MITSUBISHI HEAVY INDUSTRIES MARINE MACHINERY & ENGINE CO., LTD. SERVICE INFORMATION

MITSUBISHI HEAVY INDUSTRIES MARINE MACHINERY & ENGINE CO., LTD.
MARINE ENGINE DIVISION, SERVICE ENGINEERING SECTION
1-1, WADASAKI-CHO 1-CHOME, HYOGO-KU, KOBE 652-8585, JAPAN
TEL. +81-78-672-4083 (direct), e-mail: dsales@mhi-mme.com (parts & engineer order), dserv-eng@mhi-mme.com (technical inquiry)

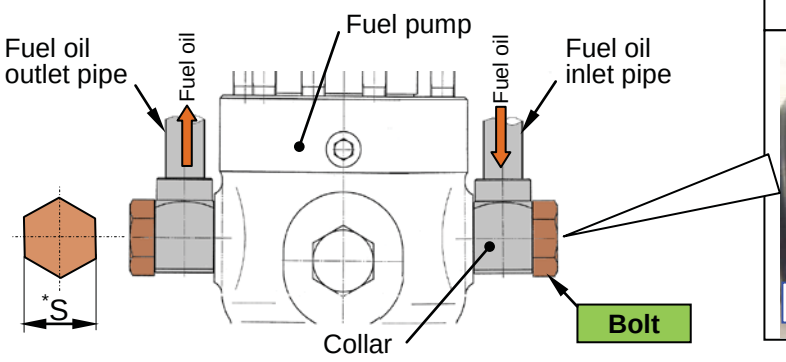
Confidential

Subject :

Tightening Standard of Bolt for Fuel Oil Inlet/Outlet Branch Pipe

Application	Mitsubishi-UEC Diesel Engine
Type	UEC (Refer to table)
No.	MSI-1559E Rev.*5*
At early opportunity	

It has been reported from some vessels in service that bolts for fuel oil inlet/outlet branch pipe were cracked. The crack seemed to be caused by over tightening of a bolt.
Therefore, the tightening standard of the bolt is shown in page 2/E. Please be careful about tightening the bolts when fitted the inlet/outlet branch pipe on the fuel pump.



An example of crack of bolt

Application engine type and thread size and width across flat (S) of Bolt

Engine Type		Bolt	
		Thread Size	*Width across flat dimensions (S) (mm)
LS	60LS	M45 x 3	65
LSII	33LSII, 37LSII, 43LSII	M26 x 1.5	46
	50LSII, 60LSII	M45 x 3	65
LSII-Eco	60LSII-Eco	M45 x 3	65
LSE	33LSE, 35LSE	M26 x 1.5	46
	45LSE, 50LSE, 52LSE, 60LSE	M45 x 3	65
	68LSE	M56 x *2*	75
LSE-Eco	35LSE-Eco*	M26 x 1.5	46
	45LSE-Eco, 50LSE-Eco, 52LSE-Eco, 60LSE-Eco	M45 x 3	65

・75LSII, 85LSII (C), 80LSE-Eco, 50LSH, *35LSE-Eco*(same engines) and 33LSE-Eco* are excluded because these engines have flange connection.
・Because there are special bolts, thread size and width across flat dimensions(S) are referred to table above.

Plan record

Rev.1 Tightening method is revised. 7th Oct. 2015 K.Y, D.Y, K.Y
Rev.2 Engine type, bolt size is revised. 20th Nov. 2015 K.Y, D.Y, K.Y
Rev.3 Revised tightening method. 23rd May 2016 K.Y, D.Y, K.Y
Rev.4 Added width across flat dimension of bolt.18th Nov. 2016
Rev.5 tightening standard of bolt is reconsidered and others.
9th Feb. 2017

Approved	K. Watanabe	MARINE ENGINE DEVISION
Checked	D. Yasuda	SERVICE ENGINEERING SECTION
Designed	K. Yoshimura	DATE OF REVISED: 9th Feb. 2017

Tightening standard of bolt

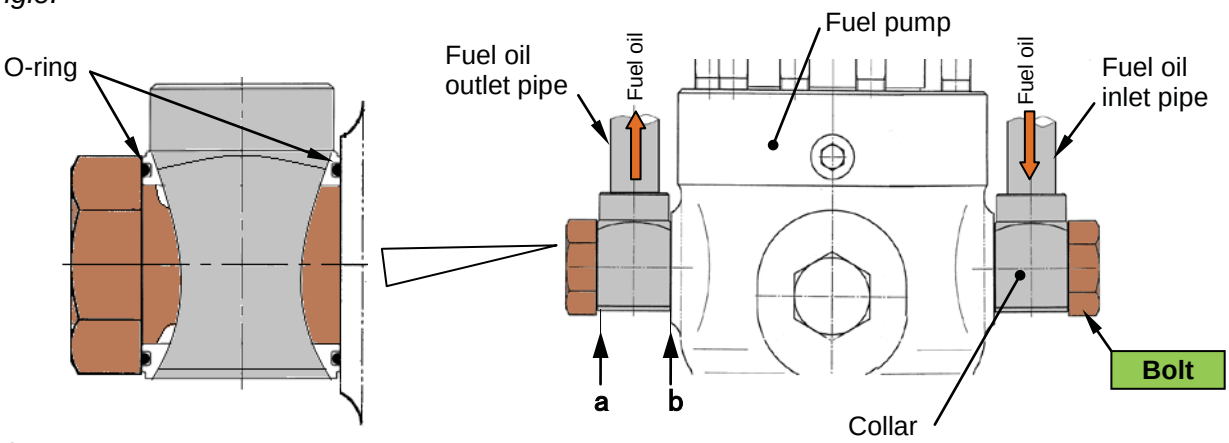
Thread size of bolt	M26 x 1.5	Tightening torque	* 68Nm (6.9kgf･m)	Note : *Tightening torque values are for reference.
		Tightening angle	6°	
	M45 x 3	Tightening torque	* 200Nm (20.4kgf･m)	
		Tightening angle	5°	
	M56 x *2*	Tightening torque	* 370Nm (37.7kgf･m)	
		Tightening angle	7°	

Tightening method

The seal has two kinds of O-ring type and metal gasket type. After seal specification of the ship is confirmed, please tighten the bolt by following methods. In addition, please confirm that the We recommend you to renew the O-ring and gasket at every overhaul, because the damage of O-ring or gasket causes the oil leakage.

O-ring type

Before tightening the bolt, thread size of bolt shall be confirmed. When tightening the bolt for fuel oil inlet/outlet branch pipe, make sure that there is no gap between the bolt and collar(a) and between collar and fuel pump surface(b). Then, tighten the bolt with above *tightening angle.*



Gasket type

Before tightening, the thread size of bolt should be confirmed. When tightening the bolt for fuel oil inlet/outlet branch pipe, it shall be tightened lightly by hand using spanner. At this time, make sure that there is no gap between the bolt and gasket (c) and between gasket and fuel pump surface (d). Then, tighten the bolt with above *tightening angle*.