



Thursday Jan-08-2015

From:

Cameron Canada Corporation
3707 97 St.

Edmonton, Alberta, Canada
T6E 6J2
780-468-2732

www.c-a-m.com

To:

..

Subject:

Serial: 120427407

Quantity/Series: 50

Comment:

Part Number: 5A-T3R10S20LZ3

Description: 1" RP 2000 WOG FNPT SLT, FIRESAFE, ANTI

Sales Order: N/A

Purchase Order: N/A



Thursday Jan-08-2015

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Cameron Canada Corporation
3707 97 St.
Edmonton, Alberta, Canada
T6E 6J2
780-468-2732

To:

..

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Document Summary Page

The MTR's are printed in the following order:

#	Heat #	Heat Code	Part Description	Product
1	L	LOC	Nutron T3, B3, B2, TT Sour Low Temp.	--LOC
2	Hydro Test	598	API 598	-Hydro Test
3	D101D916		BODY, 7/8" 4000 WOG T3	5A-10001032400
4	D70456	HE	FORGING #974,CAP,1" RP 4000 WOG FNPT,AST	5A-8110101032400
5	HN91		CAP, 1" RP 4000 WOG FNPT	5A-1010101032400
6	R6271		STEM,7/8",ANTI-STATIC, ASTM A564 17-4	5A-11301013617001
7	S8313		BALL,7/8",w/1/8" HOLE FOR ANTI- STATIC SP	5A-11501041617026



VALVES & MEASUREMENT
Cameron Canada Corporation
3707 - 97 Street
Edmonton Alberta Canada T6E 6J2
Phone 780.463.6868
Fax 780.465.1244
www.c-a-m.com

GENERAL LETTER OF COMPLIANCE

for:

**Nutron Models
T3, B3 & B2 & TT**

Style 'L': Sour Low Temperature Service

Cameron Valves & Measurement hereby certifies that the design, fabrication, testing and quality control of the above NUTRON brand ball valves for Sour Low Temperature Service have been made in accordance with the following applicable standards (latest edition in effect at time of manufacture): API 598 (1-1/2" and smaller), API 6D (TT only), ASME B16.34, CSA Z245.15 Sour Service (2" FP and larger) and V&M Engineering Standards. As part of compliance to these specifications, the valves have been marked in accordance with MSS SP-25. The valve has also been marked "SOUR" as required by CSA Z245.15 marking requirements for Sour Service.

The materials of construction for this valve conform to the metallurgical requirements of NACE MR0175/ISO 15156:2009 (Parts 1 & 2 for Carbon & Alloy Steels in SSC Region 3 Sour Service and Parts 1 & 3 for CRA's as specified in CSA Z245.15 Chapter 13). Per NACE MR0175-2009/ISO 15156, it is the customer's/user's responsibility to ensure that the valve materials will be satisfactory in the intended service.

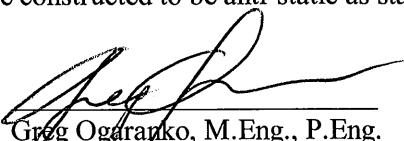
The minimum service temperature of these valves is -46°C/-50°F. Impact testing has been performed in accordance with applicable ASTM requirements and those of CSA Z245.15 for Category II M45C Service.

The 'Z' option code designation at the end of a figure number indicates that the valve meets the requirements of API-607 Fourth Edition, May 1993.

These valves (1-1/2" and larger) conform to the Pressure Equipment Directive requirements and are marked as CE certified (Certificate #8888-001-2002).

The B2 and TT valve models are constructed to be anti-static as standard.

Approved by:


Greg Ogarko, M.Eng., P.Eng.
Engineering Manager

**VALVES & MEASUREMENT**

Cameron Canada Corporation
3707-97th St.
Edmonton Alberta Canada T6E 6J2
Phone 780.468.2732
www.c-a-m.com

CERTIFICATE OF CONFORMANCE**API 598 Pressure Testing – Carbon Steel
(2" RP and Smaller)**

COMPLIANCE: These valves are tested in accordance with Cameron Valves & Measurement's standard procedures and API Standard 598, as per the chart below.

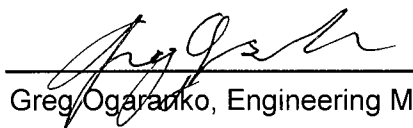
Test durations are 15 seconds in length as a minimum. Test duration is defined as the period of inspection after the valve is fully prepared and is under full pressure.

Butt weld end valves shall be tested in accordance with the ANSI rating.

Actual test pressure is rounded to next highest increment on the gauge.

Carbon Steel
Shell and Seat Test Pressures
(Table Based on Rating for Group 1.1 Materials per ANSI B16.34)

Valve Class	Maximum Working Pressure	Hydrostatic Shell Test Pressure (PSI)	Air Seat Test Pressure +/- 10 PSI
150 ANSI	285	450	80
300 ANSI	740	1125	80
600 ANSI	1480	2225	80
800 ANSI	1975	3000	80
900 ANSI	2220	3350	80
1500 ANSI	3705	5575	80
2500 ANSI	6170	9275	80
275 WOG	275	425	80
720 WOG	720	1100	80
1000 WOG	1000	1500	80
1440 WOG	1440	2175	80
1500 WOG	1500	2250	80
2000 WOG	2000	3000	80
2160 WOG	2160	3250	80
3000 WOG	3000	4500	80
3600 WOG	3600	5400	80
4000 WOG	4000	6000	80
5000 WOG	5000	7500	80
6000 WOG	6000	9000	80


Greg Ogaranko, Engineering Manager



客户名称 Customer: CAMERON
日期 Date AUGUST 28, 2014
编号 No. QZJMLT8301139-08003

page 1 / 1

CERTIFICATION OF COMPLIANCE

DATE: May 26, 2011

TO: CAMERON

PART NUMBER: P0974-1
OEM214

CUST. ORDER #: 4502772647

SALES ORDER #: SO000018702

PART NAME: 1' RP NPT 4000 CAP

QUANTITY: 2100 Pieces

I hereby certify that the material covered by this Certificate of Compliance has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract or purchase order and that documentary evidence of the tests or release certificates from the place of origin, are on file in the records of this office.

Authorized by: _____



Quality Representative and Stamp

APPROVED

By laia at 11:45 am, 5/31/11



*** CERTIFICATE OF CONFORMANCE ***

IMT - FORGE DIVISION (P.C. DROP FORGE)

837 REUTER ROAD
PORT COLBORNE, ONTARIO, CANADA
P.O. BOX 100 L3K 5V7
Telephone: (905) 834-7211
Fax: QA (905) 834-6018

TO:
CAMERON C/O I.M.T

DATE OF ISSUE: 23-Mar-11
PART NUMBER: 5A-8110101032400 (OEM214PCDF)
DESCRIPTION: 1" RP NPT 4000 CAP
DIE NO.: P0974-1
ORDER NO.: XXXXXXX
QUANTITY: 10,067 pcs.
HEAT CODE: HE
HEAT NO.: D70456
MATERIAL SPEC.: ASTM A105/A30-LF2 PER 5A-ES-32

CHEMICAL ANALYSIS

Carbon	Manganese	Phosphorus	Sulphur	Silicon	Chromium	Molybdenum	Nickel	Copper	Vanadium
0.200	1.210	0.009	0.018	0.210	0.050	0.010	0.040	0.110	0.000
Niobium									
0.014									

PHYSICAL ANALYSIS

Charpy Results	Testing Temperature	Yield Strength (PSI)	Tensile Strength (PSI)	Elongation (%)	Reduction of Area (%)	Hardness (BHN)
83-57-87	-50°F	49,700	76,300	34.0%	71.0%	148

HEAT TREATMENT: NORM PER ASTM A350 LF2
COPY OF MILL CERT, HEAT CERT AND TEST RESULTS ATTACHED
TEST MEASUREMENTS IN (PSI)
COMPLIES TO EN 10204 3.1 : 2004
PARTS TO BE MACHINED AT IMT

CERTIFICATION: I hereby certify that the material covered by this Certificate of Conformance has been inspected and tested and conform to all specifications relevant thereto in accordance with the conditions of the contract or purchase order and that documentary evidence of the tests or release certificates from the place of origin, are on file in the records of this office.

Authorized Signature
Ken McClellmont, QA Technician

APPROVED

By laia at 11:46 am, 5/31/11

1 Incoir Longueuil
Incoir Works

CERTIFICAT D'ESSAIS
TEST CERTIFICATE

ArcelorMittal

ArcelorMittal Montreal Inc.

COMMANDE SALES ORDER	BON DE COMMANDE DU CLIENT CUSTOMER'S ORDER NO.	DATE COMMANDÉE DATE ENTERED	No CERTIFICAT CERTIFICATE No	DATE EXPÉDITION DATE SHIPPED
L42951	11085-1	2008/08/14	190089	2008/10/14

RENDU À - SOLD TO

INGERSOLL MACHINE & TOOL CO. LTD. 13947501
347 King St. West
Ingersoll ON CA N5C 3K6

EXPÉDIÉ À - SHIPPED TO

P C DROP FORGINGS LTD 11930002
837 Reuter Rd.
Port Colborne ON CA L3K 5V7

RTI. TEM	DESCRIPTION	No CAMPAGNE SCHEDULE No.	POIDS EXPÉDIÉ WEIGHT SHIPPED	COULÉE HEAT
00001	ROUND - SBQ 1.75 IN, 19' 6" A105 ASTM A105/A350 LF2 PER SA-ES-32 REV 03	L0470 No MATÉRIEL: MATERIAL No 10117505 No PIÈCE: PART No P0945/P0974	75,120 LB CONNAISSANCE BILL OF LADING 80071434	D70456

ANALYSE CHIMIQUE - CHEMICAL ANALYSIS

COULÉE HEAT	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Nb	Al _T	Al _S	N ₂
070456	.20	1.21	.009	.018	.21	.11	.04	.05	.010	.000	.014	.020	.018	.0043
COULÉE HEAT	Sn	Ti	B	Ca	Pb	As	Co	Sb	Te	Bi	Se	D.I.	C.E.	
070456	.010	.003	.0001	.0018	.000	.004	.003	.002	-	-	-	-	-	.424

ESSAI JOMINY - JOMINY TEST (HRC)

COULÉE HEAT	J1	J2	J3	J4	J5	J6	J7	J8	J10	J12	J14	J16	J20	J24	J28	J32	J0
070456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

PROPRIÉTÉS MÉCANIQUES - MECHANICAL PROPERTIES

COULÉE HEAT	L.E. Yield Strength psi (MPa)	L.U. Ulti. Tens. Strength psi (MPa)	% ALL ELONG.	Striction % Reduction Area	Dureté Hardness BHN (HRC)	Grosneur de Grain Grain size	Ratio Reduction Ratio
070456	53359	82441	34.2"	67	163,167	-	-

RÉSULTATS D'ESSAIS SPÉCIAUX - SPECIAL TEST RESULTS

COULÉE-HEAT	AUTRES ESSAIS - OTHER TEST	RÉSULTATS - RESULTS
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MATERIAL WAS NOT EXPOSED TO MERCURY OR ANY METAL ALLOY THAT IS LIQUID
AT AMBIENT TEMPERATURES DURING PROCESSING OR WHILE IN OUR POSSESSION.
THE MATERIAL IS LEAD FREE AND THIS MATERIAL IS NOT REPAIRED BY WELDING.

974
DIE 945 - HE
OK ASTM A105/A350 LF2 per SA-ES-32

APPROVED

By laja at 11:47 am, 5/31/11

OCT - 15 - 2008

Approuvé par :

Approved by :

Jean Larivée

INSPECTEUR Métallurgie A/U
INSPECTOR Metallurgy and Q/A

TO: PC DROP

Bodycote**TESTING GROUP**

www.bodycote.com

www.bodycotetesting.com

Test Certificate

P.C. Drop Forgings Limited
A Member of Ivaco Inc.
P.O. Box 100
837 Reuter Road
Port Colborne, Ontario
L3K 5V7
Attn: Dave Stutz

REF No
Ord No

G810066 : Issue 1
Dave Stutz

Date Tested
Date Reported

11/12/08
11/12/08

Item - Ref: Die #945 "HE", Heat #D70456
Specification - 5A-ES-32 Rev. 03

	Dimensions [in]	Area [in ²]	GL [in]	0.20%YS [psi]	UTS [psi]	%EL	%RA	Comments
001:Parent	0.2560	0.0515	1.00	49700	76300	34	71	Nil

	Position	Dimensions [mm]	Denomination	Test Temp [°F]	Energy Absorbed [Joules]	Average [Joules]	Comments
002:Parent	N/A	10x10x2V	N/A	-50.0	83, 57, 87	75	Nil

	Method	Load	Results	Comments
003:Parent Hardness	Brinell HBW	3000kgf	148	Nil

Certificate Comments

The process represents the actual attributes of the material furnished and indicates full compliance with all applicable specification and contract requirements supplied to us by IMT PC Forge.

Item 01: Conforms to the tensile requirements of 5A-ES-32 Rev. 03.
Item 02: Conforms to the impact requirements of 5A-ES-32 Rev. 03.
Item 03: Conforms to the hardness requirements of 5A-ES-32 Rev. 03.

APPROVED

By laia at 11:48 am, 5/31/11

Bodycote Testing Group
15 High Ridge Court • Cambridge • Ontario • Canada • N1R 7L3 • Tel: +1 (519) 621-8191 • Fax: +1 (519) 621-7700



Test Certificate

REF No

G810066

: Issue 1

P.C. Drop Forgings Limited
Ref: Die #945 "HE", Heat #D70456

Tested by

Bill Bartlett


.....
For and on behalf of
BODYCOTE TESTING GROUP

Don Wells
Mechanical Dept. Manager

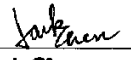
MTR COVER SHEET

Company: ZINTRON INDUSTRIAL LTD
Address: No.198-1, Sinhe Rd, Hsin Feng Hsiang,Hsinchu, Taiwan, R.O.C.
Phone: 886-3-568-7100
Fax: Line 1: 886-3-568-7119
E-Mail: zintron@zintron.com.tw

Date:	2014/11/21				
Customer :	CAM DISTRIBUTED VAL EDMONTON				
Address:	COOPER CAMERON CANADA CORP 3707-97 Street Edmonton, Alberta T6E 6J2				
Customer PO:	4510530775	Item No.	40	Date:	2015/2/10
Part No.	5A-1010101032400 REV. 03	Part Desc.:	CAP,1" RP 4000 WOG FNPT,ASTM A350 (LATEST EDITION) Gr LF2		
Heat No.	HN96_	Forging Heat Treatment No.	1411058302		
	HN91_		1406208301		
	HN94_		1408148305		

S.O.No.:		Item No.:		Date:	
Quantity:		Weight:			

We hereby certifies that the parts shipped on your purchase order specified above have been produced in accordance with purchase order instructions and specification.

Authorized Signature: **APPROVED BY :** 
QA Manager : Jack Chen
Print Name: Jack Chen
Title: QA Manager

Original MTR/Certification provided by(attached):

Supplier: ZINTRON INDUSTRIAL LTD
Address: No.198-1, Sinhe Rd, Hsin Feng Hsiang,Hsinchu, Taiwan, R.O.C.
Phone: 886-3-568-7100
Fax: Line 1: 886-3-568-7119
E-Mail: zintron@zintron.com.tw

Note: MTR/Certification shall be legible for electronic archiving.



MTR HEAT NUMBER ANNEX FORM

Part Number: 5A-1010101032400 REV. 03

PO: 4510530775-40

Quantity: 9600[illegible]



Zintron Industrial LTD

No.198-1, Sinhe Rd., Sinfong Township, Hsinchu County 304, Taiwan (R.O.C.)
 Tel : 886-3-568-7100
 Fax : 886-3-568-7119
 E-mail : zintron@zintron.com.tw

[T3-1" R FNPT LF2]

Report No: 2549-347

MILL TEST CERTIFICATE REPORT

Client	Cooper Cameron Valves Canada	Shipping Date	Nov.21.2014
Product	CAP,1" RP 4000 WOG FNPT,ASTM A350 (LATEST EDITION) Gr LF2	Material	ASTM A350 LF2
Order No	4510530775-40	Condition	Forge
Part No	5A-1010101032400 REV. 03		
Order Q'ty	9600 pcs	Shipping Q'ty	9600 pcs

CHEMICAL PROPERTIES

Material Spec. Heat No: Forging Heat Treatment No:	Chemical Composition %															
		C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	Cb	Residue	C.E.	Cr+Mo	
	Max.	0.210	0.300	1.350	0.030	0.030	0.400	0.300	0.120	0.400	0.050	0.020	1.000	0.430	0.320	
	Min.		0.150	0.600												
HN96_ 1411058302		0.200	0.210	0.810	0.015	0.006	0.060	0.130	0.020	0.120	0.002	0.001	0.332	0.380	0.150	
HN91_ 1406208301		0.190	0.200	0.860	0.020	0.010	0.060	0.080	0.010	0.130	0.002	0.002	0.282	0.360	0.090	
HN94_ 1408148305		0.200	0.200	0.830	0.014	0.007	0.050	0.070	0.010	0.130	0.002	0.002	0.262	0.370	0.080	

MECHANICAL PROPERTIES

Material Spec. Heat No: Forging Heat Treatment No:		Tensile Strength	Yield Strength	Elong.%	R.A.%	Hardness1	Hardness2		
	Max.	95000 psi				197 HB	197 HB		
	Min.	70000 psi	36000 psi	22 %	30 %	143 HB	143 HB		
HN96_ 1411058302		75396 psi	54787 psi	35 %	73.6 %	151 HB	148 HB		
HN91_ 1406208301		75709 psi	53478 psi	36.6 %	74.9 %	163 HB	167 HB		
HN94_ 1408148305		77601 psi	51445 psi	38 %	75.6 %	167 HB	165 HB		

Charpy V-Notch Impact Test for Standard Size 10x10mm Specimen

Material Spec. Heat No: Forging Heat Treatment No:	-46°C V- Notch Impact	Impact No.1	Impact No.2	Impact No.3		
HN96_ 1411058302	50.11 ft/lbs	40.74 ft/lbs	58.9 ft/lbs	50.69 ft/lbs		
HN91_ 1406208301	55.05 ft/lbs	93.08 ft/lbs	29.36 ft/lbs	42.7 ft/lbs		
HN94_ 1408148305	56.96 ft/lbs	50.69 ft/lbs	48.67 ft/lbs	71.53 ft/lbs		

Heat Treatment Procedure as follows:

1. Austenitize at 1550-1700°F(843-930°C). Cycle time shall be one hour minimum.
2. Oil quench.
3. Temper at 1100-1300°F(590-704°C),holding at temperature a minimum of 30 min/in.(30min/25mm) of maximum thickness but in no case less than 30 min.
4. Air cool.

- 1.The material specification followed MS-021034-01-02 REV.02.
- 2.C.E.= %C+%Mn/6 + (%Cr+%Mo + %V)/5 +(%Ni+%Cu)/15
- 3.The Charpy V-notch impact test was implemented as below:
 (1)Specimen Size :ASTM E23 10 mm x 10 mm x 55 mm V-Notch
 (2)The test specimen orientation: longitudinal.

We hereby certify that the material provided complies with all CVM requirements as stated in the applicable purchase order and that inspections were performed and certificates issued in accordance with EN 10204, 3.1, 2004.

APPROVED BY :
 QA Manager : Jack Chen



ISO 9001:2008
 Management
 System
 www.tuv.com
 ID 0910089878

MTR TREATMENT ANNEX FORM

[illegible]

豐興鋼鐵股份有限公司
FENG HSIN STEEL CO., LTD.

無放射性污染暨品質證明書
(出廠證明書)
TEST CERTIFICATE

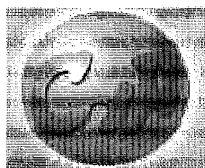
OFFICE : 臺中市后里區中后路702號
702 CHIAHOU ROAD, HOU LI SHUNG
TALCHUNG HSIEN, TAIWAN, ROC
TEL : (04)25565101
FAX : (04)25566955

[illegible]

※就證明本表所列產品，均依材料規格製造及試驗並符合規格之要求
WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS MANUFACTURED AND TESTED WITH
SATISFACTORY RESULTS IN ACCORDANCE WITH THE REQUIREMENT OF THE ABOVE MATERIAL SPECIFICATION

冶金研發處處長
MANAGER
METALLURGICAL R&D DEP.

學外數



Giant Young Machinery Component Parts Co., Ltd.

No. 13 Fang Yuan Ind. Park 4 th Rd. , Chang Hwa Hsien , Taiwan

TEL: 886-4-8965977

FAX: 886-4-8965981

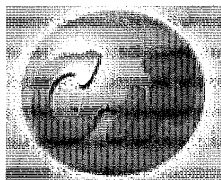
機械性質測試證明 MECHANICAL PROPERTIES CERTIFICATE

材質 (Material): ASTM A350 LF2 報告編號 (Report No): GF20140924048
數量 (Quantity): 1PC 訂單號碼 (Order No): GF1030924
日期 (Date): Sep.24.2014 試片 (Specimen): Forged Specimen
爐號 (Heat No.): HN96 取樣位置 (Location): 1/2 max thickness
熱處理批號 (Forged Heat treatment No.): 1410178308

拉 伸 試 驗 Tension Test							
試 片 Test specimen		抗拉強度 T.S	降伏強度 Y.S	伸長率 Elongation	斷面縮率 R.A	硬度值 1 Surface Hardness 勃氏硬度(表面)	硬度值 2 Surface Hardness 勃氏硬度(表面)
標點長(mm) Gauge Length	直徑 (mm) Dia	kgf/mm ²	0.2% offset kgf/mm ²	%	%	Brinell HB	Brinell HB
50	12.44	53.01	38.52	35	73.6	151	148
		(75396 psi)	(54787 psi)				

Q.A.CHIEF:

陳加鎮



Giant Young Machinery Component Parts Co., Ltd

No. 13 Fang Yuan Ind. Park 4 th Rd. , Chang Hwa Hsien , Taiwan

TEL: 886-4-8965977

FAX: 886-4-8965981

衝擊試驗報告表 IMPACT TEST REPORT

客 戶: 品 名: 檢驗編號:
Customer: Cameron International Cor Product: Forged specimen Application No: GF20140925048

爐 號: 熱處理批號:
Heat no.: HN96 Forged Heat Treatment no.: 1410178308

委託事項: 衝擊試驗 材 質: 檢驗日期:
Job Description: Impact Testing Material: ASTM A350 LF2 Date Issued: Sep.25,2014

1. Testing specification: ASTM A-350 LF2
2. Testing Instrument: Impact Tester
3. Specimen Size :ASTM E23 10 mm x 10 mm x 55 mm V-Notch
4. Testing Temperature: - 50⁰ F
5. The test specimen orientation:long
6. The test specimen taken from 1/2 max thickness

Testing Result:

衝 擊 值			平均值 Average Value(Ft-Lbs)	備註 Remark
Energy Value (Ft-Lbs)				
No. 1	No. 2	No. 3		
40.74	58.90	50.69	50.11Ft-Lbs	

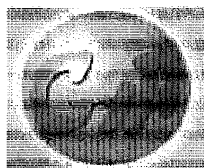
Q.A.CHIEF: 陳加鎮



無放射性污染暨品質證明書
(出廠證明書)
TEST CERTIFICATE

OFFICE : 臺中市后里區甲后埭702號
702, CHIAHOV ROAD, HOU LI SHUNG,
TAICHUNG HSIEN, TAIWAN, ROC
TEL : (04)25585101
FAX : (04)25588955

客戶名稱 CUSTOMER NAME		ASTM A105		產品名稱 PRODUCT		HOT ROLLED STRAIGHT ROUND BAR		證明書編號 CERTIFICATE NO.		234B0223-001													
規格名稱 SPEC.		ASTM A105		產品名稱 PRODUCT		熱軋直棒鋼		交還日期 SHIPPING DATE		2014/04/15 ~ 2014/04/15													
尺寸及規格 MATERIAL		DESCRIP.		拉力試驗 TENSILE		化學成分(%) CHEMICAL ANALYSIS		證明書刊印日期 CERTIFICATE DATE		2014/04/18													
直徑 DIA. (mm)	長度 LEN. (m)	數量 QTY (bol.)	重量 WEIGHT (kg)	爐號 HEAT NO	屈服 Yield (MPa)	抗拉 Tensile (MPa)	伸長率 EL(%)	C	SI	Mn	P	S	NI	Cr	Mo	CU	PB	AI	NB	V	B	CO	
38	6	10	19869	343292				18	15	80	30	30	40	30	12	40			20	30			
								20	30	100	MAX	MAX	MAX	MAX	MAX	MAX			MAX	MAX			
								19	20	80	20	10	6	8	1	13	0		2	2	4	1203415081	
				=H491																			
TOTAL: 10 BUNDLES				19,889 kgs.																			
REMARK:																							
茲證明本公司所列產品均係材料規格製造及試驗並符合規格之要求 WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS MANUFACTURED AND TESTED WITH COMPLIANCE WITH THE ABOVE MATERIAL SPECIFICATION.				冶金研發處處長 MANAGER METALLURGICAL R&D DEP.				2535CF2-2014-				郭志毅											
ISO 9001 ID: 5M8Y004				證明書編號 CERTIFICATE NO.				234B0223-001				交還日期 SHIPPING DATE				2014/04/15 ~ 2014/04/15							
證明書刊印日期 CERTIFICATE DATE				2014/04/18				證明書編號 CERTIFICATE NO.				234B0223-001				交還日期 SHIPPING DATE				2014/04/15 ~ 2014/04/15			



Giant Young Machinery Component Parts Co., Ltd.

No. 13 Fang Yuan Ind. Park 4 th Rd. , Chang Hwa Hsien , Taiwan 2319

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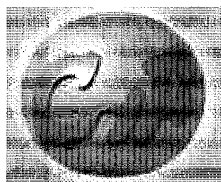
機械性質測試證明 MECHANICAL PROPERTIES CERTIFICATE

材質 (Material): ASTM A350 LF2 報告編號 (Report No): GF20140923014
數量 (Quantity): 1PC 訂單號碼 (Order No): GF1030923
日期 (Date): Sep.23.2014 試片 (Specimen): Forged Specimen
爐號 (Heat No.): HN91 取樣位置 (Location): 1/2 max thickness
熱處理批號 (Forged Heat treatment No.): 1405228304

拉 伸 試 驗 Tension Test							
試 片 Test specimen		抗拉強度 T.S	降伏強度 Y.S	伸長率 Elongation	斷面縮率 R.A	硬度值 1 Surface Hardness 勃氏硬度(表面)	硬度值 2 Surface Hardness 勃氏硬度(表面)
標點長(mm) Gauge Length	直徑 (mm) Dia	kgf/mm ²	0.2% offset kgf/mm ²	%	%	Brinell HB	Brinell HB
25	6.21	53.23	37.60	36.6	74.9	163	167
		(75709 psi)	(53478 psi)				

Q.A.CHIEF:

陳加鎮



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衝擊試驗報告表 IMPACT TEST REPORT

客 戶: 品 名: 檢驗編號:
Customer: Cameron International Cor Product: Forged specimen Application No: GF20140923014

爐 號: 熱處理批號:
Heat no.: HN91 Forged Heat Treatment no.: 1405228304

委託事項: 衝擊試驗 材 質: 檢驗日期:
Job Description: Impact Testing Material: ASTM A350 LF2 Date Issued: Sep.23,2014

1. Testing specification: ASTM A-350 LF2
2. Testing Instrument: Impact Tester
3. Specimen Size :ASTM E23 10 mm x 10 mm x 55 mm V-Notch
4. Testing Temperature: - 50⁰ F
5. The test specimen orientation:long
6. The test specimen taken from 1/2 max thickness

Testing Result:

衝 擊 值			平均值 Average Value(Ft-Lbs)	備註 Remark
Energy Value (Ft-Lbs)				
No. 1	No. 2	No. 3		
93.08	29.36	42.70	55.05Ft-Lbs	

Q.A.CHIEF: 陳加鎮

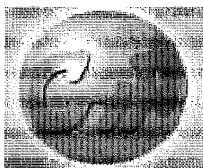


無放射性污染暨品質證明書
(出廠證明書)
TEST CERTIFICATE

OFFICE : 臺中市后里區甲后路702號
702, CHIAHOUI ROAD, HOU LI, SHUNG,
TAICHUNG HSIEN, TAIWAN, ROC
TEL : (04)25565101
FAX : (04)25565955

CUSTOMER NAME	客戶名稱		證明書編號 CERTIFICATE NO.		237B0332-001
SPEC.	規格名稱	ASTM A105	交運日期 SHIPPING DATE	2014/07/16	2014/07/16
PRODUCT			證明書列印日期 CERTIFICATE DATE	2014/07/18	

尺寸及規格 MATERIAL DESCRIP.				爐號 HEAT NO		抗力試驗 TENSILE			化學成分(%)CHEMICAL ANALYSIS												重量單 編號 SHIPPING NO.	
直徑 DIA. (mm)	長度 LEN. (m)	數量 QTY (bbl.)	重量 WEIGHT (kg)	降伏YP /mm ²	抗拉TS /mm ²	伸長率 EL(%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	PB	Al	NB	V	B	CO	
42	6	2	4051	344516			18	15	80	30	30	40	30	12	40			20	30			
42	6	3	5426	344607			20	30	100	MAX	MAX	MAX	MAX	MAX	MAX			MAX	MAX	MAX	MAX	
				HN94			20	21	85	12	9	6	6	1	19	0			2	2	3	1



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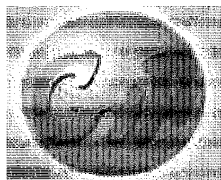
機械性質測試證明 MECHANICAL PROPERTIES CERTIFICATE

材質 (Material): ASTM A350 LF2 報告編號 (Report No): GF20140923012
數量 (Quantity): 1PC 訂單號碼 (Order No): GF1030923
日期 (Date): Sep.23.2014 試片 (Specimen): Forged Specimen
爐號 (Heat No.): HN94 取樣位置 (Location): 1/2 max thickness
熱處理批號 (Forged Heat treatment No.): 1408148305

拉 伸 試 驗 Tension Test							
試 片 Test specimen		抗拉強度 T.S	降伏強度 Y.S	伸長率 Elongation	斷面縮率 R.A	硬度值 1 Surface Hardness 勃氏硬度(表面)	硬度值 2 Surface Hardness 勃氏硬度(表面)
標點長(mm) Gauge Length	直徑 (mm) Dia	kgf/mm ²	0.2% offset kgf/mm ²	%	%	Brinell HB	Brinell HB
25	6.23	54.56	36.17	38	75.6	167	165
		(77601 psi)	(51445 psi)				

Q.A.CHIEF:

陳加鎮



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FAX: 886-4-8965981

衝擊試驗報告表 IMPACT TEST REPORT

客 戶: 品 名: 檢驗編號:
Customer: Cameron International Cor Product: Forged specimen Application No: GF20140923012

爐 號: 熱處理批號:
Heat no.: HN94 Forged Heat Treatment no.: 1408148305

委託事項: 衝擊試驗 材 質: 檢驗日期:
Job Description: Impact Testing Material: ASTM A350 LF2 Date Issued: Sep.23,2014

1. Testing specification: ASTM A-350 LF2
2. Testing Instrument: Impact Tester
3. Specimen Size :ASTM E23 10 mm x 10 mm x 55 mm V-Notch
4. Testing Temperature: - 50⁰ F
5. The test specimen orientation:long
6. The test specimen taken from 1/2 max thickness

Testing Result:

衝 擊 值			平均值 Average Value(Ft-Lbs)	備註 Remark
Energy Value (Ft-Lbs)				
No. 1	No. 2	No. 3		
50.69	48.67	71.53	56.96Ft-Lbs	

Q.A.CHIEF: 陳加鎮

Wen Zone

TUV

ISO 9001
No. 01 100 029186**原 璋 實 業 有 限 公 司****WON ZONE CORPORATION**

3F No. 185 Chung Hwa Road Sec. 2, Chung Li City 32068, Taiwan

32068 桃園縣中壢市中華路二段 185 號 3 樓 統一編號: 16879927

Tel: +886-3-4341 325 Fax: +886-3-4341 525 E-mail: wonzone.taiwan@msa.hinet.net

CERTIFICATE OF CHEMICAL ANALYSIS AND MECHANICAL PROPERTIES						CERTIFICATE NO. 141027- 3 DATE: 27-Oct-14					
To. CAMERON CANADA CORPORATION 3707-97th Street, EDMONTON, AB T6E 6J2, CANADA											
INVOICE NO. WZ-141027A						Your Order No. 4510517522/521523/539725					
MATERIAL SPECIFICATION: ASTM A-564 TYPE 630 H1150D											
Q'TY	PART NAME	DRAWING No.	Heat Code	Mechanical Properties							
				Y.S.(KSI)	T.S.(KSI)	ELO.(%)	HRC	RA (%)	ft-lbf (-75°F)		
				<u>105 min</u>	<u>125 min</u>	<u>16 min</u>	<u>29~33</u>	<u>50 min</u>	<u>15 min</u>		
6,400	5A-11301013617001 Stem 7/8"	#02040	R6271	121	139	22	30	70	92/92/94		
164	5A-11301513617001 Stem 1½"	#02038	FO	127	138	22	32	72	96/86/100		
1,936	5A-11301513617001 Stem 1½"	#02038	FR	119	136	24	32	72	95/97/98		
720	5A-11501013617026 Ball 7/8"	#06082	S8492	116	137	25	32	72	103/95/96		
180	5A-11502013617015 Ball 2"	#06080	S8421	110	135	22	30	70	84/84/86		
Heat Code	Chemical Composition (%)										
	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Nb+Ta	
	<u>0.07max</u>	<u>1.0max</u>	<u>1.0max</u>	<u>.030max</u>	<u>.040max</u>	<u>15-17.5</u>	<u>3.0-5.0</u>	<u>0.5 max</u>	<u>3.0-5.0</u>	<u>0.15-0.45</u>	
R6271	0.02	0.64	0.49	0.023	0.029	15.04	4.36	0.19	3.40	0.23	
FO	0.02	0.63	0.51	0.023	0.029	15.17	4.32	0.18	3.40	0.23	
FR	0.02	0.63	0.46	0.018	0.030	15.20	4.33	0.17	3.46	0.22	
S8492	0.02	0.63	0.45	0.025	0.029	15.27	4.22	0.18	3.47	0.22	
S8421	0.02	0.63	0.46	0.018	0.030	15.20	4.33	0.17	3.46	0.22	
Solution Treatment: 1900°F for 30 Min/Inch (Minimum of 1 Hour), Fast Air Cooling to below 90°F											
Double Aged at 1150°F for 4 hours minimum and cooled to below 90°F in air											
Charpy Impact Test Specimens: 10*10*55mm(Longitudinal)											
Re Orig Heat #SE0302-G80 for R6271; #SE0082-BA2 for FO; #SE1134-GK0 for FR;											
#SE0979-G80 for S8492; #SE1134-GE8 for S8421											
NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B											
QUALITY CONTROL INSPECTOR						MANAGER					
Sandy Yeh						Grant Hsu					

APPROVED

By laia at 8:04 am, 11/20/14



ISO 9001
No. 01 100 029186

原 璋 實 業 有 限 公 司

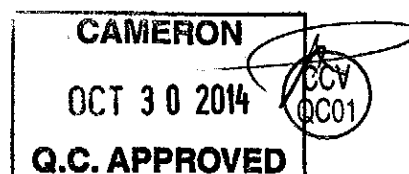
WON ZONE CORPORATION

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32068 桃園縣中壢市中華路二段 185 號 3 樓 統一編號: 16879927

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CERTIFICATE OF CHEMICAL ANALYSIS AND MECHANICAL PROPERTIES					CERTIFICATE NO. 141013- 2 DATE: 13-Oct-14			
To. CAMERON CANADA CORPORATION 3707-97th Street, EDMONTON, AB T6E 6J2, CANADA								
INVOICE NO. WZ-141013A					Your Order No. 4510471667			
Material Specification: ASTM A351 CF8M					Heat Treatment: Solution Annealed (1050°C min./2hrs/water)			
Q'TY	PART NAME	DRAWING No.	Heat Code	Mechanical Properties				
				T.S.(MPa)	Y.S.(MPa)	ELO.(%)	HB	
				485 min	205 min	30 min	140-237	
1,000	5A-11500541617015 Ball ½"	#06076	S8312	517	229	47	168	
6,120	5A-11501041617026 Ball 7/8"	#06082	S8313	548	251	49	144	
768	5A-11501541617015 Ball 1½"	#06079	S8315	521	307	49	156	
450	5A-11502041617015 Ball 2"	#06080	S8318	530	278	46	154	
162	5A-11503041617015 Ball 3"	#06083	S8342	523	286	48	155	
Heat Code	Chemical Composition (%)							
	C	Mn	Si	S	P	Cr	Ni	Mo
	0.08max	1.5max	1.5max	.040max	.040max	18-21	9-12	2.0-3.0
S8312	0.0465	0.7673	0.4173	0.0071	0.0377	18.6200	9.4424	2.2732
S8313	0.046	0.91	0.512	0.0101	0.035	18.50	9.36	2.13
S8315	0.043	1.05	0.498	0.0098	0.0297	18.59	9.47	2.14
S8318	0.047	0.89	0.527	0.0099	0.0314	18.52	9.47	2.22
S8342	0.056	1.11	0.569	0.0083	0.0302	18.69	9.46	2.21
Re: Orig Heat # D598 for S8312; #140826-03-3 for S8313; #B140925-16-2 for S8315; B140909-09-2 for S8318; #B140821-15-3 for S8342								
NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B								
QUALITY CONTROL INSPECTOR					MANAGER			
Sandy Yeh					Grant Hsu			





ISO 9001
No. 01 100 029186

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INVOICE NO. WZ-141013A					Your Order No. 4510471667				
Material Specification: ASTM A351 CF8M					Heat Treatment: Solution Annealed (1050°C min./2hrs/water)				
Q'TY	PART NAME	DRAWING No.	Heat Code	Mechanical Properties					
				T.S.(MPa)	Y.S.(MPa)	ELO.(%)	HB		
				<u>485 min</u>	<u>205 min</u>	<u>30 min</u>	<u>140-237</u>		
1,000	5A-11500541617015 Ball ½"	#06076	S8312	517	229	47	168		
6,120	5A-11501041617026 Ball 7/8"	#06082	S8313	548	251	49	144		
768	5A-11501541617015 Ball 1½"	#06079	S8315	521	307	49	156		
450	5A-11502041617015 Ball 2"	#06080	S8318	530	278	46	154		
162	5A-11503041617015 Ball 3"	#06083	S8342	523	286	48	155		
Heat Code	Chemical Composition (%)								
	C	Mn	Si	S	P	Cr	Ni	Mo	
	<u>0.08max</u>	<u>1.5max</u>	<u>1.5max</u>	<u>.040max</u>	<u>.040max</u>	<u>18-21</u>	<u>9-12</u>	<u>2.0-3.0</u>	
S8312	0.0465	0.7673	0.4173	0.0071	0.0377	18.6200	9.4424	2.2732	
S8313	0.046	0.91	0.512	0.0101	0.035	18.50	9.36	2.13	
S8315	0.043	1.05	0.498	0.0098	0.0297	18.59	9.47	2.14	
S8318	0.047	0.89	0.527	0.0099	0.0314	18.52	9.47	2.22	
S8342	0.056	1.11	0.569	0.0083	0.0302	18.69	9.46	2.21	
Re: Orig Heat # D598 for S8312; #140826-03-3 for S8313; #B140925-16-2 for S8315; B140909-09-2 for S8318; #B140821-15-3 for S8342									
NOTE: CERTIFICATE ACCORDING TO EN 10204/3.1B									
QUALITY CONTROL INSPECTOR					MANAGER				
Sandy Yeh					Grant Hsu				

