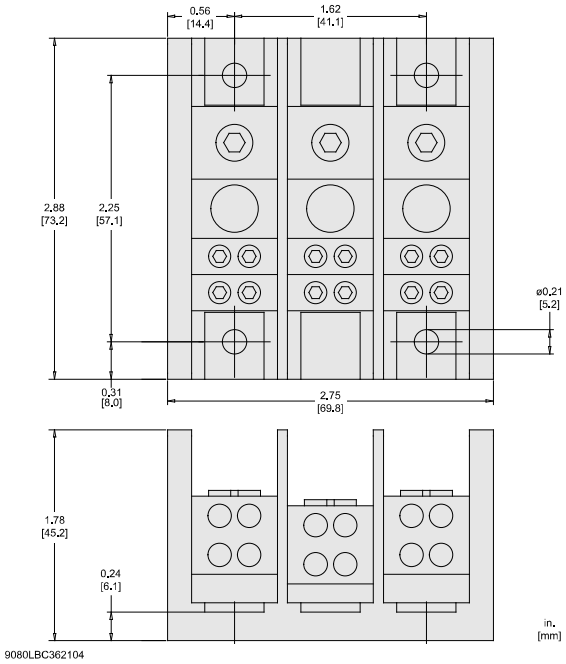
Technical Illustration

Dimensions



MTR's

Fittings & Pipe

INSPECTION CERTIFICATE

FACTORY : 50, CHUNGJUSANDAN 5-RO, CHUNGJU-SI
CHUNGCHEONGBUK-DO, KOREA 27327
TEL : (043)849-1114 FAX : (043)849-1234

FIELD OF TESTING : MECHANICAL TESTING
LAB. ID. : 111983
CERT. NO. : 0882.01

STANDARD OF CERTIFIED : IATF 16949, ISO 9001, ISO 14001
CERTIFICATE NO. : TS-01899, AC-01899, EAC-01899

STANDARD CERTIFIED : EN 14399-1, EN 15048-1
CERTIFICATE NO. (14399-1) : 1020 - CPR - 0700384467
CERTIFICATE NO. (15048-1) : 1020 - CPR - 0700484404

STANDARD CERTIFIED : EN 14399-1, EN 15048-1
CERTIFICATE NO. (14399-1) : 0038 - CPR - SEO2214043/1
CERTIFICATE NO. (15048-1) : 0038 - CPR - SEO2214043/2

Certificate No. : J420231121094
P/O No. : O-212213
L/C No. : STELFAST(ATLANTA)FOB T90
Date Issued : 2023.11.21
Date Shipped : 2023.11.23
Date Tested : 2023.09.06
Date Manufactured : 2023.08.31
Specifications : ASTM A194/A194M - 22

Customer : STELFAST(Atlanta)
Description : H/H N I GR.2H XYLAN1424/BLUE
Grade : GR.2H
Size : 5/8-11UNC(0.010")
Marking : 2H,KPF LOGO
Surface Condition : XYLAN1424/BLUE
Lot No. : 2040611700
Q'ty Shipped : 155,600 PCS

1. Chemical Composition (%)

Heat No.		C x100	Si x100	Mn x100	P x1000	S x1000	Cr x100	Mo x100	Ni x100	B x10000	Cu x100	Ti x100	V x100	Al x1000
Spec.	Min.	40												
	Max.		40	100	40	50								
G232008553		44	20	66	16	3	3		1		1			35

2. Macroetch Meet

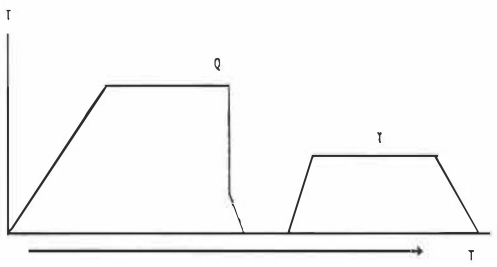
Division	Surface Condition	Random Condition	Center Segregation	Spec. of Test Method
Spec.	S2	R2	C3	ASTM E381 - 22
Results	S1	R1	C1	
Tested By	C.I.LEE			

3. Mechanical Properties

Division		Hardness Surface	Hardness Core	Proof Load	Sample Nut Hardness 540°C/24hr	Impact Test Individual	Impact Test Average
		n = 5		n = 5	n = 1		
Unit	Min.	HRC		LBF	HRB		
	Max.	HRC					
Spec.	Min.	24		39,550	89		
	Max.	35					
Results	1	HRC 31		39,550	HRC 30		
	2	32		39,550			
	3	32		39,550			
	4	31		39,550			
	5	31		39,550			
	6						
	7						
	8						
	9						
	10						
	Avg.	31		39,550	30		
Tested By		C.I.LEE		C.I.LEE	C.I.LEE		
Spec. of Test Method		ASTM A370-21		ASTM A370-21	ASTM A370-21		

4. Heat Treatment

Quenching	Min. Temp.	
	Max. Temp.	
	Working Temp.	880 ℃
	Holding Time	30 min.
Tempering	Min.Temp.	455 ℃
	Working Temp.	510 ℃
	Holding Time	90 min.



Reference : 1. PART NO:A2HHXB0625C
2. XYLAN1424/BLUE
- Appearance (n=All) : Pass
- Coating Thickness (tot 25㎛ Min, n=5pcs) : 50,51,49,53,51
- Fitting Test (B/N, n=5pcs) : Pass

This is to certify that the above results are true and correct in every details

hyo surk Kang

HYO - SURK KANG
Chief of Quality Management Dept

沙 钢

SG03B-1914E

Jiangsu Shagang Group CO., LTD.

高 速 线 材 质 量 证 明 书

High-speed Wire Rod Quality Certificate

江苏省张家港市锦丰镇 邮编：215625
Jinfeng, Zhang Jiagang, Jiangsu, P. R. CHINA
TEL: (0512) 58568866, 58568829
FAX: (0512) 58550365, 58550818

订货单位CUSTOMER	浙商中拓集团（浙江）新材料科技有限公司	用户代码CUSTOMER CODE		合同号CONTRACT NO.	X2AA0062Q043 X2AA0062Q012
牌号STEEL GRADE	SWRCH15K	提货单号DELIVERY	1H1897	发货日期DATE OF DELIVERY	20221023
交货标准 SPECIFICATION	Q/320582 SGY303-2018	质证书号CERTIFICATE NO.	1H18974515 1	签发日期DATE OF ISSUE	20221023
		用途USE		精炼方式REFINING MATHOD	炉外精炼

序号 NO	炉批号 HEAT NO.	直径 Dia. mm	盘数 Coils	重量 kg	化学成分CHEMICAL COMPOSITION % C	Si	Mn	P	S	Cr	Ni	Cu	Al		拉伸试验TENSILE TEST Rm	ReL	A	A11.3	Z	顶锻试验 H.T.	硬度试验 HRB	脱碳层 D.of.D	晶粒度 Micro-Grade	索氏体 Sorbite %	备注 REMARKS
					2	2	2	3	3	2	2	2	3		MPa		%								
					1=×10⁻¹ 2=×10⁻² 3=×10⁻³ 4=×10⁻⁴ 5=×10⁻⁵																				
1	G231009187	26.0	13	28608	45	22	66	14	2	2	1	1	35		621	371			39.0	完好	85.60		9		
															638	378			43.0		87.60		9		
2	G232008553	24.0	22	49229	44	20	66	16	3	3	1	1	35		638	378			36.0	完好	86.00		8		
															647	387			39.0		87.40		8		
3	G232008553	24.0	23	49237	44	20	66	16	3	3	1	1	35		638	378			36.0	完好	86.00		8		
															647	357			39.0		87.40		8		
4	G232008553	24.0	2	1490	44	20	66	16	3	3	1	1	35		638	378			36.0	完好	86.00		8		
															647	357			39.0		87.40		8		
5	G232006555	24.0	20	41810	44	19	65	16	2	2	1	1	30		632	369			38.0	完好	86.50		8		
															643	378			39.0		86.70		8		
合计 Total			79	176374	说明 NOTES	本质量证明书适用于合金类线材；本产品不含可任何辐射元素。It is guaranteed that the products don't contain radiochemical impurities. *1. H.T.—Head-colding Test; *2 D.of D.—Depth of Decarburization;																			

综合判定 FINAL RESULT	合格 PASS	注意事项 ATTENTIVE ITEMS	1. 质量证明书复印件不作有效证明文件，除非盖章：The copy of this Certificate is not valid except stamped. 2. 用户验货后使用如有异议应及时告知炉号、牌号，并保留实物及标志。Please inform us the steel grade and the heat number of under quanlified material(s) found in inspection on time, and keep the material(s) and the marking card 3. 梢孔共捆结处短端为轧制成品头部。The coil head is marked by the binding	签证人 VISA

Accepted 2023.05.10 KPF QM

3

INSPECTION CERTIFICATE
(MILL TEST CERTIFICATE)
EN 10204 3.1

CHARM MING VIETNAM CO., LTD
Lot 49,51, B Road, Sai Gon-Linh Trung Export
Processing Zone, Linh Trung Ward, Thu Duc District,
HO CHI MINH CITY, POSTAL CODE 720400, VIETNAM
TEL : 84-28-3897 4885
FAX : 84-28-3897 4894

PURCHASER : Ferguson Enterprises, LLC
ORDER NO. : F986-6177
SPEC. FOR RAW MATERIAL : ASTM A106 Gr. B
SPEC. FOR INSPECTION : ASTM A234 - 23 WPB
ASME SA234 - 2021 WPB
ASME B16.9-2018 / ASME B16.25-2022
BS EN 10204 3.1-2004

JOB NO. : FE2311159A
CERTIFICATE NO. : Q240215159A-04
DATE : FEB. 15, 2024

	FE Product Code	Size(Inch) & Product			Heat Code	Quantity	Full Heat	Raw Material Mfg.	Certificate No.
16	GW9K	2	CS STD WLD LR	90 ELL	315	138	13323315	BAOSHAN - CHINA	BGSAG2311080692500
17	GW9M	3	CS STD WLD LR	90 ELL	819	2000	13323819	BAOSHAN - CHINA	BGSAG2311270174800
18	GW9N	3-1/2	CS STD WLD LR	90 ELL	315	5	13323315	BAOSHAN - CHINA	BGSAG2311090495000
19	GW9P	4	CS STD WLD LR	90 ELL	317	2139	13323317	BAOSHAN - CHINA	BGSAG2311090495200
20	GW9S	5	CS STD WLD LR	90 ELL	316	204	13323316	BAOSHAN - CHINA	BGSAG2311090496100

Spe.	Chemical Composition %													Tension Test (Longitudinal Specimen)			Hardness Test	The way of forming	Magnetic Particle Exam.
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Pb	CE	Yield Strength	Tensile Strength	Elongation			
	X100	X100	X100	X100	X1000	X100	X100	X100	X100	X1000	X1000	X1000	X100	P.S.I	P.S.I	%	HBW		
MIN		10	29											35000	60000	30			
MAX	30		106	50	58	40	40	40	15	80	20		42		95000		197		
16	13	15	73	10	7	4	3	5	2	<1	<1	*<3	27	46980	67135	39	133	Hot Forming	N/A
17	13	18	74	9	3	2	2	7	3	<1	<1	*<3	28	44950	64235	41	127	Hot Forming	N/A
18	13	15	73	10	7	4	3	5	2	<1	<1	*<3	27	41325	65395	41	128	Hot Forming	N/A
19	12	16	73	9	4	4	3	6	2	<1	<1	*<3	26	44080	62785	40	126	Hot Forming	N/A
20	13	17	72	8	5	3	3	5	2	<1	1	*<3	27	39440	61480	43	128	Hot Forming	N/A

Visual Examination	Dimensional Inspection	Heat Treatment	(*) Product Analysis by CHARM MING
Acceptable	Acceptable	N/A	

CE = C + Mn/6 + (Cr + Mo + V) / 5 + (Ni + Cu) /15

MATERIAL (HARDNESS) CONFORMS TO THE REQUIREMENTS OF NACE MR0103-2015 (R2023) / NACE MR0175-2021 and ISO 15156-2020

We hereby certify that the products described here in have been manufactured, sampled, tested and inspected in accordance with all requirements of above specification.

The products have been made free of MERCURY/RADIATION and made from SEAMLESS steel pipe.

No weld repair was performed and all products are free of weld repair.

NOTE:

1. ABOVE - LISTED ELBOWS HAVE BEEN HOT - FORMED AT A TEMPERATURE ABOVE 1150^{0}F (620^{0}C) AND BELOW 1800^{0}F (980^{0}C) AND SUBSEQUENTLY COOLED IN STILL AIR.
2. TENSION SPECIMEN SIZE: GAUGE LENTH 2 inches THE WIDTH 12.5mm WERE USED, GAUGE LENGTH 1 inch THE WIDTH 6.3mm WERE USED.
3. THE MANGANESE ABOVE THE SPECIFIED MAXIMUM WILL BE PERMITTED UP TO A MAXIMUM OF 1.65%. (FOOTNOTE **D** IN TABLE 1 OF ASTM A234 - 23 WPB).
4. THE QUALITY MANAGEMENT SYSTEM OF ISO 9001-2015 HAVE BEEN APPROVED BY LRQA
5. MATERIAL CERTIFIED ACCORDING TO ANNEX I PARAGRAPH 4.3 PED 2014/68/EU OF PRESSURE EQUIPMENT DIRECTIVE. MATERIAL ACCORDING TO ASME II PART D TABLE Y1

Charm Ming Vietnam Co., Ltd
Linh Trung - Thu Duc
QUALITY ASSURANCE SECTION

BUI VAN NGUYEN
Quality Assurance Section/ Manager

AN ISO 9001:2015 COMPANY

BALKRISHNA STEEL FORGE PVT. LTD.

244/P, NH-27, Shitala Mata Mandir Road, Beyond G.E.B. Sub station, Shapar (Vara
INDIA Ph.: +91 2827 252777,Fax : +91 2827-252507,E-mail : info@balkrishnafor

MANUFACTURING TEST CERTIFICATE

CERTIFICATION AS PER EN 10204: 3.1 (2004)

TC NO. BF/014516 DT. 02.05.2025

CUSTOMER NAME :- M/S. FERGUSON ENTERPRISES, INC -USA INV. NO./EC NO.-3432 Dt: 02

P.O. No.	G796-14323	P.O. DT.	18.03.2025						
Sr. No.	DESCRIPTION	PRODUCT CODE	P.O. SR NO.	INV. SR NO.	QTY	MATERIAL	MILL HEAT NO.	H.L. NO.	
1	2" X 150# SO RF	GRFSOFK	21	8	5	A105/SA105	07-31-04 B	07-31-04 B	
2	2" X 150# SO RF	GRFSOFK	21	8	369	A105/SA105	AC 184	AC 184	
3	2" X 150# SO RF	GRFSOFK	21	8	81	A105/SA105	AC 185	AC 185	
4	8" X 150# SO RF	GRFSOFX	23	9	229	A105/SA105	K 415	K 415	
5	8" X 150# SO RF	GRFSOFX	23	9	6	A105/SA105	03-03-05 B	03-03-05 B	
6	6" X 150# THRD RF	GRFTFU	33	10	50	A105/SA105	EC 72	EC 72	
7	8" X 150# WN RF STD	GRFWNFX	38	11	378	A105/SA105	04-12-03 B	04-12-03 B	
8	8" X 150# WN RF STD	GRFWNFX	38	11	252	A105/SA105	04-12-01 B	04-12-01 B	

Chemical Composition			C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%
Std. Reqmnt.		MIN.	-	0.60	-	-	0.10	-	-	-	-
		MAX	0.25	1.65	0.035	0.040	0.35	0.40	0.40	0.30	0.12
chech analysis	07-31-04 B		0.24	0.82	0.028	0.023	0.27	0.09	0.12	0.29	0.02
	AC 184		0.20	0.82	0.022	0.020	0.28	0.05	0.05	0.12	0.01
	AC 185		0.19	0.86	0.019	0.015	0.31	0.04	0.04	0.12	0.01
	K 415		0.22	0.83	0.033	0.018	0.18	0.08	0.05	0.14	0.01
	03-03-05 B		0.23	0.91	0.023	0.015	0.26	0.09	0.06	0.13	0.01
	EC 72		0.22	0.91	0.034	0.023	0.32	0.11	0.03	0.12	0.02
	04-12-03 B		0.22	0.97	0.024	0.018	0.32	0.09	0.07	0.10	0.01
	04-12-01 B		0.21	0.87	0.027	0.020	0.34	0.10	0.06	0.11	0.02

MECHANICAL PROPERTIES		U.T.S.	Y.S.(0.2% Offset)	ELONGA-TION%	REDUCTION IN AREA%	HARDNESS (HBW)	HEAT TREATMENT DETAILS	IMP.
Std.		485	250	22%	30%	137 TO 187		
Requirement		MIN.	MIN.	MIN.	MIN.			
Result	07-31-04 B	522.03	333.49	34.72	64.90	153-158	AS FORGED	-
	AC 184	572.01	372.39	28.84	61.18	153-157	AS FORGED	-
	AC 185	558.76	358.12	30.64	61.37	151-156	AS FORGED	-
	K 415	525.24	401.58	30.98	60.72	156-159	AS FORGED	-
	03-03-05 B	558.26	366.89	32.56	60.95	167-170	AS FORGED	-
	EC 72	537.89	361.14	31.86	60.19	151-157	AS FORGED	-
	04-12-03 B	574.60	387.14	30.48	63.21	152-156	AS FORGED	-
	04-12-01 B	551.11	348.04	29.26	61.56	167-170	AS FORGED	-

Identification Size,Pressure Rating,Type,Nominal Bore,SA/A105 , B-16, Heat Lot No., INDIA (All Normalised Flange Mat.Grade Marked as "S

Remark:-

* Materials Was manufactured,sampled,Tested and inspected in accordance with specification(s) solely by the manufacturer listed herein and was found to meet the requirments.
* No weld repair was performed.
* Materials is free of mercury and radioactive contamination.
* Country of melt and pour is India.
* Test Bar used - Round L=4D.
* The Raw material for above item is manufactured/procure from indian mill

All Normalised Flanges confirms to Fine grain MicroStructure.
All Flanges are coated with Anti Rust Black Paint.

We hereby certify that the above mentioned items conform to requirements of - ASME SA-105-23/ASTM A105-24, NACE MR0175 / ISO15156 - 20.

Your PO: H329-2637

HAITIAN PIPE FITTINGS (VIETNAM) COMPANY LIMITED

Lot 61C Long Giang Industrial Park, Tan Lap 1 Commune, Tan Phuoc District, Tien Giang Province, Vietnam.

MILL TEST CERTIFICATE

IN ACC TO EN-10204 3.1

P/O NO.: 405405-401
Material : WPB
COMMODITY : CARBON STEEL SEAMLESS FITTINGS

MTR NO.
Date of issue
Material Specification
PAGE

ITEM NO	Item Description	HEAT NO.	QTY	%C	%Si	%Mn	%P	%S	%Cu	%Ni	%Cr
				≤ 0.30	≥ 0.10	0.29-1.06	≤ 0.050	≤ 0.058	≤ 0.40	≤ 0.40	≤ 0.40
71	1 1/2 LR 90 160 WPB A234	388A04M	20	0.17	0.16	0.37	0.018	0.004	0.062	0.043	0.074
72	1 X 3/4 T XH WPB A234	344A048	20	0.12	0.18	0.50	0.017	0.007	0.062	0.040	0.063
73	2 X 1/2 T XH WPB A234	605A04M	20	0.15	0.14	0.45	0.010	0.009	0.056	0.066	0.061
74	2 45 160 WPB A234	459A04M	20	0.17	0.23	0.53	0.017	0.008	0.042	0.074	0.054
75	3 CROSS STD WPB A234	896A04M	20	0.18	0.26	0.36	0.018	0.004	0.045	0.067	0.068

ITEM NO	Item Description	HEAT NO.	YS Mpa	TS Mpa	E/L %	Hardness (HB)	HEAT TREATMENT	Impact Akv (J)	Red Area %	PMI Test	X-RAY Test
			≥ 240	≥ 415	≥ 30	≤ 197					
71	1 1/2 LR 90 160 WPB A234	388A04M	256	439	35	131	A	-	-	PASSED	N/A
72	1 X 3/4 T XH WPB A234	344A048	261	423	32	126	S	-	-	PASSED	N/A
73	2 X 1/2 T XH WPB A234	605A04M	253	448	32	134	S	-	-	PASSED	N/A
74	2 45 160 WPB A234	459A04M	253	448	31	134	A	-	-	PASSED	N/A
75	3 CROSS STD WPB A234	896A04M	266	441	32	132	S	-	-	PASSED	N/A

NOTE:

A: Hot formed with final temperature above 620°C and below 980°C. Air cooling N:Normalizing 900°C 30 Min. Air cooling.
Q:Quenching 940°C 30Min. Water cooling T:Tempering 620°C 90Min. Air cooling. S:Stress relieving:670 °C±15. 60Min Air cooling
YS: (Yield strength) TS: (Tensile strength) E : (Elongation)
*The sum of Copper, Nickel, Chromium, and Molybdenum is not exceed. 1.00%. *Mechanical Test: Longitudinal Direction
1.The raw materials conform to purchaser's requirments and the test result shown here are correct.
2.The seamless c.s fittings are manufactured,tested and inspected in accordance with ASTM A234/SA234 -2021 and ASME B16.9 2018.
3.Material certificed accordance PED2014/68/EU NO.:01 202 CHN/Q-23 0906.00.
4.Elongation test adopted Longitudinal Rectangular specimen.
5. Magnetic particle examined in accordance with Guide ASTM E709-08.
6. Made in VietNam

HAITIAN PIPE FITTINGS (VIETNAM) QA Department

Inspector: PHAM THI KIM NGAN

Approved:

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"", false, "", "AppQuickSearch.aspx", false, true)))

MEC-H

VIETNAM BUTT WELDING FITTINGS TECHNOLOGY CO., LTD.

Certificate of Quality

Products Description:Carbon steel butt-welding fitting.
Purchaser: Service Metal Products Company
PO No:7025104
Contract No:HH1-252J425A,HH1-252J425B

According to EN 10204 3.1
This is to certify that the products listed here have been manufactured and checked strictly according to technical standards and requirements set forth in the contract.And our production is carried out under the supervision of ISO 9001 Quality Management System.

Certificate N
Material Sta
Product stan
Raw Materia
Country of C
Country of M
NACE MR0
NACE MR0
Type: Seamle
Hot Forming
Issued date:

No.	Part NO.	Products	Type	Material	Pcs	Pipe heat No.	Fitting Heat No.	Yield Strength(MPa)
								≥240
1	S4505	ELBOW 45 LR	5"STD	WPB	20	LZ252J4013	04013	321
2	S4506	ELBOW 45 LR	6"STD	WPB	350	WN02241102?3	10223	348
3	S4506	ELBOW 45 LR	6"STD	WPB	125	WN02241102?3	04841	310
4	SL901.25	ELBOW 90 LR	1 1/4"STD	WPB	375	WN0224090213	90213	312
5	SL901.5	ELBOW 90 LR	1 1/2"STD	WPB	500	LZ240911416	11416	304
6	SL902.5	ELBOW 90 LR	2 1/2"STD	WPB	1,100	LZ240914218	14218	300
7	SL903.0	ELBOW 90 LR	3"STD	WPB	600	WN0224060018	60018	340
8	SL905 .	ELBOW 90 LR	5"STD	WPB	100	LZ252J4013	04013	321
9	X4502.0	ELBOW 45 LR	2"XS	WPB	300	S241012457	12457	310
10	X4504	ELBOW 45 LR	4"XS	WPB	40	LZ243014156	14156	310
11	XL901.0	ELBOW 90 LR	1"XS	WPB	40	WH02240725	50223	310
12	XL901.5	ELBOW 90 LR	1 1/2"XS	WPB	40	LZ241124125	24125	348
13	XL902.0	ELBOW 90 LR	2"XS	WPB	100	WH02240724	24Y22	315
14	XL902.5	ELBOW 90 LR	2 1/2"XS	WPB	100	WH02240628	24M17	325
15	XL904	ELBOW 90 LR	4"XS	WPB	40	LZ243014156	14156	310
16	XL905	ELBOW 90 LR	5"XS	WPB	10	WH02240620	24B25	310

No.	Chemical Composition (%)										
	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	B
	≤0.30	≥0.10	0.29-1.06	≤0.050	≤0.058	≤0.40	≤0.40	≤0.15	≤0.40	≤0. 08	/
1	0.150	0.110	0.36	0.014	0.011	0.014	0.008	0.006	0.010	0.006	<0.000
2	0.150	0.110	0.300	0.024	0.018	0.006	0.016	0.001	0.008	0.006	<0.000

AN ISO 9001 : 2015 COMPANY

376

BALKRISHNA STEEL FORGE PVT. LTD.

244/P, NH-27, Shitala Mata Mandir Road, Beyond G.E.B. Sub station, Shapar (Veraval), Dist.: RAJKOT-360 024. GUJARAT, INDIA Ph.: +91 2827 252777,Fax : +91 2827-252507,E-mail : info@balkrishnaforge.com Web.: www.balkrishnaforge.com

MANUFACTURING TEST CERTIFICATE

CERTIFICATION AS PER EN 10204: 3.1 (2004)

TC NO. BF/014210 DT. 16.01.2025

CUSTOMER NAME :- M/S. FERGUSON ENTERPRISES, INC -USA INV. NO./EC NO.- 3197 Dt: 16.01.2025

P.O. No.	G533-6236	P.O. DT.	22.10.2024							
Sr. No.	DESCRIPTION	PRODUCT CODE	P.O. SR NO.	INV. SR NO.	QTY	MATERIAL	MILL HEAT NO.	H.L. NO.	DIMENSION STD	
1	2" X 150# THRD RF	GRFTFK	37	8	722	A105/SA105	K 1005	K 1005	ASME B16.5-20	
2	10" X 150# WN RF STD	GRFWNF10	41	9	152	A105/SA105	K 1159	K 1159	ASME B16.5-20	
3	3" X 150# SO RF	GRFSOFM	23	3	62	A105/SA105	07-24-02 B	07-24-02 B	ASME B16.5-20	
4	3" X 150# SO RF	GRFSOFM	23	3	364	A105/SA105	11-20-04 B	11-20-04 B	ASME B16.5-20	
5	2" X 150# THRD RF	GRFTFK	37	8	178	A105/SA105	162 SC	162 SC	ASME B16.5-20	
6	2" X 150# THRD RF	GRFTFK	37	8	85	A105/SA105	273 SC	273 SC	ASME B16.5-20	
7	10" X 150# WN RF STD	GRFWNF10	41	9	129	A105/SA105	K 1137	K 1137	ASME B16.5-20	

Chemical Composition			C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%	V%	Nb%	Al%	CE.
Std. Reqmnt.		MIN.	-	0.60	-	-	0.10	-	-	-	-	-	-	-	-
		MAX	0.25	1.65	0.035	0.040	0.35	0.40	0.40	0.30	0.12	0.08	0.02	-	0.43
chech analysis	K 1005		0.20	0.81	0.035	0.027	0.19	0.04	0.02	0.04	0.01	0.00	0.00	0.00	0.35
	K 1159		0.21	0.87	0.024	0.015	0.31	0.12	0.08	0.27	0.02	0.00	0.00	0.00	0.43
	07-24-02 B		0.23	0.98	0.029	0.020	0.34	0.05	0.03	0.17	0.01	0.00	0.01	0.00	0.43
	11-20-04 B		0.24	0.82	0.031	0.024	0.24	0.06	0.03	0.08	0.01	0.00	0.00	0.00	0.40
	162 SC		0.19	0.93	0.025	0.026	0.26	0.11	0.04	0.11	0.02	0.00	0.00	0.00	0.38
	273 SC		0.22	0.93	0.022	0.013	0.27	0.07	0.04	0.12	0.01	0.01	0.01	0.00	0.41
	K 1137		0.20	0.90	0.032	0.024	0.25	0.08	0.04	0.13	0.01	0.00	0.00	0.00	0.38

MECHANICAL PROPERTIES		U.T.S. N/mm2	Y.S.(0.2% Offset) N/mm2	ELONGATION%	REDUCTION IN AREA%	HARDNESS (HBW)	HEAT TREATMENT DETAILS	IMPACT ENERGY ABSORBED AT °C Specimen (J) 1	2	3		Avg.(J)
Std. Requirement		485 MIN.	250 MIN.	22% MIN.	30% MIN.	137 TO 187						
Result	K 1005	548.78	348.78	31.54	65.76	149-158	AS FORGED	-	-	-	-	-
	K 1159	565.16	337.18	34.74	59.59	153-158	AS FORGED	-	-	-	-	-
	07-24-02 B	513.63	314.55	39.32	59.80	152-156	AS FORGED	-	-	-	-	-
	11-20-04 B	553.54	361.89	32.00	58.87	153-156	AS FORGED	-	-	-	-	-
	162 SC	537.91	341.38	34.16	62.43	151-155	AS FORGED	-	-	-	-	-
	273 SC	520.43	376.32	28.10	68.22	152-159	AS FORGED	-	-	-	-	-
	K 1137	561.93	363.34	29.72	61.36	150-154	AS FORGED	-	-	-	-	-

Identification Size,Pressure Rating,Type,Nominal Bore,SA/A105 , B-16, Heat Lot No., INDIA

Remark:-

* Materials Was manufactured,sampled,Tested and inspected in accordance with specification(s) solely by the manufacturer listed herein and was found to meet the requirments.
* No weld repair was performed.
* Materials is free of mercury and radioactive contamination.
* Country of melt and pour is India.
* Test Bar used - Round L=4D.
* The Raw material for above item is manufactured/procure from indian mill

We hereby certify that the above mentioned items conform to requirements of - ASME SA-105-23/ASTM A105-24, NACE MR0175 / ISO15156 - 20.

B. Saini

QA HEAD

FLB:12 REV:00 Dt: 01.11.17

AN ISO 9001 : 2015 COMPANY

BALKRISHNA STEEL FORGE PVT. LTD.

244/P, NH-27, Shitala Mata Mandir Road, Beyond G.E.B. Sub station, Shapar (Veraval), D
INDIA Ph.: +91 2827 252777,Fax : +91 2827-252507,E-mail : info@balkrishnaforge.co

MANUFACTURING TEST CERTIFICATE

CERTIFICATION AS PER EN 10204: 3.1 (2004)

TC NO. BF/013335 DT. 19.01.2024

CUSTOMER NAME :- M/S. FERGUSON ENTERPRISES, INC -USA INV. NO./EC NO.- 2927 Dt: 19.01

P.O. No.	F533-7715	P.O. DT.	06.11.2023						
Sr. No.	**DESCRIPTION**	**PRODUCT CODE**	**P.O. SR NO.**	**INV. SR NO.**	**QTY**	**MATERIAL**	**MILL HEAT NO.**	**H.L. NO.**	
1	4" X 300# WN FF STD	G300FFWNFP	2	1	7	A105/SA105-23	K 1074	K 1074	
2	3" X 300# LJ	G300LJFM	3	2	7	A105/SA105-23	12-03-05 A	12-03-05 A	
3	4" X 300# LJ	G300LJFP	4	3	3	A105/SA105-23	04-24-05	BKS/04654	
4	6" X 300# SO RF	G300RFSOFU	7	4	13	A105/SA105-23	K 1234	K 1234	
5	2" X 300# THRD RF	G300RFTFK	9	5	23	A105/SA105-23	205060	205060	
6	4" X 300# WN RF XH	G300RFWNFXHBP	13	6	4	A105/SA105-23	10-30-01	BKS/04452	
7	3" X 600# WN RF STD	G600RFWNFM	14	7	7	A105/SA105-23	091304	BKS/03687	
8	3" X 150# SO FF	GFFSOFM	15	8	6	A105/SA105-23	K 834	K 834	

Chemical Composition			C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%
Std. Reqmnt.		MIN.	-	0.60	-	-	0.10	-	-	-	-
		MAX	0.25	1.65	0.035	0.040	0.35	0.40	0.40	0.30	0.12
chech analysis	K 1074		0.20	0.89	0.021	0.015	0.19	0.05	0.04	0.07	0.01
	12-03-05 A		0.20	0.86	0.028	0.020	0.27	0.09	0.05	0.11	0.01
	04-24-05		0.22	0.87	0.027	0.017	0.34	0.12	0.07	0.15	0.04
	K 1234		0.19	0.97	0.022	0.020	0.22	0.04	0.05	0.18	0.02
	205060		0.22	1.20	0.020	0.025	0.22	0.01	0.01	0.01	0.00
	10-30-01		0.20	0.85	0.026	0.021	0.30	0.07	0.04	0.13	0.01
	091304		0.20	0.95	0.021	0.019	0.20	0.07	0.02	0.01	0.01
	K 834		0.21	0.88	0.033	0.025	0.22	0.05	0.03	0.17	0.01

MECHANICAL PROPERTIES		U.T.S. N/mm2	Y.S.(0.2% Offset) N/mm2	ELONGATION%	REDUCTION IN AREA%	HARDNESS (HBW)	HEAT TREATMENT DETAILS	IMPA
Std. Requirement		485 MIN.	250 MIN.	22% MIN.	30% MIN.	137 TO 187		1
Result	K 1074	577.61	332.75	33.66	60.41	152-158	AS FORGED	-
	12-03-05 A	515.55	293.61	33.98	55.62	151-156	AS FORGED	-
	BKS/04654	533.00	357.99	29.75	55.96	151--159	NORMALISED	-
	K 1234	511.58	315.30	36.92	59.26	149-154	AS FORGED	-
	205060	552.22	308.81	30.88	57.27	153-159	AS FORGED	-
	BKS/04452	524.25	314.43	30.92	58.97	153-163	NORMALISED	-
	BKS/03687	503.04	316.95	30.80	67.00	149-159	NORMALIZED	-
	K 834	526.57	365.56	32.80	59.97	149-163	AS FORGED	-

Identification Size,Pressure Rating,Type,Nominal Bore,SA/A105 , B-16, Heat Lot No., INDIA

Remark:-

- Materials Was manufactured,sampled,Tested and inspected in accordance with specification(s) solely by the manufacturer listed herein and was found to meet the requirments.
- No weld repair was performed.
- Materials is free of mercury and radioactive contamination.
- HOT DIPPED Galvanize carried out in accordance with ASTM A123-15
- Test Bar used - Round L=4D.
- The Raw material for above item is manufactured/procure from indian mill

We hereby certify that the above mentioned items conform to requirements of - ASME SA-105-23/ASTM A105-23, NACE MR0103-15 & NACE MR0175 / ISO15156 - 20.

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JAI AUTO PVT. LIMITED

JAPL FORGINGS & FLANGES

VILLAGE KADDON, G.T ROAD DORAHA LUDHIANA (P.B.)INDIA
E-Mail:info@jaiauto.in

Works Test Certificate

EN 10204/3.1

JAPL/LAB NO: 25-26/ | INVOICE NO.: (J2526-131) | DATE: 06-09-2025

Purchase Order No	G986-12114	Customer	FERGUSON ENTERPRISES INC 12500 JEFFERSON AVENUE NEWPORT NEWS ,VA 23602 USA
Component	3"-150# BLRF FLG.		
Item Code			
Machining STD	ANSI B16.5- 2020 ASME B16.5- 2020	Quantity	11Nos.

Forging specification	ASME SA 105-2019 ASTM A105-2021
Steel Supplier	JAI JAWALA STEEL
Mill Heat No.	APR=51

JAPL. HEAT NO:4042

TEST RESULTS

CHEMICAL COMPOSTION

Element %	Specified Composition	Actual	
		JAPL LAB	MILL T.C.
Carbon	0.35max	0.202	0.185
Manganese	0.60-1.35	1.05	1.095
Silicon	0.10-0.35	0.224	0.28
Sulphur	0.040max	0.0051	0.015
Phosphorous	0.035max	0.0212	0.022
Chromium	0.30max	0.0239	0.051
Nickel	0.40max	0.0114	0.045
Copper	0.40max	0.0119	0.017
Molybdenum	0.12max	0.0030	0.020
Vanadium	0.08max	0.0018	0.010
Carbon Equivalent (CE)	0.47max	0.384	0.387

MECHANICAL PROPERTIES

PROPERTIES	SPECIFIED	OBTAINED
Yield Strength (mpa)	250.00min.	343.73
Tensile Strength (mpa)	485.00min.	589.72
%Elongation in 50mm / 4D	22.00min.	31.74
Hardness HBW	187max.	156-161
% Reduction of Area	30.00min.	62.55

Remarks:- We hereby certify that the product satisfies the requirement of ASTM A 105 and material described here in has been tested in accordance with the applicable specifications referred above and meets the requirements as per EN10204/3.1B & NACE MRO-175 & ISO 15156. Product does not come in contact with mercury and lead during the manufacturing process. No weld repair was performed and all products are free of weld repair

Specified carbon as per Purchase Order 0.25max.

Serrated face as per MSS-SP-6 With in limits of 125-250AARH

CARBON EQUIVALENT (CE)

$$CE = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

MARKING AS PER MSS-SP-25-2013

3-150 SA A105 4042 B16.5 JAPL INDIA

country of melt and pour INDIA

Checked by:

Metallurgist

Certified by:

Quality Control Manager

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JAPL
FORGINGS & FLANGES

JAI AUTO PVT. LIMITED

VILLAGE KADDON. G.T ROAD DORAHA LUDHIANA (P.B.)INDIA
E-Mail:info@jaiauto.in

Works Test Certificate

EN 10204/3.1

JAPL/LAB NO: 25-26/		INVOICE NO.: (J2526-218)		DATE: 22-01-2026	
Purchase Order No	G452-40617	Customer	FERGUSON ENTERISES LLC # 452 1250 RICHHARD PETY WAY LEBANON ,TN ,370900000 U.S.A	Forging specification	ASME SA 105-2019 ASTM A105-2021
Component	3"-150# BLRF FLG			Steel Supplier	KESARI ALLOYS
Item Code					
Machining STD	ANSI B16.5- 2020 ASME B16.5- 2020	Quantity	200Nos.	Mill Heat No.	25K 1526

JAPL. HEAT NO:4527

TEST RESULTS

CHEMICAL COMPOSTION

Element %	Specified Composition	Actual	
		JAPL LAB	MILL T.C.
Carbon	0.35max	0.189	0.199
Manganese	0.60-1.35	1.14	1.08
Silicon	0.10-0.35	0.256	0.26
Sulphur	0.040max	0.0130	0.008
Phosphorous	0.035max	0.0219	0.021
Chromium	0.30max	0.0334	0.04
Nickel	0.40max	0.0169	0.01
Copper	0.40max	0.0158	0.01
Molybdenum	0.12max	0.0038	0.003
Vanadium	0.08max	0.0020	0.0005
Carbon Equivalent (CE)	0.47max	0.389	0.389

MECHANICAL PROPERTIES

PROPERTIES	SPECIFIED	OBTAINED
Yield Strength (mpa)	250.00min.	270.42
Tensile Strength (mpa)	485.00min.	582.39
%Elongation in 50mm / 4D	22.00min.	34.82
Hardness HBW	187max.	160-162
% Reduction of Area	30.00min.	67.47

Remarks:- We hereby certify that the product satisfies the requirement of ASTM A 105 and material described here in has been tested in accordance with the applicable specifications referred above and meets the requirements as per EN10204/3.1B & NACE MRO-175 & ISO 15156. Product does not come in contact with mercury and lead during the manufacturing process. No weld repair was performed and all products are free of weld repair

Specified carbon as per Purchase Order 0.25max.

Serrated face as per MSS-SP-6 With in limits of 125-250AARH

CARBON EQUIVALENT (CE)

$$CE = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

MARKING AS PER MSS-SP-25-2013

3-150 SA/A105 4527 B16.5 JAPL INDIA

country of melt and pour INDIA

Checked by:

Metallurgist

Certified by:

Quality Control Manager

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JAPL
FORGINGS & FLANGES

JAI AUTO PVT. LIMITED

VILLAGE KADDON. G.T ROAD DORAHA LUDHIANA (P.B.)INDIA
E-Mail:info@jaiauto.in

Works Test Certificate

EN 10204/3.1

JAPL/LAB NO: 24-25/ | INVOICE NO.: (J2425-243) | DATE: 26-02-2025

Purchase Order No	F533-18690	Customer	FERGUSON ENTERPRISES INC FEI FORTPAYNE # 533 2500 JORDAN ROAD SOUTH FORT PAYNE , AL 35968 U.S.A.
Component	3" -150# SORF FLG.		
Item Code			
Machining STD	ANSI B16.5- 2020 ASME B16.5- 2020	Quantity	436Nos.

Forging specification	ASME SA 105-2019 ASTM A105-2021
Steel Supplier	JAI JAWALA
Mill Heat No.	J=55

JAPL. HEAT NO: 3780

TEST RESULTS

CHEMICAL COMPOSTION

Element %	Specified Composition	Actual	
		JAPL LAB	MILL T.C.
Carbon	0.35max	0.219	0.20
Manganese	0.60-1.35	1.20	1.074
Silicon	0.10-0.35	0.230	0.26
Sulphur	0.040max	0.006	0.013
Phosphorous	0.035max	0.019	0.026
Chromium	0.30max	0.148	0.096
Nickel	0.40max	0.0255	0.057
Copper	0.40max	0.0236	0.026
Molybdenum	0.12max	0.0202	0.020
Vanadium	0.08max	0.004	0.010
Carbon Equivalent (CE)	0.47max	0.457	0.409

MECHANICAL PROPERTIES

PROPERTIES	SPECIFIED	OBTAINED
Yield Strength (mpa)	250.00min.	386.09
Tensile Strength (mpa)	485.00min.	575.06
%Elongation in 50mm / 4D	22.00min.	29.20
Hardness HBW	187max.	151-161
% Reduction of Area	30.00min.	63.03

Remarks:- We hereby certify that the product satisfies the requirement of ASTM A 105 and material described here in has been tested in accordance with the applicable specifications referred above and meets the requirements as per EN10204/3.1B & NACE MRO-175 & ISO 15156. Product does not come in contact with mercury and lead during the manufacturing process. No weld repair was performed and all products are free of weld repair

Specified carbon as per Purchase Order 0.25max.

Serrated face as per MSS-SP-6 With in limits of 125-250AARH

CARBON EQUIVALENT (CE)

$$CE = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

MARKING AS PER MSS-SP-25-2013

3-150 SA/A105 3780 B16.5 JAPL INDIA

country of melt and pour INDIA

Checked by:

Metallurgist

Certified by:

Quality Control Manager

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INSPECTION CERTIFICATE
(MILL TEST CERTIFICATE)
EN 10204 3.1

CHARM MING VIETNAM CO., LTD
Lot 49,51, B Road, Sai Gon-Linh Trung Export
Processing Zone, Linh Xuan Ward, Ho Chi Minh City
POSTAL CODE 720400, VIETNAM
TEL : 84-28-3897 4885
FAX : 84-28-3897 4894

PURCHASER : Ferguson Enterprises, LLC
ORDER NO. : G533-21838
SPEC. FOR RAW MATERIAL : ASTM A106 Gr. B
SPEC. FOR INSPECTION : ASTM A234-24 WPB
ASME SA234-2023 WPB
ASME B16.9-2024 / ASME B16.25-2022
BS EN 10204 3.1-2004

JOB NO. : FE2504076
CERTIFICATE NO. : Q250811076-10
DATE : AUG 11, 2025

	FE Product Code	Size(Inch) & Product		Heat Code	Quantity	Full Heat	Raw Material Mfg.	Certificate No.
40	GWXCR10U	10 x 6	CS XH WLD	CON. RED 04H	5	87404H	YANTAI - CHINA	BGSQG2407120412800
41	GWXCR12X	12 x 8	CS XH WLD	CON. RED 68Y	5	14168Y	YANTAI - CHINA	BGSQG2305180425100
42	GWCRKH	2 x 1-1/4	CS STD WLD	CON. RED 024	60	15300024	BAOSHAN - CHINA	BGSAG2503240493400
43	GWCRMG	3 x 1	CS STD WLD	CON. RED 025	65	15300025	BAOSHAN - CHINA	BGSAG2503240495600
44	GWCRMK	3 x 2	CS STD WLD	CON. RED 025	120	15300025	BAOSHAN - CHINA	BGSAG2503240495600

Spe.	Chemical Composition %													Tension Test (Longitudinal Specimen)			Hardness Test	The way of forming	Magnetic Particle Exam.
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Pb	CE	Yield Strength	Tensile Strength	Elongation			
	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X1000	X1000	X1000	X100	P.S.I	P.S.I	%	HBW		
MIN		10	29											35000	60000	30			
MAX	30		106	50	58	40	40	40	15	80	20		42		95000		197		
40	15	17	88	16	5	1	1	3	<1	<1	1	*<3	30	38425	64670	48	139	Cold Forming	Acceptable
41	20	23	53	7	5	1	1	3	<1	<1	<1	*<3	30	39005	61480	47	137	Cold Forming	Acceptable
42	13	17	74	8	4	2	2	7	1	<1	1	*<3	27	40600	60755	41	140	Cold Forming	Acceptable
43	13	18	73	8	4	3	2	8	2	<1	1	*<3	28	38715	60320	42	139	Cold Forming	Acceptable
44	13	18	73	8	4	3	2	8	2	<1	1	*<3	28	38715	60320	42	137	Cold Forming	Acceptable

Visual Examination	Dimensional Inspection	Heat Treatment	(*) Product Analysis by CHARM MING
Acceptable	Acceptable	S.R 690^{0}C x 0.5H	

CE = C + Mn/6 + (Cr + Mo + V) / 5 + (Ni + Cu) /15

MATERIAL COMPLIES WITH THE REQUIREMENTS OF NACE MR0103-2015/ ISO 17945:2015(R2023)/ NACE MR0175-2021 and ISO 15156-2020 PER ANNEX A2.2

We hereby certify that the products described herein have been manufactured, sampled, tested and inspected in accordance with all requirements of above specification.

The products have been made free of MERCURY/RADIATION and made from SEAMLESS steel pipe.

No weld repair was performed and all products are free of weld repair.

NOTE:

1. TENSION SPECIMEN SIZE: GAUGE LENGTH 2 inches THE WIDTH 12.5mm WERE USED, GAUGE LENGTH 1 inch THE WIDTH 6.3mm WERE USED.
2. THE MANGANESE ABOVE THE SPECIFIED MAXIMUM WILL BE PERMITTED UP TO A MAXIMUM OF 1.65%. (FOOTNOTE **D** IN TABLE 1 OF ASTM A234-24 WPB).
3. THE QUALITY MANAGEMENT SYSTEM OF ISO 9001-2015 HAS BEEN APPROVED BY LRQA.
4. MATERIAL CERTIFIED ACCORDING TO ANNEX I PARAGRAPH 4.3 PED 2014/68/EU OF PRESSURE EQUIPMENT DIRECTIVE. MATERIAL ACCORDING TO ASME IIA PART D TABLE Y1.
5. THE COUNTRY OF MELT AND POUR: CHINA.

Charm Ming Vietnam Co., Ltd
Linh Xuan Ward - Ho Chi Minh City
QUALITY ASSURANCE SECTION

NGUYEN TRUNG NHAN
Quality Assurance Section/ Manager

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INSPECTION CERTIFICATE
(MILL TEST CERTIFICATE)
EN 10204 3.1

CHARM MING VIETNAM CO., LTD
Lot 49,51, B Road, Sai Gon-Linh Trung Export
Processing Zone, Linh Trung Ward, Thu Duc District,
HO CHI MINH CITY, POSTAL CODE 720400, VIETNAM
TEL : 84-28-3897 4885
FAX : 84-28-3897 4894

PURCHASER : Ferguson Enterprises, LLC
ORDER NO. : E423-9817
SPEC. FOR RAW MATERIAL : ASTM A106 Gr. B
SPEC. FOR INSPECTION : ASTM A234 - 19 WPB
ASME SA234 - 2021 WPB
ASME B16.9-2018 / ASME B16.25-2017
BS EN 10204 3.1-2004

JOB NO. : FE2212085B
CERTIFICATE NO. : Q230504085B-26
DATE : MAY. 04, 2023

	FE Product Code	Size(Inch) & Product	Heat Code	Quantity	Heat No.	Raw Material Mfg.	Certificate No.
120	GWTMMJ	3 x 3 x 1-1/2 CS STD WLD RED. TEE	951	14	11311951	BAOSHAN - CHINA	BGSAG2110270003700
121	GWTMMK	3 x 3 x 2 CS STD WLD RED. TEE	030	25	12318030	BAOSHAN - CHINA	BGSAG2211070002600
122	GWTPPJ	4 x 4 x 1-1/2 CS STD WLD RED. TEE	90Z	20	WF2085490Z	JINGJIANG - CHINA	23GC011858
123	GWTSSM	5 x 5 x 3 CS STD WLD RED. TEE	451	26	12317451	BAOSHAN - CHINA	BGSAG2211160007400
124	GWTSSP	5 x 5 x 4 CS STD WLD RED. TEE	001	7	WC11B02001	JINGJIANG - CHINA	21GC008096-1

Spec.	Chemical Composition %													Tension Test (Longitudinal Specimen)			Hardness Test		Magnetic Particle Exam.
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Pb	CE	Yield Strength	Tensile Strength	Elongation			
	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X1000	X1000	X1000	X100	P.S.I	P.S.I	%	HBW		
MIN		10	29											35000	60000	30			
MAX	30		106	50	58	40	40	40	15	80	20		42		95000		197		
120	13	19	77	12	3	2	3	10	3	<10	<1	*<3	29	40455	64670	44	130	Cold Forming	Acceptable
121	13	17	73	8	2	2	3	7	2	<1	<1	*<3	27	46255	62060	42	132	Cold Forming	Acceptable
122	11	22	124	9	4	6	4	14	3	3	1	5	35	54375	75255	43	136	Cold Forming	Acceptable
123	13	13	73	15	5	3	2	4	1	<1	1	*<3	26	42340	66555	43	124	Cold Forming	Acceptable
124	11	24	126	12	5	1	3	5	1	10	3	1	34	48140	72790	46	138	Cold Forming	Acceptable

Visual Examination	Dimensional Inspection	Heat Treatment	(*) Product Analysis by CHARM MING
Acceptable	Acceptable	S.R 690^{0}C x 0.5H	

CE = C + Mn/6 + (Cr + Mo + V) / 5 + (Ni + Cu) /15

MATERIAL (HARDNESS) CONFORMS TO THE REQUIREMENTS OF NACE MR0103-2015/ NACE MR0175-2015 and ISO 15156-2015

We hereby certify that the products described here in have been manufactured, sampled, tested and inspected in accordance with all requirements of above specification.

The products have been made free of MERCURY/RADIATION and made from SEAMLESS steel pipe.

No weld repair was performed and all products are free of weld repair.

NOTE:

1. TENSION SPECIMEN SIZE: GAUGE LENTH 2 inches THE WIDTH 12.5mm WERE USED, GAUGE LENGTH 1 inch THE WIDTH 6.3mm WERE USED.
2. THE MANGANESE ABOVE THE SPECIFIED MAXIMUM WILL BE PERMITTED UP TO A MAXIMUM OF 1.65%. (FOOTNOTE D IN TABLE 1 OF ASTM A234 -19 WPB).
3. THE QUALITY MANAGEMENT SYSTEM OF ISO 9001-2015 HAVE BEEN APPROVED BY LRQA
4. CERTIFIED ACCORDING TO PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU, ANNEX I SEC. 4.3 BY THE NOTIFIED BODY OF TÜV THÜRINGEN E. V. REG. NO. 0090 AND ANOTHER BY THE NOTIFIED BODY OF LLOYD'S REGISTER NEDERLAND B.V. REG. NO. 0343

Charm Ming Vietnam Co., Ltd
Linh Trung - Thu Duc
QUALITY ASSURANCE SECTION

BUI VAN NGUYEN
Quality Assurance Section/ Manager

NORMA (INDIA) LIMITED

(AN ISO 9001:2015 CERTIFIED COMPANY)
48 Site IV industrial Area, Sahibabad, Ghaziabad-201010 (U.P) INDIA.
Tel: 91-120-2896091, 2895404 E-mail: normaindia@gmail.com

Works Test Certificate

(AS PER EN 10204:3.1)
Doc. No: QF/LB/07

NORMA/LAB NO- 7134/2025-26		INVOICE NO. E 7163		DATE: 11.10.2025	
P. Order. No:	16140	Customer: -	SERVICE METAL PRODUCTS CO. U.S. A	Forging specification	ASTM A105-2023 ASME SA105-2023
Component	4''-150# SORF FLG.			Steel Supplier	Devbhoomi Casting Pvt.Ltd.
Part No.	SO104				
Machining STD	ANSI B16.5- 2020 ASME B16.5-2020	Quantity: -	121 Nos.	Mill Heat No.	J-20251736

TEST RESULTS — NORMA HEAT NO: 714

CHEMICAL COMPOSTION

Elements (%)	Specified Composition	Actual	
		NORMA LAB	MILL T.C.
Carbon	0.35max.	0.20	0.20
Manganese	0.60-1.05	1.13	1.12
Silicon	0.10-0.35	0.25	0.24
Sulphur	0.040max.	0.004	0.010
Phosphorous	0.035max.	0.018	0.027
Chromium	0.30max.	0.100	0.070
Nickel	0.40max.	0.025	0.020
Copper	0.40max.	0.022	0.030
Molybdenum	0.12max.	0.008	0.004
Vanadium	0.080max.	0.002	----
Aluminum	0.020min.	0.027	0.022
Carbon Equivalent (CE)	0.470max.	0.413	0.405

MECHANICAL PROPERTIES.

PROPERTIES	SPECIFIED	OBTAINED
Yield Strength (mpa)	250.00 min.	345.68
Tensile Strength (mpa)	485.00 min.	557.66
%Elongation in 50mm / 4D	22.00 min	29.00
Hardness HB.	197. max.	149-167
% Reduction of Area	30.00 min.	65.89

"As per ASTM A105 Table 1 Note: For each reduction of 0.01% below the specified carbon maximum (0.35%).an increase of 0.06% manganese above the specified maximum (1.05%) will be permitted up to maximum 1.35%.

Serrated face as per MSS-SP-6 With in limits of 125-250AARH

Supply Condition: Fully Finished.

CARBON EQUIVALENT (CE)

$$CE = C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$$

MARKING AS PER MSS-SP-25-2008
4''-150 SA/A105 714 B16.5 NORMA INDIA.07/2025

Checked by:

Metallurgist

NORMA INDIA LTD. Quality Dept. SAHIBABAD

Certified by:

Quality Control Manager

Remarks: We here by certify that the material described here in has been tested in accordance with the applicable specifications referred above and meets the requirements as per EN10204:3.1-2004, All material supplied is certified to be free of mercury contamination, No weld repair performed.
Raw material used is fully killed and fine grain practice.**Country of Origin/Melt/Manufacture: INDIA.**

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(1)

AN ISO 9001:2015 COMPANY

BALKRISHNA STEEL FORGE PVT. LTD.

244/P, NH-27, Shitala Mata Mandir Road,Beyond G.E.B. Sub station, Shapar (Veraval), Dist.: RAJKOT-360 024. GUJARAT, INDIA Ph.: +91 2827 252777,Fax : +91 2827-252507,E-mail : info@balkrishnaforge.com Web.: www.balkrishnaforge.com

MANUFACTURING TEST CERTIFICATE

CERTIFICATION AS PER EN 10204: 3.1 (2004)

TC NO. BF/015074 DT. 03.11.25

CUSTOMER NAME :- M/S. FERGUSON ENTERPRISES, INC -USA INV. NO./EC NO.- 3642 Dt: 03.11.25

P.O. No.	G533-22023	P.O. DT.	22.04.2025							
Sr. No.	DESCRIPTION	PRODUCT CODE	P.O. SR NO.	INV. SR NO.	QTY	MATERIAL	MILL HEAT NO.	H.L. NO.	DIMENSION STD	
1	3/4" X 150# SO RF	GRFSOFF	15	8	35	A105/SA105	2509227	2509227	ASME B16.5-25	
2	1-1/2" X 150# SO RF	GRFSOFJ	16	9	200	A105/SA105	2502634	2502634	ASME B16.5-25	
3	4" X 150# SO RF	GRFSOFP	17	10	581	A105/SA105	LC74	LC74	ASME B16.5-25	
4	4" X 150# SO RF	GRFSOFP	17	10	519	A105/SA105	LC271	LC271	ASME B16.5-25	
5	1" X 150# SW RF STD	GRFSWFG	18	11	300	A105/SA105	2509267	2509267	ASME B16.5-25	
6	2-1/2" X 150# SW RF STD	GRFSWFL	19	12	35	A105/SA105	2506976	2506976	ASME B16.5-25	
7	1" X 150# THRD RF	GRFTFG	20	13	300	A105/SA105	2502646	2502646	ASME B16.5-25	
8	3" X 2" X 150# RED THRD RF	GRFTFMK	21	14	10	A105/SA105	2505636	2505636	ASME B16.5-25	

Chemical Composition			C%	Mn%	P%	S%	Si%	Cu%	Ni%	Cr%	Mo%	V%	Nb%	Al%	CE.
Std. Reqmnt.		MIN.	-	0.60	-	-	0.10	-	-	-	-	-	-	-	-
		MAX	0.25	1.65	0.035	0.040	0.35	0.40	0.40	0.30	0.12	0.08	0.02	-	0.47
chech analysis	2509227		0.23	1.20	0.024	0.016	0.24	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.43
	2502634		0.22	1.19	0.026	0.012	0.19	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.42
	LC74		0.23	0.88	0.034	0.021	0.29	0.07	0.04	0.08	0.01	0.00	0.00	0.00	0.40
	LC271		0.22	0.88	0.033	0.023	0.28	0.09	0.05	0.09	0.01	0.00	0.00	0.00	0.40
	2509267		0.22	1.18	0.022	0.019	0.23	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.42
	2506976		0.24	1.21	0.033	0.020	0.20	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.44
	2502646		0.21	1.18	0.027	0.014	0.17	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.41
	2505636		0.24	1.17	0.025	0.018	0.32	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.44

MECHANICAL PROPERTIES		U.T.S. N/mm2	Y.S.(0.2% Offset) N/mm2	ELONGATION%	REDUCTION IN AREA%	HARDNESS (HBW)	HEAT TREATMENT DETAILS	IMPACT ENERGY ABSORBED AT °C Specimen (J)				
								1	2	3		Avg.(J)
Std. Requirement		485 MIN.	250 MIN.	22% MIN.	30% MIN.	137 TO 187						
Result	2509227	522.59	351.36	30.16	59.19	153-157	-	-	-	-	-	-
	2502634	520.03	328.03	31.54	63.29	151-155	-	-	-	-	-	-
	LC74	541.54	350.61	28.98	60.09	149-153	-	-	-	-	-	-
	LC271	525.19	343.30	31.72	63.19	149-153	-	-	-	-	-	-
	2509267	589.06	373.16	30.10	59.27	149-156	-	-	-	-	-	-
	2506976	564.60	350.91	25.86	56.36	150-153	-	-	-	-	-	-
	2502646	560.65	356.95	31.20	53.56	149-153	-	-	-	-	-	-
	2505636	536.55	356.16	33.20	65.21	150-156	-	-	-	-	-	-

Identification — Size,Pressure Rating,Type,Nominal Bore,SA/A105 , B-16, Heat Lot No., INDIA (All Normalised Flange Mat.Grade Marked as "SA/A105N")

Remark:-

* Materials Was manufactured,sampled,Tested and inspected in accordance with specification(s) solely by the manufacturer listed herein and was found to meet the requirments.
* No weld repair was performed.
* Materials is free of mercury and radioactive contamination.
* Country of melt and pour is India.
* Test Bar used - Round L=4D.
* The Raw material for above item is manufactured/procure from indian mill

All Normalised Flanges confirms to Fine grain MicroStructure.

All Flanges are coated with Anti Rust Black Paint.

We hereby certify that the above mentioned items conform to requirements of - ASME SA-105-25/ASTM A105-24, NACE MR0175 / ISO15156 - 20.

B. Saini

QA HEAD

FLB:12 REV:00 Dt: 01.11.17

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INSPECTION CERTIFICATE
(MILL TEST CERTIFICATE)
EN 10204 3.1

CHARM MING VIETNAM CO., LTD
Lot 49,51, B Road, Sai Gon-Linh Trung Export
Processing Zone, Linh Xuan Ward, Ho Chi Minh City
POSTAL CODE 720400, VIETNAM
TEL : 84-28-3897 4885
FAX : 84-28-3897 4894

PURCHASER : Ferguson Enterprises, LLC
ORDER NO. : G533-21838
SPEC. FOR RAW MATERIAL : ASTM A106 Gr. B
SPEC. FOR INSPECTION : ASTM A234-24 WPB
ASME SA234-2023 WPB
ASME B16.9-2024 / ASME B16.25-2022
BS EN 10204 3.1-2004

JOB NO. : FE2504076
CERTIFICATE NO. : Q250811076-11
DATE : AUG 11, 2025

	FE Product Code	Size(Inch) & Product			Heat Code	Quantity	Full Heat	Raw Material Mfg.	Certificate No.
45	GWCRML	3 x 2-1/2	CS STD WLD	CON. RED	025	58	15300025	BAOSHAN - CHINA	BGSAG2503240495600
46	GWCRPK	4 x 2	CS STD WLD	CON. RED	050	70	WY5203050	JINGJIANG - CHINA	25GC137247
47	GWCRUM	6 x 3	CS STD WLD	CON. RED	085	38	WY5103085	JINGJIANG - CHINA	25GC137238
48	GWCR10S	10 x 5	CS STD WLD	CON. RED	61H	10	87061H	YANTAI - CHINA	BGSQG2503190694700
49	GWCR12X	12 x 8	CS STD WLD	CON. RED	60H	11	87060H	YANTAI - CHINA	BGSQG2503190694800

Spe.	Chemical Composition %													Tension Test (Longitudinal Specimen)			Hardness Test	The way of forming	Magnetic Particle Exam.
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Pb	CE	Yield Strength	Tensile Strength	Elongation			
	X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X1000	X1000	X1000	X100	P.S.I	P.S.I	%	HBW		
MIN		10	29											35000	60000	30			
MAX	30		106	50	58	40	40	40	15	80	20		42		95000		197		
45	13	18	73	8	4	3	2	8	2	<1	1	*<3	28	38715	60320	42	140	Cold Forming	Acceptable
46	12	22	129	9	4	2	1	3	<1	3	3	<1	34	49445	69310	43	140	Cold Forming	Acceptable
47	11	18	124	9	5	2	1	2	<1	1	2	<1	32	49300	61770	45	143	Cold Forming	Acceptable
48	15	19	92	12	4	2	1	5	<1	<1	1	*<3	32	39585	65250	46	138	Cold Forming	Acceptable
49	14	22	92	12	3	2	1	4	<1	<1	1	*<3	30	41180	65830	46	144	Cold Forming	Acceptable

Visual Examination	Dimensional Inspection	Heat Treatment	(*) Product Analysis by CHARM MING
Acceptable	Acceptable	S.R 690°C x 0.5H	

CE = C + Mn/6 + (Cr + Mo + V) / 5 + (Ni + Cu) /15

MATERIAL COMPLIES WITH THE REQUIREMENTS OF NACE MR0103-2015/ ISO 17945:2015(R2023)/ NACE MR0175-2021 and ISO 15156-2020 PER ANNEX A2.2

We hereby certify that the products described herein have been manufactured, sampled, tested and inspected in accordance with all requirements of above specification.

The products have been made free of MERCURY/RADIATION and made from SEAMLESS steel pipe.

No weld repair was performed and all products are free of weld repair.

NOTE:

1. TENSION SPECIMEN SIZE: GAUGE LENGTH 2 inches THE WIDTH 12.5mm WERE USED, GAUGE LENGTH 1 inch THE WIDTH 6.3mm WERE USED.
2. THE MANGANESE ABOVE THE SPECIFIED MAXIMUM WILL BE PERMITTED UP TO A MAXIMUM OF 1.65%. (FOOTNOTE **D** IN TABLE 1 OF ASTM A234-24 WPB).
3. THE QUALITY MANAGEMENT SYSTEM OF ISO 9001-2015 HAS BEEN APPROVED BY LRQA.
4. MATERIAL CERTIFIED ACCORDING TO ANNEX I PARAGRAPH 4.3 PED 2014/68/EU OF PRESSURE EQUIPMENT DIRECTIVE. MATERIAL ACCORDING TO ASME IIA PART D TABLE Y1.
5. THE COUNTRY OF MELT AND POUR: CHINA.

Charm Ming Vietnam Co., Ltd
Linh Xuan Ward - Ho Chi Minh City
QUALITY ASSURANCE SECTION

NGUYEN TRUNG NHAN
Quality Assurance Section/ Manager

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INSPECTION CERTIFICATE
(EN 10204-3.1)

ARAH DAGANG SDN.BHD. (202899-M)

No.10, Jalan Jasmine 3, SEK BB10, Bandar Bukit Beruntung, 48300 Selangor Darul Ehsan, Malaysia.
Tel : 603-60281863, 60281866, 60281833 Fax : 603-60282863

Purchaser : FERGUSON ENTERPRISES, LLC
Order No : G533-5406, FORT PAYNE, AL
Starting Material : SEAMLESS PIPE
Country Of Original : MALAYSIA
Heat Treatment (*) : S
(*)Steel Making Process : Y
Certificate No : AD/05/25/10348T
Date : 10-May-25
INVOICE NO : AD/EX/F2499/25
Country Of Melt : CHINA

Specification for Inspection : ASME B16.9 (20
NACE MR 0175(
Specification for Material : ASTM A234 (202
Appearance (Visual) : Satisfactory
Dimension : Satisfactory
Certification : Issued in agreer
service GmbH. (
Para.4.3 by No
Certificate no.

No	Manufacturing No. (Heat ID No.)	Raw Material Heat No	Article, Size & Grade	Quantity	Chemical Composition											CE	Tension Test (20'C)		
					C	Sl	Mn	P	S	Cu	Ni	Cr	Mo	V	NB		(*)Test direction	Yield P.S.I [MPA	Te
					x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x100			35000	6(
				Min:-		10	29												9
				Max:-	30		106	50	58	40	40	40	15	8		0.50			
1	08	20509-0874	1" STD TEE WPB	28	20	22	44	20	20	5	1	3	0	0	0	0.27	L	51200	6
2	W71L	WB031803538	1.1/2" STD TEE WPB	25	19.5	23.7	38.3	22	13	1	<1	<1	<1	<1	<1	0.26	L	43000	8
3	W25M	14326026	2" STD TEE WPB	70	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600	8
4	W27M	14326026	2" STD TEE WPB	7	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600	8
5	WT210N	242B12992	6" STD TEE WPB	8	18	24	53	19	6	1	2	18	1	1	1	0.31	L	47600	7
6	9N8	314713	1.1/2" XH TEE WPB	66	19	25	55	9	<1	1	0	0	0	0	<1	0.28	L	55100	7
7	HN17	19102640	3" XH TEE WPB	5	17	27	46	22	1.3	4.4	1.4	10.1	4.5	<1	<1	0.25	L	51200	7
8	RD214	242B08486	4" X 2.1/2" STD RED TEE WPB	63	19	23	57	12	6	1	2	20	1	1	1	0.33	L	49800	7
9	KM543	12314611	3" X 2.1/2" STD CON RED WPB	38	19	21	45	8	2	3	2	7	2	<1	<1	0.27	L	53900	7
10	KV812	243B03231	4" X 1.1/2" STD CON RED WPB	45	18	25	54	21	5	1	2	19	1	1	1	0.31	L	55100	7
11	KJ112N	242B05591	4" X 2" STD CON RED WPB	59	18	25	55	15	7	1	2	17	1	1	1	0.31	L	58900	8
12	KC71B	242B05591	4" X 2.1/2" STD CON RED WPB	326	18	25	55	15	7	1	2	17	1	1	1	0.31	L	59300	8
13	KC158F	242B05591	4" X 3" STD CON RED WPB	394	18	25	55	15	7	1	2	17	1	1	1	0.31	L	54400	8
14	KC170F	242B05591	4" X 3" STD CON RED WPB	175	18	25	55	15	7	1	2	17	1	1	1	0.31	L	54400	8
15	KFU108	14328907	5" X 4" STD CON RED WPB	93	18	24	45	12	4	4	3	10	2	<1	<1	0.29	L	47100	7
16	K5477	19303226	6" X 2.1/2" STD CON RED WPB	3	19	21	38	13	6.1	4.8	2.1	20.3	2.1	<1	<1	0.26	L	57100	7
17	KA474B	242B12992	6" X 4" STD CON RED WPB	312	18	24	53	19	6	1	2	18	1	1	1	0.31	L	50300	7
18	KL133U	90322H	10" X 8" STD CON RED WPB	136	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	46900	7
19	KL134U	90322H	10" X 8" STD CON RED WPB	4	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	46900	7
20	KB115H	85233H	12" X 10" STD CON RED WPB	26	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	59600	7
21	KB117H	85233H	12" X 10" STD CON RED WPB	54	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	59600	7
22																			

IOTE:

:E = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

')

) Hot Forming operation : at a temperature between 690'C – 980'C and cooled in still air.
) Cold Forming operation : Normalizing at a temperature between 850'C – 910'C and cooled in still air.
= Basic oxygen process L = Longitudinal
= Electric furnace T = Transverse

/e hereby certify that the product described herein has been manufactured in accordance with the specification concerned and also
ith the purchaser's requirement and the result of all examination and test are acceptable.

ARAH DAGANG SDN. BHD.

SHAKTI

Forge Industries Pvt. Ltd.

CIN No. U29100GJ2015PTC083609

An ISO:9001 Certified
Manufacturer of Pipe Fitting & Flanges
Forgings, Precision Components & Industrial Suppliers

Country of Melt and Pour India
Country of Origin: India

-: TEST CERTIFICATE :-

[In Accordance with EN 10204:2005 (E) Type 3.1]

CERTIFICATE NO.: SFIPL/TC/E/2025/22773	**DATE:** 9-Sep-25
CUSTOMER: FERGUSON ENTERPRISES	**PO. NO.:** G533-24472
Item Details as follow :-	**PROCESS OF MANUFACTURING:-** HOT FORGING / MACHINING

Po. Sr.No.	ITEM DESCRIPTION	Material Specification	Size X Class	Qty	Lot No	HT No.
018	IFSTHCB - HALF COUPLING NPT	SA / A105N	1/4" 3000#	269	G097	2312293

MILL TEST PROPERTIES

Lot No	HT NO.	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Al	CE
Min		-	0.60	0.10	-	-	-	-	-	-	-	-	-
Max		0.350	1.050	0.350	0.040	0.035	0.300	0.400	0.120	0.400	0.080	-	0.470
G097	2312293	0.220	0.970	0.240	0.020	0.021	0.020	-	-	0.001	-	0.026	0.386

CHEMICAL PROPERTIES (TEST METHOD AS PER ASTM E-415)

Lot No	HT NO.	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	V	Al	CE
Min		-	0.60	0.10	-	-	-	-	-	-	-	-	-
Max		0.350	1.050	0.350	0.040	0.035	0.300	0.400	0.120	0.400	0.080	-	0.470
G097	2312293	0.226	0.966	0.254	0.024	0.022	0.008	0.0050	0.0010	<0.005	<0.001	0.031	0.390

MECHANICAL PROPERTIES (TEST METHOD AS PER ASTM A370)

Lot No	HT NO.	Yield Strength / (0.2 % Offset method) MPa	Ultimate Tensile Strength MPa	Elongation (%) G.L.=4D	Reduction In Area %	Hardness In BHN	Heat Treatment
Min		250.00	485.00	22.00%	30.00%	137	Normalizing at 910°C Soaking Time 01:15 HRS and Air Cooled.
Max		-	-	-	-	197	
G097	2312293	343.590	502.820	26.560	57.860	147 - 150	

MARKING DETAILS :- (BRAND, MATERIAL+N, LOT NO, STD, PRESSURE, SIZE, COUNTRY OF ORIGIN)

MATERIAL STANDARD :	ASME Section II Part-A SA105 - 2023 / ASTM A105 - 2024	**DIMENSION STANDARD :-**	ASME B16.11 - 2021
GALVANIZING STANDARD :-	N.A.	**THREADING STANDARD :-**	ASME B1.20.1 - 2013(R2018)

Remark :- MATERIAL CONFIRMS TO ASME Section II Part-A SA105 - 2023 / ASTM A105 - 2024

Note:- 1) All material supplied is certified to be free of radioactive contamination & mercury contamination and no mercury bearing equipment was used during manufacturing & No weld repair performed. 2) Above Fitting Material are fully Killed & Fine grained. 3) Dimension and visual inspection have been carried out for the above items and found Satisfactory.4) Material Confirms to the Requirement as per NACE MR-0175/ISO 15156-2-2020 / MR0103/ISO 17495-1-2016.

We hereby certify that the fitting was manufactured, sampled, tested and inspected in the specification and was found to meet the requirements

For, Shakti Forge Industries Pvt. Ltd.	For, Shakti Forge Industries Pvt. Ltd.	For Client / Third Party Insp. Agency
SHAKTI FORGE INDU. PVT. LTD. QC		
Kachhela Jayesh QA/QC Asst. Manager	Naitik Thaker Quality Manager	
(Inspected By)	(Approved By)	(Auth. Signature & Stamp)

CLIENTE / Customer / Client
FERGUSON
P.O. BOX 9406
HAMPTON VA 23670
USA
USA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

UNE EN 10204:06 / 3.1
ISO 10474:15 / 3.1

FECHA: Date: 13/09/2019 / 12/11/2020
N.º No. 205513 Rev.01
HOJA: Page: 4

ISO 14001 CERTIFIED SGI 1922164
ISO 9001 CERTIFIED SGI 6000236
Management Systems certified
Certified acc. PED 97/23/EC+
PED 14/68/UE
by TÜV Rheinland·
N.º 01 202 E/Q 02 7443

PRODUCTO / Article - Produit: FLANGES

SU PEDIDO N.º / Your Order No. / Votre Cde. N.º: Y474-3843 McGregor

DE / of. - de: 19/08/2019

NORMAS APLICABLES / Requirements - Normes Applicables: ASME B16.5-17

MATERIAL CORRESPONDIENTE / Material Correspondent - Qualité: ASME SA105M-17, ASTM A105M-18, EN 10222-2 P280GH-17.

MODO DE FUSION (*) / Steel Making - Elaboration de l'acier: NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17945-15

E = Elec. Y = Oxígeno básico

MARCA DEL FABRICANTE / Mark of factory / Marque du fabricant

DEPARTAMENTO / Section / Département: QUALI

PARTIDA / Item / Poste	CANTIDAD / Quantity / Quantité	DESCRIPCION / Description / Description	OBSERVACIONES / Remarks / Observations (*)	COLADA N.º / Heat No / N.ºCoulée	RESISTENCIA T.Strength Resist Rupt N/mm2	LIMITE ELAST. Y.Strength 0.2 % N/mm2	ALARGAM. Elongation Allongement Lo:50mm/4d %	ESTRICCION Red. Area Striction %
53 GRFBF18-WE	5	BLIND 18 150LB RF A105N	NE	S8AV9	512	340	34,12	70,18
53 GRFBF18-WE	5	BLIND 18 150LB RF A105N	NE	T6AV9	520	322	30,04	70,77
54 GRFBFD-WE	40	BLIND 1/2 150LB RF A105N	NE	A53A9	524	305	35,80	71,15
55 GRFBFG-WE	221	BLIND 1 150LB RF A105N -r-	NE	A53A9	524	305	35,80	71,15
55 GRFBFG-WE	4	BLIND 1 150LB RF A105N -r-	NE	B61A8	519	321	32,60	69,30
56 GRFBFJ-WE	105	BLIND 1.1/2 150LB RF A105N	NE	A55A9	524	319	37,97	73,71
61 GRFSOFD-WE	40	SO 1/2 150LB RF A105N	NE	C03A8	492	290	35,30	71,00
62 GRFSOFP-WE	17	SO 4 150LB RF A105N	NE	15HC9	494	316	36,34	72,61

COLADA N.º / Heat No / Ladle: L / Product: P	COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE															Origin of Steel
	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Nb %	V %	Cu %	Al %	Ti %	B %	CEq %	
S8AV9 L	0,190	0,210	1,130	0,014	0,001	0,090	0,100	0,020	0,002	0,000	0,140	0,035	0,003	0,0001	0,42	Italy
T6AV9 L	0,180	0,230	1,130	0,015	0,002	0,090	0,090	0,020	0,002	0,000	0,110	0,031	0,003	0,0001	0,40	Italy
A53A9 L	0,189	0,223	1,168	0,009	0,004	0,054	0,053	0,013	0,001	0,002	0,076	0,026	0,001	0,0002	0,41	France
B61A8 L	0,190	0,250	1,060	0,010	0,003	0,050	0,060	0,011	0,004	0,001	0,210	0,025	0,001	0,0004	0,40	France
A55A9 L	0,190	0,201	1,136	0,012	0,004	0,039	0,037	0,013	0,001	0,002	0,047	0,025	0,002	0,0002	0,40	Germany
C03A8 L	0,190	0,250	1,060	0,010	0,003	0,050	0,060	0,011	0,004	0,001	0,210	0,025	0,001	0,0004	0,40	France
15HC9 L	0,190	0,190	1,144	0,008	0,004	0,046	0,030	0,008	0,000	0,002	0,047	0,028	0,001	0,0002	0,40	Germany

- Las dimensiones
- Dimension and s
- Les dimensions e

- Los materiales cit
- Manufacturing req
- Les normes applic

(*) OBSERVACIONES: Remarks / Observations

FLANGES ARE FULLY KILLED AND FINE GRAIN PRACTICED
N_NORMALIZED ABOVE 900ºC AND COOLED IN AIR AT ROOM TEMPERATURE

ULMA
Dpto. de
Qualit

ORIGINAL

MATERIAL TEST & INSPECTION CERTIFICATE

PFC

#39, Noksans

Purchaser FERGUSON
Project Name
Bill of Lading No FOB
Po No F796-17876

According to
DIN 50049 3.1 / EN 10204 3.1 / ISO 10474 3.1

SPEC. FOR MATERIAL	ASTM A234 WPB-23 & ASME SA234 WPB(ASME BPVC.II.A-2023)	HEAT TREATMENT	A : HOT FORMED WITH FINAL(620°C ~ 980°C)	CERTI
SPEC. FOR INSPECTION	ASME B16.9 (Wrought Buttwelding Fittings)-2018		SR : STRESS RELIEVING(620°C×0.5hr/in & A/C)	DATE
STARTING MATERIAL	CARBON STEEL SEAMLESS PIPE			VISUA

No	SEQ/LINE/ITEM NO	ITEM	SCH.	NPS	Qty	HCN		H/T
1		45D ELBOW LR	STD	2	62	A7302		A
2		45D ELBOW LR	STD	5	78	A5035		A
3		45D ELBOW LR	XH	2	43	A7063		A
4		90D ELBOW LR	STD	12	87	A7328		A
5		90D ELBOW LR	STD	2	13	A7302		A
6		90D ELBOW LR	STD	2-1/2	334	A7168		A
7		90D ELBOW LR	STD	3	1,842	A7248		A
8		90D ELBOW LR	STD	5	81	A5035		A
9		90D ELBOW LR	STD	6	420	A7326		A
10		90D ELBOW LR	STD	8	144	A7247		A

No	HCN	CHEMICAL COMPOSITION (wt. %)											TENSILE TEST					
		SPEC.	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	V	SPEC.	Y.S	T.S	E.L	R.A	Hardness
			×100	×100	×100	×1000	×1000	×100	×100	×100	×100	×100		Mpa	Mpa	%	%	HBW
		MIN		10	29								MIN	240	415	22.0		
		MAX	30		106	50	58	40	40	15	40	8	MAX					197
1	A7302	L	23	24	55	11	7	1	4	0	2	0	L	356	484	36.0		145/150
2	A5035	L	20	27	54	11	2	3	17	0	5	0	L	311	476	32.5		129/133
3	A7063	L	21	22	42	16	13	1	3	0	1	0	L	275	475	29.0		136/131
4	A7328	L	18	27	54	11	3	1	4	0	1	1	L	291	460	37.0		133/130
5	A7302	L	23	24	55	11	7	1	4	0	2	0	L	356	484	36.0		145/150
6	A7168	L	18	26	99	18	2	2	5	1	1	0	L	397	529	56.0		133/138
7	A7248	L	20	25	55	10	3	1	5	0	1	4	L	310	490	34.0		157/159
8	A5035	L	20	27	54	11	2	3	17	0	5	0	L	311	476	32.5		129/133
9	A7326	L	22	25	56	18	6	1	5	0	2	0	L	332	478	37.0		136/140
10	A7247	L	20	28	69	10	4	1	4	0	1	4	L	315	510	33.0		136/136

Note.
1) L : LADLE ANALYSIS , P : PRODUCT ANALYSIS , HCN : Heat Control Number
2) Mn : FOR EACH REDUCTION OF 0.01% BELOW THE SPECIFIED CARBON MAXIMUM, AN INCREASE OF 0.06% MANGANESE ABOVE THE SPECIFIED MAXIMUM WILL BE PERMITTED,UP TO A MAXIMUM OF 1.65%.
- "ASME SA234/SA234M(ASME BPVC.II.A-2023) TABLE 1"
3) MADE IN SOUTH KOREA

WE CERTIFY THIS MATERIAL HAS BEEN MANUFACTURED AND EXAMINED I
REQUIREMENTS OF THE SPECIFICATION AND THE RESULTS OF ALL EXAMIN

REVIEWED BY :

WITNESSED BY :

MANAGER OF Q

INSPECTION CERTIFICATE
(EN 10204-3.1)

ARAH DAGANG SDN.BHD. (202899-M)

No.10, Jalan Jasmine 3, SEK BB10, Bandar Bukit Beruntung, 48300 Selangor Darul Ehsan, Malaysia.
Tel : 603-60281863, 60281866, 60281833 Fax : 603-60282863

Purchaser	**:FERGUSON ENTERPRISES, LLC**
Order No	**:G533-8913, FORT PAYNE, AL**
Starting Material	**:SEAMLESS PIPE**
Country Of Original	**:MALAYSIA**
Heat Treatment (*)	**:S**
(*)Steel Making Process	**:Y**
Certificate No	**:AD/08/25/10659T**
Date	**:31-Aug-25**
INVOICE NO	**:AD/EX/F2527/25**

Specification for Inspection	**: ASME B16 NACE MR**
Specification for Material	**: ASTM A23**
Appearance (Visual)	**: Satisfacto**
Dimension	**: Satisfacto**
Certification	**: Issued in a service Gr Para.4.3 I Certificat**

No	Manufacturing No. (Heat ID No.)	Raw Material Heat No	Article, Size & Grade	Quantity	Chemical Composition												Tension Test (2	
					C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	NB	CE	(*)Test direction	Yield P.S.I
					x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x100			35000
				Min:-		10	29											
				Max:-	30		106	50	58	40	40	40	15	8		0.50		
1	20	303425	1/2" STD TEE WPB	39	19	25	53	10	10	16	4	3	0	0	0	0.28	L	76100
2	W33M	14326026	2" STD TEE WPB	17	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600
3	WH121	14326199	3" STD TEE WPB	90	18	27	43	10	4	2	3	10	1	<1	<1	0.28	L	55300
4	WCT15	89993H	14" STD TEE WPB	24	20	23	55	15	10	1	2	5	1	1	<1	0.31	L	45600
5	WDN28	89761H	16" STD TEE WPB	7	19	25	56	15	8	1	1	3	<1	<1	<1	0.29	L	43500
6	HA253	90590H	8" XH TEE WPB	5	20	23	58	11	8	1	1	3	<1	<1	<1	0.31	L	50000
7	V580J	242B12992	6" X 5" STD RED TEE WPB	20	18	24	53	19	6	1	2	18	1	1	1	0.31	L	46900
8	KA487B	252B03278	6" X 4" STD CON RED WPB	100	18	24	46	19	5	1	2	6	1	1	1	0.27	L	52700
9	L4	303-613	1" X 1/2" XH CON RED WPB	10	21	25	54	10	10	15	5	4	0	0	0	0.30	L	65100
10	LB8	WB011908033	2" X 3/4" XH CON RED WPB	10	20	23	40.2	10	14	1.6	1.1	2	<1	<1	<1	0.27	L	61600
11	LC100	13324260	2" X 1.1/2" XH CON RED WPB	7	18	24	44	9	4	3	4	7	2	<1	1	0.26	L	53200
12	LMN94	19102640	3" X 2.1/2" XH CON RED WPB	23	17	27	46	22	1.3	4.4	1.4	10.1	4.5	<1	<1	0.25	L	53900
13	LK43U	243B08392	10" X 8" XH CON RED WPB	10	18	23	54	16	6	1	2	18	1	1	1	0.31	L	48400
14																		
15																		
16																		
17																		
18																		
19																		
20																		
21																		
22																		

NOTE:

CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

(*)

A) Hot Forming operation : at a temperature between 690°C – 980°C and cooled in still air.

S) Cold Forming operation : Normalizing at a temperature between 850°C – 910°C and cooled in still air.

Y = Basic oxygen process

E = Electric furnace

L = Longitudinal

T = Transverse

We hereby certify that the product described herein has been manufactured in accordance with the specification concerned and also with the purchaser's requirement and the result of all examination and test are acceptable.

ARAH DAGANG SDN. BHD.

JINDAL

JINDAL SAW LTD.

WORKS / MILL TEST CERTIFICATE

F / QLY / 23 R 00

T.C.NO: JSAW / Q / XP2402000290 / B DATE: 20.07.2024
P.O.NO: F5479-372 DATE: 28.03.2024
S.O.NO: 4111006039-20 DATE: 23.04.2024
INV.NO: XP2402000290 DATE: 20.07.2024

CUSTOMER : FERGUSON ENTERPRISES LLC

PRODUCT : HOT FINISHED CARBON STEEL SEAMLESS PIPES

PIPE SPECIFICATION : API 5L GR B AND X42 PSL 1 - 46TH EDITION / ASTM A 53 GR. B - 22 / ASME SA 53 TYPE-S GR. B, (ASME SEC II PART A EDITION 2023) / ASTM A 106 GR. B & C - 19a / ASME SA 106 GR. B & C, (ASME SEC II PART A EDITION 2023) / NACE MR 0103:2015 / NACE MR 0175:2021 / ISO 15156:2020

ITEM CODE : GBSPA106BM

PIPE DIMENSIONS		LENGTH (FEET)	END CONDTIONS	STRAIGHTNESS	HEAT NO.	QUANTITY	
OD	WT					NOS.	FEET
3.500 "	0.216 "	21.00	Bevelled Ends	Satisfactory	3415698	96	2016.064
3 NPS	SCH 40				3417140	45	945.030
					TOTAL	141	2961.094

CHEMICAL COMPOSITION :

Heat No.	Analysis	% C	% Mn*	% Si	% S	% P	% Cr	% Ni	% Cu	% Mo	% V	% Nb	% Ti	% B	% Nb+V	% Nb+V+Ti	% CE
	Reqd.	0.28 Max.	0.29 - 1.06	0.10 Min.	0.010 Max.	0.030 Max.	0.40 Max.	0.40 Max.	0.40 Max.	0.15 Max.	0.08 Max.	-	-	0.001 Max.	0.06 Max.	0.15 Max.	-
3415698	Heat	0.18	1.10	0.28	0.006	0.012	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	0.37
	Product I	0.19	1.11	0.29	0.006	0.014	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	0.38
	Product II	0.18	1.10	0.28	0.007	0.013	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	0.37
3417140	Heat	0.18	1.10	0.26	0.010	0.009	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.001	<0.01	<0.01	0.37
	Product I	0.19	1.11	0.27	0.009	0.008	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	0.38
	Product II	0.18	1.10	0.26	0.010	0.009	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	0.37

** Mn. is acceptable upto 1.20 % Max. as per Table 1 of ASME SA 53.*

MECHANICAL TESTS :

Heat No.		TENSILE TEST			OTHER TESTS		
		Y.S. (0.2% Offset)	U.T.S.	% E G.L= 50.00 mm	HARDNESS TEST	FLATTENING TEST	HYDROSTATIC TEST (100%)
		Longitudinal Tensile Specimen Width 19.05 mm					
	Reqd.	42100 PSI Min.	70000 PSI Min.	21.50% Min.	200 HBW Max.	As Per Spec.	3000 PSI for 5 Seconds Minimum
3415698	Obtained	50994	73601	36	148 - 150	Satisfactory	Satisfactory
3417140	Obtained	54325	77608	32	152 - 154	Satisfactory	Satisfactory

Remarks :

1. Marking on Pipes : JSAW API SPEC 5L /ASTM A 53 /ASME SA 53 TYPE-S GR B /ASTM A 106 / ASME SA 106 GR B AND C / NACE MR 0103 / NACE MR 0175/ISO 15156 3.500" OD 0.216" WT (3 NPS SCH 40) GR B AND X42 PSL1 SMLS HEAT NO. 3415698, 3417140 HYDRO 3000 PSI 21 FEET LENGTH 7.58 lb/ft ITEM CODE GBSPA106BM FEL PO. NO. F5479-372 MADE IN INDIA.
2. Steel Making Process : EAF-LRF-VD-CCM, Fully Killed.
3. Visual Inspection : Satisfactory
4. Name of Steel Melt : Jindal Steel and Power Limited
5. Country of Melt : India
6. Name of Pipe Manufacture : Jindal Saw Limited
7. Country of Pipe Manufacture : India
8. Product is free from Mercury & No Repairs Made By Welding.
9. Residual Magnetism (30 Gauss Max.) : 10-12

T.C. AS PER EN10204 - 3.1

We hereby certify that the material herein described has been manufactured, sampled, tested & inspected in accordance with above standard and Confirms to each Grade and specification individually & satisfy the requirements.

Authorized Signatory
KIRAN KUMAR (Sr. Executive - Quality)

G533-5406

INSPECTION CERTIFICATE
(EN 10204-3.1)

ARAH DAGANG SDN.BHD. (202899-M)

No.10, Jalan Jasmine 3, SEK BB10, Bandar Bukit Beruntung, 48300 Selangor Darul Ehsan, Malaysia.
Tel : 603-60281863, 60281866, 60281833 Fax : 603-60282863

Purchaser	: FERGUSON ENTERPRISES, LLC
Order No	: G533-5406, FORT PAYNE, AL
Starting Material	: SEAMLESS PIPE
Country Of Original	: MALAYSIA
Heat Treatment (*)	: S
(*)Steel Making Process	: Y
Certificate No	: AD/05/25/10348T
Date	: 10-May-25
INVOICE NO	: AD/EX/F2499/25
Country Of Melt	: CHINA

Specification for Inspection	: ASME B16. NACE MR 0
Specification for Material	: ASTM A234
Appearance (Visual)	: Satisfactory
Dimension	: Satisfactory
Certification	: Issued in ag service Gmb Para.4.3 by Certificate

No	Manufacturing No. (Heat ID No.)	Raw Material Heat No	Article, Size & Grade	Quantity	Chemical Composition												Tension Test (20	
					C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	NB	CE	(*)Test direction	Yield P.S.I [M
					x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x100			
				Min:-			10	29										
				Max:-	30			106	50	58	40	40	40	15	8			35000
1	08	20509-0874	1" STD TEE WPB	28	20	22	44	20	20	5	1	3	0	0	0	0.50		
2	W71L	WB031803538	1.1/2" STD TEE WPB	25	19.5	23.7	38.3	22	13	1	<1	<1	<1	<1	0	0.27	L	51200
3	W25M	14326026	2" STD TEE WPB	70	18	24	43	8	2	3	4	8	2	<1	<1	0.26	L	43000
4	W27M	14326026	2" STD TEE WPB	7	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600
5	WT210N	242B12992	6" STD TEE WPB	8	18	24	53	19	6	1	2	18	1	1	1	0.31	L	47600
6	9N8	314713	1.1/2" XH TEE WPB	66	19	25	55	9	<1	1	0	0	0	0	<1	0.28	L	55100
7	HN17	19102640	3" XH TEE WPB	5	17	27	46	22	1.3	4.4	1.4	10.1	4.5	<1	<1	0.25	L	51200
8	RD214	242B08486	4" X 2.1/2" STD RED TEE WPB	63	19	23	57	12	6	1	2	20	1	1	1	0.33	L	49800
9	KM543	12314611	3" X 2.1/2" STD CON RED WPB	38	19	21	45	8	2	3	2	7	2	<1	<1	0.27	L	53900
10	KV812	243B03231	4" X 1.1/2" STD CON RED WPB	45	18	25	54	21	5	1	2	19	1	1	1	0.31	L	55100
11	KJ112N	242B05591	4" X 2" STD CON RED WPB	59	18	25	55	15	7	1	2	17	1	1	1	0.31	L	58900
12	KC71B	242B05591	4" X 2.1/2" STD CON RED WPB	326	18	25	55	15	7	1	2	17	1	1	1	0.31	L	59300
13	KC158F	242B05591	4" X 3" STD CON RED WPB	394	18	25	55	15	7	1	2	17	1	1	1	0.31	L	54400
14	KC170F	242B05591	4" X 3" STD CON RED WPB	175	18	25	55	15	7	1	2	17	1	1	1	0.31	L	54400
15	KFU108	14328907	5" X 4" STD CON RED WPB	93	18	24	45	12	4	4	3	10	2	<1	<1	0.29	L	47100
16	K5477	19303226	6" X 2.1/2" STD CON RED WPB	3	19	21	38	13	6.1	4.8	2.1	20.3	2.1	<1	<1	0.26	L	57100
17	KA474B	242B12992	6" X 4" STD CON RED WPB	312	18	24	53	19	6	1	2	18	1	1	1	0.31	L	50300
18	KL133U	90322H	10" X 8" STD CON RED WPB	136	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	46900
19	KL134U	90322H	10" X 8" STD CON RED WPB	4	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	46900
20	KB115H	85233H	12" X 10" STD CON RED WPB	26	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	59600
21	KB117H	85233H	12" X 10" STD CON RED WPB	54	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	59600
22																		

NOTE:

CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

(*)

A) Hot Forming operation : at a temperature between 890'C ~ 980'C and cooled in still air.
S) Cold Forming operation : Normalizing at a temperature between 850'C ~ 910'C and cooled in still air.
Y = Basic oxygen process
E = Electric furnace
L = Longitudinal
T = Transverse

We hereby certify that the product described herein has been manufactured in accordance with the specification concerned and also with the purchaser's requirement and the result of all examination and test are acceptable.

ARAH DAGANG SDN BHD (202899-M)

G533-5406

INSPECTION CERTIFICATE
(EN 10204-3.1)

ARAH DAGANG SDN.BHD. (202899-M)

No.10, Jalan Jasmine 3, SEK BB10, Bandar Bukit Beruntung, 48300 Selangor Darul Ehsan, Malaysia.
Tel : 603-60281863, 60281866, 60281833 Fax : 603-60282863

Purchaser	: FERGUSON ENTERPRISES, LLC
Order No	: G533-5406, FORT PAYNE, AL
Starting Material	: SEAMLESS PIPE
Country Of Original	: MALAYSIA
Heat Treatment (*)	: S
(*)Steel Making Process	: Y
Certificate No	: AD/05/25/10348T
Date	: 10-May-25
INVOICE NO	: AD/EX/F2499/25
Country Of Melt	: CHINA

Specification for Inspection	: ASME B16.
	NACE MR (
Specification for Material	: ASTM A234
Appearance (Visual)	: Satisfactor
Dimension	: Satisfactor
Certification	: Issued in a
	service Gm
	Para.4.3 b
	Certificate

No	Manufacturing No. (Heat ID No.)	Raw Material Heat No	Article, Size & Grade	Quantity	Chemical Composition												Tension Test (2	
					C	Sl	Mn	P	S	Cu	Ni	Cr	Mo	V	NB	CE	(*)Test direction	Yield P.S.I
				Min:-	x100	x100	x100	x1000	x1000	x100	x100	x100	x100	x100	x100			
				Max:-		10	29											
1	08	20509-0874	1" STD TEE WPB	28	30		106	50	58	40	40	40	15	8		0.50		35000
2	W71L	WB031803538	1.1/2" STD TEE WPB	25	20	22	44	20	20	5	1	3	0	0	0	0.27	L	51200
3	W25M	14326026	2" STD TEE WPB	70	19.5	23.7	38.3	22	13	1	<1	<1	<1	<1	<1	0.26	L	43000
4	W27M	14326026	2" STD TEE WPB	7	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600
5	WT210N	242B12992	6" STD TEE WPB	8	18	24	43	8	2	3	4	8	2	<1	<1	0.28	L	61600
6	9N8	314713	1.1/2" XH TEE WPB	66	18	24	53	19	6	1	2	18	1	1	1	0.31	L	47600
7	HN17	19102640	3" XH TEE WPB	5	19	25	55	9	<1	1	0	0	0	0	<1	0.28	L	55100
8	RD214	242B08486	4" X 2.1/2" STD RED TEE WPB	63	17	27	46	22	1.3	4.4	1.4	10.1	4.5	<1	<1	0.25	L	51200
9	KM543	12314611	3" X 2.1/2" STD CON RED WPB	38	19	23	57	12	6	1	2	20	1	1	1	0.33	L	49800
10	KV812	243B03231	4" X 1.1/2" STD CON RED WPB	45	19	21	45	8	2	3	2	7	2	<1	<1	0.27	L	53900
11	KJ112N	242B05591	4" X 2" STD CON RED WPB	59	18	25	54	21	5	1	2	19	1	1	1	0.31	L	55100
12	KC71B	242B05591	4" X 2.1/2" STD CON RED WPB	326	18	25	55	15	7	1	2	17	1	1	1	0.31	L	58900
13	KC158F	242B05591	4" X 3" STD CON RED WPB	394	18	25	55	15	7	1	2	17	1	1	1	0.31	L	59300
14	KC170F	242B05591	4" X 3" STD CON RED WPB	175	18	25	55	15	7	1	2	17	1	1	1	0.31	L	54400
15	KFU108	14328907	5" X 4" STD CON RED WPB	93	18	24	45	12	4	4	3	10	2	<1	<1	0.29	L	54400
16	K5477	19303226	6" X 2.1/2" STD CON RED WPB	3	19	21	38	13	6.1	4.8	2.1	20.3	2.1	<1	<1	0.26	L	47100
17	KA474B	242B12992	6" X 4" STD CON RED WPB	312	18	24	53	19	6	1	2	18	1	1	1	0.31	L	57100
18	KL133U	90322H	10" X 8" STD CON RED WPB	136	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	50300
19	KL134U	90322H	10" X 8" STD CON RED WPB	4	19	22	55	18	5	1	1	2	<1	<1	<1	0.29	L	46900
20	KB115H	85233H	12" X 10" STD CON RED WPB	26	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	46900
21	KB117H	85233H	12" X 10" STD CON RED WPB	54	19	24	55	12	8	1	1	2	<1	<1	<1	0.29	L	59600
22																	L	59600

NOTE:

CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15

(*)

A) Hot Forming operation : at a temperature between 890°C – 980°C and cooled in still air.
S) Cold Forming operation : Normalizing at a temperature between 850°C – 910°C and cooled in still air.
Y = Basic oxygen process
E = Electric furnace
L = Longitudinal
T = Transverse

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ARAH DAGANG SDN. BHD. (202899-M)