



SERIAL NUMBER: N-264 COOK DATE: _____

MOLD SIZE _____ BY _____

ORDER DATE _____ SHIP DATE: _____ PO 594930

SIZE _____ TYPE Drivesub SCB

THREAD ✓ OTHER _____

MATRIX (H) _____ WEIGHT _____

MATRIX (S) _____ WEIGHT _____

BINDER _____ WEIGHT _____

BLANK _____ TJ _____

BILLET 225659 TUBE _____

WELD _____ MPI _____ MPI PIC _____ BRAZE _____

THREAD GAGE _____ STAND OFF _____

FINAL DIAMOND GRIND SIZE _____

LENGTH TO WELD _____

FINISHED PIC TAKEN BY _____ SHIPPED BY _____ DATE: _____

DIMS L _____ X W _____ X H _____ WEIGHT _____

IF MULTIPLES IN ONE BOX ONLY NEED DIMS ON ONE SHEET

SHORT BIT & TOOL CO
225 GOLD STREET
GARLAND TX 75042
972-205-1011
shortbits@gmail.com



Certificate of Conformance

Serial Number	Size	Type	Steel or Matrix	Shank Diameter	Bore
N-264			Steel		
Component	Material	Vender	Lot or Heat Number		
Blank	4140 Steel	RHW	225659		
Hard Powder					
Soft Capping Powder					
Tool Joint					
MIG Weld					
WP Tube					
Inspection					
Diamond Grinding To Size					
Weld MPI					
Thread Gaging					
Signed By: <i>P Beggs</i>			date: <i>8/31/2018</i>		

Customer Name

Customer PO#

Shipper No

Heat Number


H. E. HALFORD, JR WELDING CO.,

HEH 4622

8002

225659

APPROVED
By Todd Perrin et 2:28 pm, Apr 27, 2016

 ACCIAIERIE BERTOLI SAFAU ABSOLUTE STEEL QUALITY ACCIAIERIE BERTOLI SAFAU SpA Via Buttrio n.28 - Frazione Carnagacco - 33090 Pozzuolo del Friuli (UD) Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it	CERTIFICATO DI COLLAUDO Inspection Certificate 3.1/Certificat de reception 3.1/ Abnahmeprufzeugnis 3.1		N. 105211 / 4 Data 21.03.2016 COLATA N. 225659 Heat-Coulee-Schmelze Pag. 1 / 2									
	CLIENTE Customer-Client-Besteller PROFILO Shape-Section-Profil ACCIAIO Steel-Acier-Stahl CAPITOLATO ABS: Technical Specification: CAPITOLATO DI ANALISI: Material Specification: CAPITOLATO DI FORNITURA: Technical Delivery Requirements:	MAGELLAN CORPORATION HQT ROLLED ROUND BARS , 57,15 MM - 2 1/4" SAISI 4140 ABS MAGELLAN MIC 6016/2010 ADD.11 10/04/2014 MAGELLAN MIC 6016-10 12.22.2010	ORDINE Order-Commande-Bestellung STATO DI FORNITURA Delivery State-Etat de livraison Lieferzustand Commissa/Pos	209807 Q.T. & STRESS RELIEV 1025642/20								
COMPOSIZIONE CHIMICA % CHEMICAL ANALYSIS % - COMPOSITION CHIMIQUE % - CHEMISCHE ZUSAMMENSETZUNG %												
	C	Mn	Si	P	S	Cr	Ni	Mo	Al (T)	Cu	Sn	Ti
Min	0,400	0,75	0,15			0,90		0,15	0,020			
Max	0,430	1,00	0,35	0,025	0,025	1,10	0,25	0,25	0,050	0,25	0,100	0,0500
Colata/Heat	0,421	0,93	0,28	0,012	0,002	1,05	0,16	0,22	0,025	0,20	0,011	0,0026
	B (T)	V	Nb	As	Ca	Sb	Co	Pb	O2/ppm	H2/ppm	P+S	D.I. INCH
Min												5,50
Max	0,0008	0,050	0,060	0,100	0,1000	0,100	0,100	0,3000	20,00	3,00	0,040	
Colata/Heat	0,0001	0,005	0,002	0,005	0,0011	0,001	0,010	0,0001	12,00	1,20	0,014	6,69
VACUUM DEGASSED ACC. TO ASTM A751-11 ELECTRICAL FURNACE MELTED ANALYSIS TOLERANCE ASTM A29/A29M-12												
CARATT. MECCANICHE MECHANICAL PROPERTIES - CARACTERISTIQUES MECANIQUE - MECHANISCHE EIGENSCHAFTER												
TENSILE/IMPACT TEST ON PRODUCT						TRATTAMENTO TERMICO HEAT TREATMENT						
TRAZIONE TENSILE TEST												
"ACC. TO ASTM E10-12" ATTACHED MECHANICAL PROPERTIES(105211/4-A-)												
PROVA JOMINY JOMINY TEST - ESSAI JOMINY - STIRNABSCHRECKVERSUCH												
	J1/16" - HRC	J2/16" - HRC	J3/16" - HRC	J4/16" - HRC	J5/16" - HRC	J6/16" - HRC	J7/16" - HRC	J8/16" - HRC	J9/16" - HRC	J10/16" - HRC	J11/16" - HRC	J12/16" - HRC
Min	55	55	54	53	53	52	51	50	49	47	46	44
Max	60	60	60	59	59	58	58	57	57	56	56	55
Colata/Heat	58,8	58,4	57,9	57,6	57,1	56,8	56,6	56,2	55,4	54,8	54,4	54
	J13/16" - HRC	J14/16" - HRC	J15/16" - HRC	J16/16" - HRC	J18/16" - HRC	J20/16" - HRC	J22/16" - HRC	J24/16" - HRC	J26/16" - HRC	J28/16" - HRC	J30/16" - HRC	J32/16" - HRC
Min	42	41	40	39	37	36	35	34	34	34	33	33
Max	55	54	54	53	52	51	49	48	47	46	45	44
Colata/Heat	53,3	52,7	52	51,3	49,9	48,7	47,5	46	44,6	43,5	42,6	41,8
HARDENABILITY INCH-HRC ACC. TO "ASTM A304-11" AUSTENITIZING TEMPERATURE 850°C												
INCLUSIONI NON METALLICHE NON METALLIC INCLUSION - INCLUSIONS NON METALLIQUES - PRUFUNG NICHTMETALLISCHE EINSCHLUSSE												
	Tipo A Type A	Tipo B Type B	Tipo C Type C	Tipo D Type D								
Fine Thin	0,5	0,5	0	1,5								
Grosso Heavy	0,5	0	0	0,5								
MICROINCLUSIONS : METHOD "A" MICROINCLUSIONS: STANDARD ASTM E45												
GRANO GRAIN - GRAIN - KORNGROSSE												
AUSTENITIC GRAIN : STANDARD ASTM E112/ASTM A29 AUSTENITIC GRAIN SIZE 7												

Customer Name

Customer PO#

Shipper No


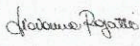
Heat Number

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 <p>ACCIAIERIE BERTOLI SAFAU SpA Via Buttrio n.28 - Frazione Cargnacco - 33050 Pozzuolo del Friuli (UD) Tel. +39 0432 613211 - Fax +39 0432 613209 - www.absacciai.it</p>	<p>CERTIFICATO DI COLLAUDO</p> <p>Inspection Certificate 3.1/Certificat de reception 3.1/ Abnahmeprufzeugnis 3.1</p>	<p>N. 105211 / 4 Data 21.03.2016 COLATA N. 225659 Heat-Coulee-Schmelze Pag. 2 / 2</p>
<p>ALTRE PROVE OTHER TESTS - AUTRES ESSAIS - SONSTIGE PRUFUNGEN</p>		
<p>MACROGROETCHING C 1 MACROGROETCHING R 1 MACROGROETCHING S 1 MACRO TEST = "ACC. TO ASTM E381"</p>		
<p>NOTE</p>		
<p>SURFACE DEFECTS: 100% SURFACE CONTROL SURFACE DEFECTS: ACC. TO "ASTM E709-01" INTERNAL DEFECT METHOD UT 100% INTERNAL DEFECTS "ACCORDING TO API 6A/ISO-10423-PSL 3" INTERNAL DEFECTS ACC. TO ASTM A388/A388M - S1 2011 INTERNAL DEFECTS API 6A/PSL3 ANTIMIX 100 % R/R = 22 TEST CERTIFICATE ISSUED ACCORDING TO: EN 10204 3.1 "NO REPAIR WELDING" "CALCIUM ALUMINUM TREATMENT" "ULTRASONIC INSPECTION SATISFACTORY" STARTING PRODUCT : CONTINUOUS CASTING fully killed Fine grain COUNTRY OF ORIGIN : ITALY A304-11;A370-12;A388-11;E709-2008; ASTM A 29-12;A788-11;A576-12;A322-13;A751-11;E381-12;E112-12;E45-13;A255-10 - Material free from lead, mercury, cadmium and hexavalent chromium (dir. 2000/53/CE - dir. 2011/65/UE as amended) - Material with radioactivity not exceeding 0,1Bq/g (d.lgs. 230/1995 as amended)</p>		
<p>CONTROLLO QUALITA' QUALITY CONTROL - CONTROLE DE QUALITE - QUALITATSSTEILE</p>		
<p>Company with a management system certified by IGQ to ISO 9001 and ISO/TS 16949 Verif.:Giovanna Rojatti</p>		
		

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INSPECTION CERTIFICATE N° 105211/4-A-
 DATE 21/03/2016
 HEAT 225659
 STEEL GRADE AISI 4140

MECHANICAL PROPERTIES												
POSITION TEST	YS 0.2% [KSI]	TS [KSI]	E% 2"	R.A.%	Kv +32°F [ft.lbs] long.			AVERAGE	Kv -20°F [ft.lbs] long.			AVERAGE
					Kv +32°F [ft.lbs] long.	Kv +32°F [ft.lbs] long.	Kv +32°F [ft.lbs] long.	Kv +32°F [ft.lbs] long.	Kv -20°F [ft.lbs] long.	Kv -20°F [ft.lbs] long.	Kv -20°F [ft.lbs] long.	
1/2 RADIUS	123	142	18,2	53	48	54	46	49	29	28	34	30
Exp. Lat. mm.					0,63	0,75	0,60		0,40	0,36	0,49	
Shear area %					52	67	52		31	27	40	

BHN = 302 ON SURFACE

BHN = 290 AT HALF RADIUS

MECHANICAL PROPERTIES OBTAINED FROM PROLONGATION OF THE BAR ACC. TO ASTM A370.
 LONGITUDINAL TEST, ACC. TO ASTM A 370.
 LENGHT OF TEST SPECIMEN 130 mm. (ACC. TO ASTM A370 SPECIMEN N°4)
 TENSILE SPECIMEN SIZE 0,500"
 IMPACT SPECIMEN SIZE 10 mm. X 10 mm.
 ATMOSPHERIC THERMOCOUPLE TYPE K CLASS 1 IEC 60584-2/1998.

AUSTENITIZE 1616°F WATER x 128' TEMPERED 1202°F AIR x 195' STRESS RELIEVED 1112°F x 135'

QUENCH WATER TEMPERATURE: BEFORE 86°F AFTER 97°F.

QUALITY CONTROL
 ACCIAIERIE BERTOLI SAFAU S.p.A.
 Servizio Clienti e Qualità

 A handwritten signature in black ink is written over a circular stamp. The stamp contains the text 'ACCIAIERIE BERTOLI SAFAU S.p.A.' and 'Servizio Clienti e Qualità'.

SA N 204



