

# ISO 18154:2017-03 (E)

## Ships and marine technology - Safety valve for cargo tanks of LNG carriers - Design and testing requirements

---

| <b>Contents</b> |   | <b>Page</b> |
|-----------------|---|-------------|
| Foreword .....  |   | v           |
| <b>1</b>        | <b>Scope .....</b>  | <b>1</b>    |
| <b>2</b>        | <b>Normative references .....</b>                             | <b>1</b>    |
| <b>3</b>        | <b>Terms and definitions .....</b>                            | <b>1</b>    |
| <b>4</b>        | <b>Main valve components .....</b>                            | <b>2</b>    |
| 4.1             | Body .....  | 2           |
| 4.2             | Nozzle .....  | 2           |
| 4.3             | Disk .....  | 2           |
| 4.4             | Cover .....   | 2           |
| 4.5             | Diaphragm .....   | 2           |
| <b>5</b>        | <b>Design .....</b>   | <b>3</b>    |
| <b>6</b>        | <b>Materials .....</b>  | <b>4</b>    |
| <b>7</b>        | <b>Production testing and inspection .....</b>                | <b>4</b>    |
| 7.1             | Purpose .....   | 4           |
| 7.2             | Impact test .....   | 4           |
| 7.3             | Non-destructive inspection .....                              | 4           |
| 7.4             | Pressure test .....   | 5           |
| 7.4.1           | General requirement .....                                     | 5           |
| 7.4.2           | Fluid .....   | 5           |
| 7.4.3           | Duration .....  | 5           |
| 7.4.4           | Test equipment .....  | 5           |
| 7.5             | Surface inspection .....                                      | 5           |
| 7.6             | Visual inspection .....                                       | 5           |
| <b>8</b>        | <b>Performance test .....</b>                                 | <b>6</b>    |
| 8.1             | Performance test in ambient temperature .....                 | 6           |
| 8.1.1           | Purpose .....   | 6           |
| 8.1.2           | Number of test times .....                                    | 6           |
| 8.1.3           | Fluid .....   | 6           |
| 8.1.4           | Acceptance criteria .....                                     | 6           |
| 8.2             | Leakage test in ambient temperature .....                     | 6           |
| 8.2.1           | Purpose .....   | 6           |
| 8.2.2           | Fluid .....   | 6           |
| 8.2.3           | Test pressure .....   | 6           |
| 8.2.4           | Duration .....  | 6           |
| 8.2.5           | Acceptance leakage rate .....                                 | 6           |
| 8.2.6           | Test equipment .....  | 7           |
| 8.3             | Performance test in low temperature .....                     | 7           |
| 8.3.1           | Purpose .....   | 7           |
| 8.3.2           | Number of test times .....                                    | 7           |
| 8.3.3           | Fluid .....   | 7           |
| 8.3.4           | Acceptance criteria .....                                     | 7           |
| 8.4             | Preparation for the performance test in low temperature ..... | 7           |
| 8.4.1           | Start temperature for the test .....                          | 7           |

|       |  |    |
|-------|--|----|
| 8.4.2 | Safety requirement .....                                       | 7  |
| 8.4.3 | Test system .....  | 7  |
| 8.5   | Leakage test in low temperature .....                          | 8  |
| 8.5.1 | Purpose .....  | 8  |
| 8.5.2 | Fluid .....  | 8  |
| 8.5.3 | Test pressure .....  | 8  |
| 8.5.4 | Duration .....   | 8  |
| 8.5.5 | Acceptance tolerance .....                                     | 9  |
| 8.5.6 | Test equipment .....   | 9  |
| 9     | Vacuum test .....  | 9  |
| 9.1   | Purpose .....  | 9  |
| 9.2   | Vacuum condition .....   | 9  |
| 9.2.1 | Test temperature .....   | 9  |
| 9.2.2 | Vacuum set test .....  | 9  |
| 9.2.3 | Number of test times .....                                     | 9  |
| 9.2.4 | Fluid .....  | 9  |
| 10    | Type test .....  | 9  |
| 11    | Determination of pilot operated safety valve performance ..... | 9  |
| 12    | Sizing of pilot operated safety valves .....                   | 10 |
| 13    | Marking and sealing .....                                      | 10 |
|       | Bibliography .....   | 11 |