

**CERTIFICATE****No. A/10-105996****Rev 00****Date 2010-10-22****Page 1/2**INSPECTION CERTIFICATE acc to
EN 10 204 3.1Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References		Sandvik References	
709301	Customer order 2010-10-22	Order No. 217610	Subs No. 189060
003-00991 ITEMS		ABSMT No. 300-31169	Dispatch note 19978/54
		C.Code 15	

Material description	Steel/material Designations
SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING	Sandvik SS 3R60 2353 AISI AFNOR TP316/TP316L Z2CND17-13 W.nr DIN 1.4435 X 2 CRNIMO 18 14 3 EN no 1.4436/1.4435
Steel making process Electric furnace	

Technical requirements
PED/23/EC, EN 10216-5 TC1 SS 219711, DIN 17458 TC1, NFA 49-117-09/85 ASTM A-213-08 AW, ASME SA-213-ED-07 AD-09B AW, ASTM A-269-08 NACE MR0175/ISO 15156-3:2003, HRB Max 80

EXTENT OF DELIVERY								
It	Product designation	Heat	Lot	Pieces	Kg	M		
01	THT-3R60-16-2.5 16.00 X 2.50	047338	93134	5	25.0	30.00		
				Total	5	25.0 30.00		
KEY TO HEAT		KEY TO LOT						
Heat Code	Heat No.	Lot Code	Lot No.					
047338	523398	93134	4844129/1-2					
TEST RESULTS								
Chemical composition (weight%)								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
047338	0.016	0.38	1.68	0.027	0.005	17.49	13.40	2.53
	N							
047338	0.038							
Chemical composition, product (weight%)								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
047338	0.010	0.41	1.70	0.025	0.001	17.41	13.33	2.52
	N							
047338	0.038							
Quality assurance - Per Eriksson/ QA-manager Tube & Pipe MTC Service / Certificates								

**CERTIFICATE****No. A/10-105996****Rev 00****Date 2010-10-22****Page 2/2****Tensile test at room temperature**

	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
Lot	Rp0.2	Rp1.0	Rm	A	2"
93134	238	269	565	55	57
	233	267	557	56	56

Hardness test

	Min	Max
Lot	HRB	HRB
93134	71	73

Following controls/tests have been satisfactorily performed:

- Flattening test.
- Flaring test
- PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E
- Intergranular corrosion test acc. to EN ISO3651-2, Method A.
- Leak test: Eddy current test acc to EN 10246-2, ASME SA-1016.
- Visual inspection and dimensional control.

Heat Treatment:

Solution annealed and quenched.

Marking:

SANDVIK 3R60 ASTM/ASME A/SA-213AW/A-269 NFA 49-117 EN 10216-5 TC1 SS 2353-22
WNR 1.4435 TP 316/TP 316L Z2CND17-13 EN 1.4435 M S PK1 16.00 X 2.50 MM HT 5233
98 SZ LOT 4844129/1-2 DIN 2391 *QA-TUBE*

Approved acc. AD 2000-Merkblatt W0 and certified acc. to
Pressure Equipment Directive (97/23/EC) by
TUEV NORD GmbH; notified body, reg.no. 0045.

The number of tests are based on the size of the manufacturing lot
before cutting to finished lengths.

The delivered products comply with the specifications and
requirements of the order.

The material is manufactured according to a Quality system,
approved and registered to ISO 9001.

The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO A100056