

# TEST REPORT

SHEFFIELD TESTING LABORATORIES Ltd.

SERIAL NUMBER  
1110165

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## 4. Testing of behaviour under load

### Assessment of results using the variables method

Formulae  $z(\Delta_1) = \bar{x}(\Delta_1) - k_s s(\Delta_1)$  and  
 $z(\Delta_2) = \bar{x}(\Delta_2) - k_s s(\Delta_2)$

Where  $z(\Delta_1)$  = test value of series of measurements of  $P_{\max}(\Delta_1)$   
 $z(\Delta_2)$  = test value of series of measurements of  $P_{\max}(\Delta_2)$   
 $\bar{x}(\Delta_1)$  = mean load in kN for series of measurements of  $P_{\max}(\Delta_1)$   
 $\bar{x}(\Delta_2)$  = mean load in kN for series of measurements of  $P_{\max}(\Delta_2)$   
 $k_s = 1.65$  for a sample size of 50  
 $s(\Delta_1)$  = estimate of the standard deviation from a series of measurements  
for  $P_{\max}(\Delta_1)$   
 $s(\Delta_2)$  = estimate of the standard deviation from a series of measurements  
for  $P_{\max}(\Delta_2)$

From test results :-  $\bar{x}(\Delta_1) = 14.04 \text{ kN}$   
 $\bar{x}(\Delta_2) = 24.74 \text{ kN}$   
 $s(\Delta_1) = 1.21 \text{ kN}$   
 $s(\Delta_2) = 1.55 \text{ kN}$

$\therefore z(\Delta_1) = \underline{12.04 \text{ kN}}$  and  $z(\Delta_2) = \underline{22.19 \text{ kN}}$

Acceptance criteria :-

If  $z(\Delta_1) \geq L(\Delta_1)$  and  $z(\Delta_2) \geq L(\Delta_2)$ , the prototype is accepted.  
If  $z(\Delta_1) < L(\Delta_1)$  and  $z(\Delta_2) < L(\Delta_2)$ , the prototype is rejected.

Requirements from BS 1139 - EN 74 table 1, columns 5 and 6 for couplers :-

Class A  
 $L(\Delta_1) = 6 \text{ kN}$   
 $L(\Delta_2) = 8.5 \text{ kN}$

*From the results, the prototype is accepted for Class A for behaviour under load*

Measured values and five load-displacement curves (charts 1-10) are detailed in Appendix 1.

The charts for delta 2 curves have been omitted from this report because no discernible movement was detected at the delta 2 position.

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## 5. Determination of the ultimate load

Results of tests :-

Test Number	Maximum Load - kN
1	24.92
2	21.24
3	21.04
4	29.66
5	27.06
6	27.14
7	20.00
8	20.54
9	19.58
10	23.58

Acceptance criteria for minimum bearing load (L)

Class A = 17.0 kN

*From the results, the prototype is accepted for Class A for ultimate bearing load.*

Please note that swivel couplers can only be Class A and should not be marked as Class B.