



ARTES Valve & Service GmbH  
Parkallee 7 - 16727 Velten  
GERMANY

# Control Valve

A MEMBER OF THE ARCA FLOW GROUP

|    |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
|----|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------|---------------------|-------------------------------------|------------------------------|---------------------|---------------------|
| 1  | Customer:                                                            | Doosan Lentjes GmbH                                                                              | ARTES-ref.-no.:        |                     | 5504547                             |                              |                     |                     |
| 2  | Plant:                                                               | A.12019 - Warzaw WTE                                                                             | Pos.:                  |                     | 15                                  |                              |                     |                     |
| 3  | Location:                                                            | Bypass Steam Control Valve Secondary Air Preheater                                               | Qty.:                  |                     | 2                                   |                              |                     |                     |
| 4  | KKS No.:                                                             | 21/31 LBG71 AA561                                                                                | S/N:                   |                     | 3176848.3 & 3176848.4               |                              |                     |                     |
| 5  | <b>Pipe - Connection Data</b>                                        |                                                                                                  | <b>Inlet</b>           |                     | <b>Outlet</b>                       |                              |                     |                     |
| 6  | Dimensions                                                           | Ø D [mm] x s [mm]                                                                                | 88,9                   | x                   | 3,2                                 | 88,9                         | x                   | 3,2                 |
| 7  | Material                                                             |                                                                                                  | 1.0345 (P235GH)        |                     |                                     | 1.0345 (P235GH)              |                     |                     |
| 8  | Welding Connection                                                   | Ø D [mm] x s [mm]                                                                                | 88,9                   | x                   | 3,2                                 | 88,9                         | x                   | 3,2                 |
| 9  | Flange Connection                                                    |                                                                                                  | --                     |                     |                                     | --                           |                     |                     |
| 10 | <b>Valve - Design Data</b>                                           |                                                                                                  | <b>Inlet</b>           |                     | <b>Outlet</b>                       |                              |                     |                     |
| 11 | Nominal Size                                                         | DN / NPS                                                                                         | 80                     |                     |                                     | 80                           |                     |                     |
| 12 | Nominal Pressure                                                     | PN / class                                                                                       | 16                     |                     |                                     | 16                           |                     |                     |
| 13 | Design Pressure                                                      | bar(g)                                                                                           | 7,2                    |                     |                                     | 7,2                          |                     |                     |
| 14 | Design Temperature                                                   | °C                                                                                               | 170                    |                     |                                     | 170                          |                     |                     |
| 15 | Material                                                             |                                                                                                  | 1.0460 (P250GH, C22.8) |                     |                                     | 1.0460 (P250GH, C22.8)       |                     |                     |
| 16 | <b>Operation Data</b>                                                |                                                                                                  | <b>Loading Case</b>    | <b>Loading Case</b> | <b>Loading Case</b>                 | <b>Loading Case</b>          | <b>Loading Case</b> | <b>Loading Case</b> |
| 17 | Medium:                                                              | Water/Steam                                                                                      | 1                      | 2                   | 3                                   | 4                            | 5                   | 6                   |
| 18 | Phase                                                                |                                                                                                  | steam                  | steam               |                                     |                              |                     |                     |
| 19 | Flow Rate                                                            | kg/s                                                                                             | 0,21                   | 0,29                |                                     |                              |                     |                     |
| 20 | Temperature, Inlet                                                   | °C                                                                                               | 170,00                 | 170,00              |                                     |                              |                     |                     |
| 21 | Pressure, Inlet                                                      | barA                                                                                             | 5,20                   | 5,20                |                                     |                              |                     |                     |
| 22 | Pressure, Outlet                                                     | barA                                                                                             | 2,00                   | 4,90                |                                     |                              |                     |                     |
| 23 | k <sub>v</sub>                                                       | m³/h                                                                                             | 11,9                   | 39,8                |                                     |                              |                     |                     |
| 24 | Flow Speed, Outlet                                                   | m/s                                                                                              | 38,6                   | 21,8                |                                     |                              |                     |                     |
| 25 | <b>Type Of Valve</b> Control Ball Valve Type W                       |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 26 | <b>Valve Parameter</b>                                               |                                                                                                  | <b>Material</b>        |                     |                                     |                              |                     |                     |
| 27 | Seat Diameter:                                                       | 50 mm                                                                                            | Body:                  |                     | 1.0460 (P250GH, C22.8)              |                              |                     |                     |
| 28 | Pressure Reduction Steps, controlled:                                | 1                                                                                                | Seating:               |                     | 1.4122 (X39CrMo17-1), metal sealing |                              |                     |                     |
| 29 | Pressure Reduction Steps, fix:                                       |                                                                                                  | Ball:                  |                     | 1.4122 (X39CrMo17-1), metal sealing |                              |                     |                     |
| 30 | k <sub>vs</sub>                                                      | 48 m³/h                                                                                          | Control disc:          |                     | 1.4122 (X39CrMo17-1)                |                              |                     |                     |
| 31 | Control Characteristic                                               | equal perc. mod.                                                                                 | Seals:                 |                     | Graphite                            |                              |                     |                     |
| 32 | max. dp for Actuator:                                                | 7,2 bar                                                                                          |                        |                     |                                     |                              |                     |                     |
| 33 | Installation Length:                                                 | 250 mm                                                                                           |                        |                     |                                     |                              |                     |                     |
| 34 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 35 | <b>Design / Inspection</b>                                           |                                                                                                  |                        |                     |                                     | <b>Final Inspection</b>      |                     |                     |
| 36 | Pressure Equipment Directive 2014/68/EU                              |                                                                                                  |                        |                     |                                     | Confirmation acc. to DIN 3.1 |                     |                     |
| 37 | Requirements acc. to: EN 12952                                       |                                                                                                  |                        |                     |                                     | EN 10204                     |                     |                     |
| 38 | Leakage Class: 0,01% of kvs-Value                                    |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 39 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 40 | <b>Actuator</b>                                                      | manual                                                                                           |                        |                     |                                     |                              |                     | 3176885             |
| 41 | Type:                                                                | gearbox with handwheel                                                                           |                        |                     |                                     |                              |                     |                     |
| 42 |                                                                      | 232-08.PS250-12                                                                                  |                        |                     |                                     |                              |                     |                     |
| 43 |                                                                      | temperature range: -20°C ... +120°C, nominal turning angle: 90°, self-locking, handwheel Ø250 mm |                        |                     |                                     |                              |                     |                     |
| 44 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 45 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 46 | <b>Actuatoradaption:</b>                                             | EN ISO 5211 - F10 - square 21 mm                                                                 |                        |                     |                                     |                              |                     |                     |
| 47 | <b>Remarks</b>                                                       |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 48 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 49 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 50 |                                                                      |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 51 | Control disc - partial perforated disc                               |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 52 | Body Strength Test - Test Pressure: p' = 24 bar - Test Medium: Water |                                                                                                  |                        |                     |                                     |                              |                     |                     |
| 53 | Revision                                                             | 0                                                                                                | 1                      | 2                   | 3                                   | 4                            | 5                   | 6                   |
| 54 | Date:                                                                | 29.08.2022                                                                                       | 04.10.2022             |                     |                                     |                              |                     |                     |
| 55 | Prepared:                                                            | H. Roßmann                                                                                       | R. Feldmann            |                     |                                     |                              |                     |                     |
| 56 | Checked:                                                             | H. Jäkel                                                                                         | P. Schüler             |                     |                                     |                              |                     |                     |

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ARTES:       |                        | 5504547               |                      |     |
| 2  | Zakład:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| 3  | Lokalizacja:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      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| 4  | KKS Nr.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 21/31 LBG71 AA561                                                       |                        | Nr seryjny:          |                        | 3176848.3 & 3176848.4 |                      |     |
| 5  | <b>Przewód rurowy - parametry połączeń</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| 6  | Wymiary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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| 7  | Materiał                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| 8  | Połączenie spawane                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| 9  | Połączenie kołnierzowe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| 10 | <b>Zawór - dane projektowe</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    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| 11 | Wymiar nominalny                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DN / NPS                                                                | 80                     |                      | 80                     |                       |                      |     |
| 12 | Ciśnienie nominalne                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| 17 | Medium:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           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