

**CERTIFICATE**

A03/Z02

**No. A/22-990590****Date**

2022-01-14

**Rev****00****Page**

1/3

A02/Z03

INSPECTION CERTIFICATE acc to  
EN 10204 3.1

A06

PROCESSKONTROLL ITEMS AB  
BOX 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP

QA-TUBE

| <b>Customer References</b> <span style="float: right;">A07</span><br>761980/Holmgren<br><br>Customer order<br>2021-12-08<br><br>003-00991 ITEMS -W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                 | <b>Sandvik References</b> <span style="float: right;">A08</span><br><b>Order No.</b> <b>Subs No.</b> <b>SMT Dispatch note</b><br>579531 705353 05469/54<br><b>SMT No.</b> <b>C.Code</b><br>300-38625 15 |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|---------------------|-------------|-------|--------|----|---|----|---------------------------------|--------|-------|----|------|--------|--|--|--|--|-------|----|-------------|-------------|--|------------|--|-----------|----------|----------|---------|--------|--------|-------|------------|------|---|----|----|---|---|----|----|----|--------|-------|------|------|-------|-------|-------|-------|------|----------|--|--|--|--|--|--|--|--|--------|-------|--|--|--|--|--|--|--|
| <b>Material description</b> <span style="float: right;">B01/B04</span><br>SEAMLESS STAINLESS COLD FINISHED<br>HYDRAULIC TUBING<br><br><br><br><b>Metallurgical process</b> <span style="float: right;">C70</span><br>Electric furnace                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                 | <b>Steel/material Designations</b> <span style="float: right;">B02</span><br><b>Sandvik</b> <b>AISI</b><br>3R60 TP316/TP316L<br><b>EN no</b><br>1.4435                                                  |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>Technical requirements</b> <span style="float: right;">B03</span><br>ASTM A-213-19 AW, ASME SA-213-ED-19 AW, ASTM A-269-15A<br>NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015<br>PED 2014/68/EU EN 10216-5 TC1<br>HRB MAX 80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |                                                                                                                                                                                                         |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>EXTENT OF DELIVERY</b> <span style="float: right;">B07-B13</span> <table><thead><tr><th>It</th><th>Product designation</th><th>Heat</th><th>Lot</th><th>Pieces</th><th>Kg</th><th>M</th></tr></thead><tbody><tr><td>02</td><td>THT-3R60-12-1.5<br/>12.00 X 1.50</td><td>041974</td><td>94494</td><td>25</td><td>59.0</td><td>150.00</td></tr><tr><td colspan="4"></td><td>Total</td><td>25</td><td>59.0 150.00</td></tr></tbody></table><br><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>041974</td><td>563099</td><td>94494</td><td>2044867-11</td></tr></tbody></table><br><b>TEST RESULTS</b><br><b>Chemical composition (weight%)</b> <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>041974</td><td>0.019</td><td>0.43</td><td>1.68</td><td>0.035</td><td>0.007</td><td>17.19</td><td>13.14</td><td>2.62</td></tr><tr><td colspan="9"><b>N</b></td></tr><tr><td>041974</td><td>0.038</td><td colspan="7"></td></tr></tbody></table> |                                 |                                                                                                                                                                                                         |            | It     | Product designation | Heat        | Lot   | Pieces | Kg | M | 02 | THT-3R60-12-1.5<br>12.00 X 1.50 | 041974 | 94494 | 25 | 59.0 | 150.00 |  |  |  |  | Total | 25 | 59.0 150.00 | KEY TO HEAT |  | KEY TO LOT |  | Heat Code | Heat No. | Lot Code | Lot No. | 041974 | 563099 | 94494 | 2044867-11 | Heat | C | Si | Mn | P | S | Cr | Ni | Mo | 041974 | 0.019 | 0.43 | 1.68 | 0.035 | 0.007 | 17.19 | 13.14 | 2.62 | <b>N</b> |  |  |  |  |  |  |  |  | 041974 | 0.038 |  |  |  |  |  |  |  |
| It                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Product designation             | Heat                                                                                                                                                                                                    | Lot        | Pieces | Kg                  | M           |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | THT-3R60-12-1.5<br>12.00 X 1.50 | 041974                                                                                                                                                                                                  | 94494      | 25     | 59.0                | 150.00      |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                 |                                                                                                                                                                                                         |            | Total  | 25                  | 59.0 150.00 |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| KEY TO HEAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                 | KEY TO LOT                                                                                                                                                                                              |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| Heat Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Heat No.                        | Lot Code                                                                                                                                                                                                | Lot No.    |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 041974                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 563099                          | 94494                                                                                                                                                                                                   | 2044867-11 |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| Heat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | C                               | Si                                                                                                                                                                                                      | Mn         | P      | S                   | Cr          | Ni    | Mo     |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 041974                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.019                           | 0.43                                                                                                                                                                                                    | 1.68       | 0.035  | 0.007               | 17.19       | 13.14 | 2.62   |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>N</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                 |                                                                                                                                                                                                         |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| 041974                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.038                           |                                                                                                                                                                                                         |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |
| <b>Quality assurance - Sofia Åkesson / Q-Manager</b> <span style="float: right;">A05/Z02</span><br>MTC Service / Certificates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                 |                                                                                                                                                                                                         |            |        |                     |             |       |        |    |   |    |                                 |        |       |    |      |        |  |  |  |  |       |    |             |             |  |            |  |           |          |          |         |        |        |       |            |      |   |    |    |   |   |    |    |    |        |       |      |      |       |       |       |       |      |          |  |  |  |  |  |  |  |  |        |       |  |  |  |  |  |  |  |

A01

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE556234683201  
SE-81181 SANDVIKEN SWEDEN www.materials.sandvik mtc\_service.smt@sandvik.com

**Chemical composition, product (weight%)**

| Heat   | C     | Si   | Mn   | P     | S     | Cr    | Ni    | Mo   |
|--------|-------|------|------|-------|-------|-------|-------|------|
| 041974 | 0.022 | 0.44 | 1.66 | 0.034 | 0.009 | 17.19 | 13.09 | 2.63 |
|        | N     |      |      |       |       |       |       |      |
| 041974 | 0.033 |      |      |       |       |       |       |      |

**Tensile test at room temperature**

| Lot   | Yield strength |       | Tensile strength | Elongation |    |
|-------|----------------|-------|------------------|------------|----|
|       | MPa            | MPa   | MPa              | %          | %  |
|       | Rp0.2          | Rp1.0 | Rm               | A          | 2" |
| 94494 | 293            | 322   | 573              | 70         | 64 |

**Hardness test**

| Lot   | Min | Max |
|-------|-----|-----|
|       | HRB | HRB |
| 94494 | 78  | 78  |

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- 100% PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- Leak test: Eddy current test acc to EN ISO 10893-1, ASME SA-1016.
- Visual inspection and dimensional control.

**Heat Treatment:**

Solution annealed at a temperature of Min 1040° C and quenched.

**Marking:**

SANDVIK 3R60 ASTM/ASME A/SA213 A269 COLD EN 10216-5 TC1 AW TP 316/TP 316L EN 1.4435 CFA SML 12.00 X 1.50 MM . HT 563099 SZ LOT 2044867-11 MADE BY SANDVIK IN CZECHIA \*QA-TUBE\*

The raw material is free from radioactive contamination.

Material free from mercury contamination.

No welding or weld repair.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU, Annex 1 para 4.3) by TUEV NORD; 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 9001:2015.





No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Sandvik Materials Technology. Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO C-3013/30

