

**CERTIFICATE****No. V/10-048066****Rev 00****Date 2010-09-10****Page 1/3**INSPECTION CERTIFICATE acc to
EN 10 204 3.1Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References 709087	Sandvik References Order No. Subs No. Dispatch note 211824 184628 097488 Suppl. No C.Code 184628 15																																																																																																																
Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING Steel making process Electric furnace	Steel/material Designations 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																																																																																																																
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 <table><thead><tr><th>It</th><th>Product designation</th><th>Heat</th><th>Lot</th><th>Kg</th><th>M</th></tr></thead><tbody><tr><td>02</td><td>THT-3R60-12-1</td><td>047341</td><td>92938</td><td>183.4</td><td>666.00</td></tr><tr><td></td><td>12.00 X 1.00</td><td>047341</td><td>92940</td><td>13.2</td><td>48.00</td></tr><tr><td colspan="4">Total</td><td>196.6</td><td>714.00</td></tr></tbody></table> <table><thead><tr><th colspan="2">KEY TO HEAT</th><th colspan="2">KEY TO LOT</th></tr><tr><th>Heat Code</th><th>Heat No.</th><th>Lot Code</th><th>Lot No.</th></tr></thead><tbody><tr><td>047341</td><td>523174</td><td>92938</td><td>348874</td></tr><tr><td></td><td></td><td>92940</td><td>348879</td></tr></tbody></table> TEST RESULTS Chemical composition (weight%) <table><thead><tr><th>Heat</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cr</th><th>Ni</th><th>Mo</th></tr></thead><tbody><tr><td>047341</td><td>0.018</td><td>0.37</td><td>1.61</td><td>0.027</td><td>0.008</td><td>17.47</td><td>13.14</td><td>2.55</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>047341</td><td>0.040</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> Chemical composition, product (weight%) <table><thead><tr><th>Heat</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cr</th><th>Ni</th><th>Mo</th></tr></thead><tbody><tr><td>047341</td><td>0.019</td><td>0.38</td><td>1.59</td><td>0.028</td><td>0.007</td><td>17.49</td><td>13.17</td><td>2.51</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>047341</td><td>0.043</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		It	Product designation	Heat	Lot	Kg	M	02	THT-3R60-12-1	047341	92938	183.4	666.00		12.00 X 1.00	047341	92940	13.2	48.00	Total				196.6	714.00	KEY TO HEAT		KEY TO LOT		Heat Code	Heat No.	Lot Code	Lot No.	047341	523174	92938	348874			92940	348879	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	047341	0.018	0.37	1.61	0.027	0.008	17.47	13.14	2.55		N								047341	0.040								Heat	C	Si	Mn	P	S	Cr	Ni	Mo	047341	0.019	0.38	1.59	0.028	0.007	17.49	13.17	2.51		N								047341	0.043							
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**CERTIFICATE****No. V/10-048066****Rev 00****Date 2010-09-10****Page 2/3****Tensile test at room temperature**

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
92938	313	344	591	57	56
	305	334	585	57	56
	306	334	584	60	58
	287	325	574	60	60
	306	333	581	61	60
	304	331	571	60	60
92940	269	298	581	60	60
	268	298	580	58	58
	282	312	579	62	60
	287	318	578	63	60
	287	316	572	61	60
	273	301	568	58	58

Hardness test

Lot	Min	Max
	HRB	HRB
92938	74	75
92940	74	76

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 12.00 X 1.00 MM HT 5231
74 SC LOT 348874 DIN 2391 *QA-TUBE*

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 12.00 X 1.00 MM HT 5231
74 SC LOT 348879 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.



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TEST RESULTS TRANSFERRED FROM CERTIFICATE NO 00038773
00038773