



DET NORSKE VERITAS PTE. LTD.

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Report no. : PP062109-1343
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CERTIFICATE OF CALIBRATION

This calibration of the force measuring system is performed in accordance with Det Norske Veritas' calibration procedure QAD-SL-10, written with reference to ISO 7500-1:2004 Part1 standard. The reference standard used is traceable to NPL UK or DKD Germany.

DETAILS OF EQUIPMENT	TEST BED	INDICATOR	CALIBRATOR	INDICATOR
Manufacturer :	Wirop	Wirop	Veccer	HBM/FGP/Daytronic
Type :	WP- 3000	C171-01DX	S1142	DK38S6/Beta-M/2107C
Serial no. :	0904	-	432012,432020,432010&452019	38488/24340022/AC0817
Rated capacity :	3000000 kgf	3000000 kgf	8000 kN	-
Sensitivity (old) :	-	-	-	-
Smallest count :	-	0.01 kgf	-	0.00001/0.0001 mv/V
Readability :	-	0.01 kgf	-	0.0001 mv/V
Ambient temperature :	32.0 deg C	-	25.8 & 26.5 deg C	-
Date of calibration :	21-Nov-2013	-	29,31-Oct & 12-Nov-2013	-
Report no. :	-	-	PP062109-1254 to 1257,1262,1263&1330	-
Class/Nominal Accuracy :	-	-	0.5 %	-

Indicated load in kgf	True load				Repeatability error (%)	Accuracy error (%)	Regressed load in kgf	Regressed A.E. (%)
	Initial	(1)	(2)	(3)				
600000.00	1.6457	1.5334	1.5373	1.5352	5860.00	0.25	0.41	-
900000.00	2.4352	2.3121	2.3129	2.3233	8836.76	0.48	-0.12	-
1200000.00	3.2251	3.0978	3.0932	3.0902	11807.46	0.25	-0.33	-
1500000.00	4.0258	3.8550	3.8759	3.8768	14782.39	0.56	-0.49	-
1800000.00	4.8338	4.6230	4.6266	4.6302	17691.51	0.16	-0.22	-
2400000.00	6.4199	6.2047	6.1735	6.1633	23661.90	0.67	-0.53	-
3000000.00	7.5375	7.7648	7.7304	7.7325	29677.91	0.44	-0.87	-
** R.I. in kgf	0.00	0.00	0.00	0.00	Note : R.I. = Zero load reading 300kgf.		A.E. = Accuracy Error	

Note : * True load has been corrected for the weights of shimming plate and reference loadcell which is 0.00 kN
 The estimated expanded uncertainties associated with these forces are within 1.08% of indicated load at approximately 95.45 % confidence level with k = 2.00
 ** The machine average of initial reading is 2.06 tonnes which can not be offsetted.

Linear regression equation (y = a + b x) : y is in kgf and x is in kgf
 Intercept , a : - kgf
 Gradient , b : -
 Maximum initial relative error of accuracy : -6.22 %
 Maximum relative error of accuracy : -0.87 %
 Maximum relative error of repeatability : 0.67 %
 Maximum relative error of zero : 0.00 %
 Maximum relative error of relative resolution : 0.00 %
 Nominal accuracy of load cell : 3.0 %
 Sensitivity (new) : -
 Calibrated range : 600000.00 to 3000000.00 kgf (Compression)
 Submitted by : Gaylin Malaysia Sdn Bhd
 PLO 475C Jalan IPIL, PO Box 91 Kawasan Perindustrian
 Tanjung Langsat 81707 Pasir Gudang, Johor, Malaysia.

Calibrated by : Zaw Htut Htut T

Checked by :

[Signature]

Approved by :

[Signature]
Gao Yan
 Engineer
 Materials Technology and
 Structural Integrity Testing Laboratories

TEST BED (4 X 800Ton)-Nov-2013