

BACKGROUND

Segnut has been designed to improve safety and efficiency during nut removal – a world first in the market. This has been achieved whilst maintaining the convenience of existing tools and procedures. Being a new product, many engineers are interested to learn more about the ability of the Segnut to work in situations exposed to vibration. Segnuts are designed and manufactured to handle the same loads and stresses as conventional hex nuts (eg per Class 8 requirements) and can work in conjunction with complementary, off-the-shelf, products/systems to ensure vibrational induced self-loosening is prevented. To demonstrate the use of Segnuts in vibration applications, the company teamed up with JOEST Australia to apply Segnuts on their exciter test bed. The tests undertaken involve slip-critical joints undergoing transverse vibration.

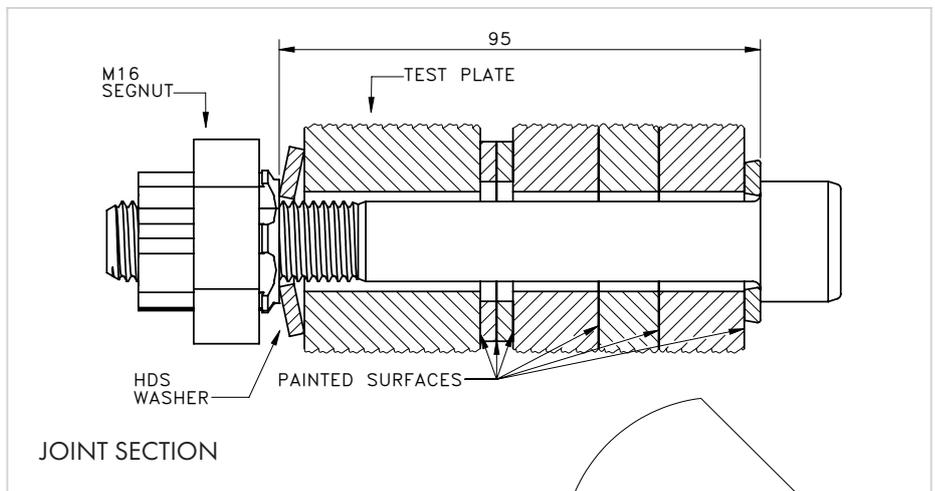


LOCATION	Welshpool, WA
YEAR	2019-2020
INDUSTRY	Material Handling
COMPANY	JOEST Australia
EQUIPMENT	Exciter Test Bed



JOINT

Six 3/4" Cone-lock fasteners were removed and two 23 kg (manual handling limit) steel plates are bolted to either side of the exciter test bed (being approximately 2 m apart). Each plate has three 20 mm holes and is bolted with M16 × 130 mm black 12.9 bolts. Heavy Duty Safety (HDS) washers are used underneath the Segnuts to minimise non-rotational loosening (relaxing/embedding), with flat F436 washers used under the bolt heads. The Segnuts were tightened to 250 Nm to approximate an 8.8/TF M16 joint as per AS4100 Table 15.2.5.1. No lubricant was used other than the light oil already on the Segnuts.

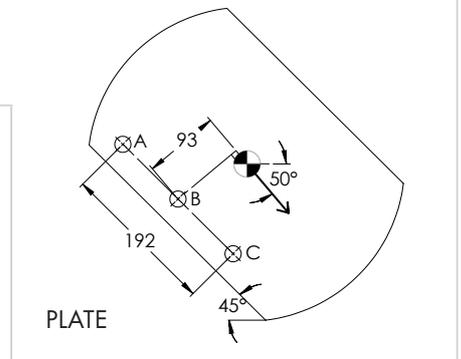


CONDITIONS

In these tests, the 10.5 Ton screen was operated at or around 830 rpm with an amplitude of 10 mm (other speeds and amplitudes were also tested as JOEST Australia uses the exciter test bed for quality assurance testing different exciters before delivery to customers). This duty cycle results in approximately 7.5 G acceleration at the test piece and 1.2 kN of shear force on the critical joint.

RESULT

No nut rotation and no slip/relative movement of the plate was observed after approximately 80 hrs of testing. The failure mode of this type of joint is generally accepted as having a high probability of occurring within the first 15 to 30 minutes of application – once transverse slip occurs; self-loosening can take seconds.



Please consult one of Engentus' experts before using Segnuts in vibrating applications.