

## Type Approval Certificate

*This is to certify that the undernoted products have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.*

This certificate is issued to:

<b>MANUFACTURER</b>	DEUKWOO Industries		
<b>MANUFACTURER ADDRESS</b>	12-9 Jangansandan 1-ro, Gijang-gun, Busan, Korea		
<b>PLACE OF PRODUCTION</b>	12-9 Jangansandan 1-ro, Gijang-gun, Busan, Korea		
<b>TYPES</b>	Grating fastener		
<b>DESCRIPTION</b>	3/4 individual wings mechanical fastening system, comprising M-Clip, M-Clip Cover, Punched Bearing Bar, Sliding Cover, L-Bending Grating, Steel Grating		
<b>TRADE NAME</b>	DW M-CLIP		
<b>APPLICATION</b>	For use in fastening to steel grating in marine, offshore and industrial environments in compliance with ISO 14122-2:2016 minimum design load.		
<b>SPECIFIED STANDARD</b>	Lloyd's Register's Rules and Regulations for the Classification of Ships, 2019. Lloyd's Register's Rules and Regulations for the Classification of Offshore Units, July 2019.		
<b>RATINGS</b>	<p>M-Clip: ASTM 316L, Adapter: ASTM A276 316L, Washer: Teflon &amp; Threaded stud connections: ASTM A276 316L</p> <table> <tr> <td> <p><u>4 individual wings:</u></p> <ul style="list-style-type: none"> <li>• DW M-CLIP-4-25 25</li> <li>• DW M-CLIP-4-25 30</li> <li>• DW M-CLIP-4-25 32</li> <li>• DW M-CLIP-4-25 35</li> <li>• DW M-CLIP-4-25 38</li> <li>• DW M-CLIP-4-25 40</li> <li>• DW M-CLIP-4-25 44</li> </ul> </td> <td> <p><u>3 individual wings:</u></p> <ul style="list-style-type: none"> <li>• DW M-CLIP-3-25 25 25</li> <li>• DW M-CLIP-3-25 25 30</li> <li>• DW M-CLIP-3-25 25 32</li> <li>• DW M-CLIP-3-25 25 35</li> <li>• DW M-CLIP-3-25 25 38</li> <li>• DW M-CLIP-3-25 25 40</li> <li>• DW M-CLIP-3-25 25 44</li> </ul> </td> </tr> </table> <p>Select the M-Clip as per the manufacturer's grating bar width and thickness calculation.</p>	<p><u>4 individual wings:</u></p> <ul style="list-style-type: none"> <li>• DW M-CLIP-4-25 25</li> <li>• DW M-CLIP-4-25 30</li> <li>• DW M-CLIP-4-25 32</li> <li>• DW M-CLIP-4-25 35</li> <li>• DW M-CLIP-4-25 38</li> <li>• DW M-CLIP-4-25 40</li> <li>• DW M-CLIP-4-25 44</li> </ul>	<p><u>3 individual wings:</u></p> <ul style="list-style-type: none"> <li>• DW M-CLIP-3-25 25 25</li> <li>• DW M-CLIP-3-25 25 30</li> <li>• DW M-CLIP-3-25 25 32</li> <li>• DW M-CLIP-3-25 25 35</li> <li>• DW M-CLIP-3-25 25 38</li> <li>• DW M-CLIP-3-25 25 40</li> <li>• DW M-CLIP-3-25 25 44</li> </ul>
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<b>OTHER CONDITIONS</b>	
	<ol style="list-style-type: none"><li>1. M-CLIP Fasteners are to be selected, installed in accordance with the manufacturer's instructions and recommendations.</li><li>2. For use on LR Classed ships, the locations and systems for which they are to be used are to be to the satisfaction of the attending surveyor.</li><li>3. The minimum thickness of the base material is not to be less than 8 mm, through penetration of base steel is not allowed.</li><li>4. The maximum tightening torque of adapter nut fitted to the threaded fastener is not to be more than 8 Nm.</li><li>5. The end user must ensure that the base and fastened materials possess adequate corrosion resistance for the environments in which they are to be used.</li><li>6. The minimum strength of the base material should be not less than: Carbon steel: 355 N/ mm<sup>2</sup></li><li>7. Marked with the following details:<ul style="list-style-type: none"><li>• Manufacturer's name or trademark.</li><li>• Type designation.</li></ul></li></ol>

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. LR2003480TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.

M.H.M.Rila  
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A member of the Lloyd's Register group