An angle steel beam was joined to an H-shaped steel beam using a C-50 clamp, and a load of 68.6 kN was applied to the top at 5 Hz repeatedly. After about 2.6 million repetitions, the displacement was 2.13 mm and the bolts were not loose, thus its reliability was sufficiently demonstrated. (Tightening torque of one bolt: 300 N·m)



Precautions for Using Bullman Clamps (C)

7. Maintenance Standard



[Standards specified by the Minister of Health, Labour and Welfare, and certification criteria]

Bullman clamps are certified by Scaffolding and Construction Equipment Association of Japan, and are maintained and managed in accordance with its management standards.

① State when the clamps are returned



② Shot blasting



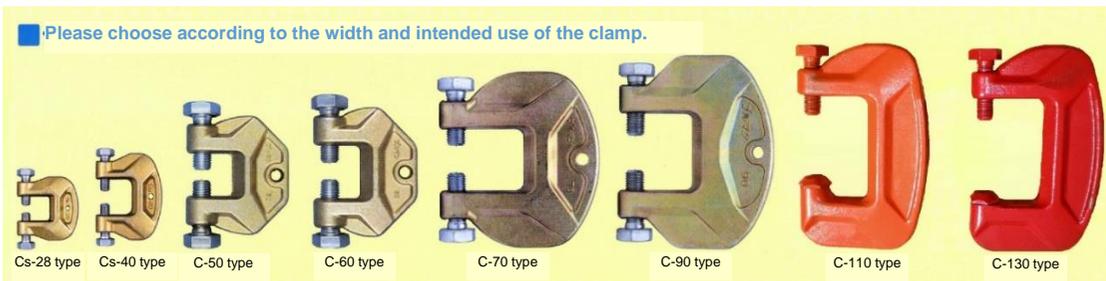
③ Check of bolt rotation and lubrication



④ Anti-corrosion treatment



8. Type



9. Color Coding of Bullman Clamps

