

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Winch - General Application**with type designation(s)  
**BWE015, BWE025, BWE035, BWE055 and BWE070**

Issued to

**Dana Motion Systems Italia S.r.l.**  
**Reggio Emilia RE, Italy**

is found to comply with

**DNV GL standard DNVGL-ST-0377 – Standard for shipboard lifting appliances****DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances****DNVGL-OS-E101 – Drilling facilities, Edition January 2018****Application :****Shipboard, platform, offshore and drilling applications**Issued at **Høvik** on **2021-05-21**This Certificate is valid until **2026-05-20**.for **DNV GL**DNV GL local station: **Italy/Malta CMC**Approval Engineer: **Antonio Sendin Alvarez****Aldo Matteucci**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



## Product description

Winches type BWE015, BWE025, BWE035, BWE055 and BWE070 (short and long drum configurations) for cargo and lifting of personnel, including gears, main and secondary brakes, with the following configurations:

| Product                    | Number of layers | i=3.95     | i=19.17    | Lifting of personnel | Rope ø |
|----------------------------|------------------|------------|------------|----------------------|--------|
|                            |                  | SWL (kg)   | SWL (kg)   | SWL (kg)             |        |
| BWE015                     | 1 layer          | 1000       | 1100       | 400                  | 8 mm   |
|                            | 2 layer          | 935        | 1029       | 374                  |        |
|                            | 3 layer          | 879        | 967        | 351                  |        |
|                            | 4 layer          | 828        | 911        | 331                  |        |
|                            | 5 layer          | 784        | 862        | 313                  |        |
|                            |                  |            |            |                      |        |
|                            | 1 layer          | 1000       | 1300       | 400                  | 10 mm  |
|                            | 2 layer          | 921        | 1198       | 369                  |        |
|                            | 3 layer          | 854        | 1110       | 342                  |        |
|                            | 4 layer          | 796        | 1035       | 318                  |        |
|                            |                  |            |            |                      |        |
|                            | 1 layer          | 1000       | 1300       | 400                  | 12 mm  |
|                            | 2 layer          | 908        | 1180       | 363                  |        |
|                            | 3 layer          | 831        | 1081       | 333                  |        |
| Gearbox max dynamic torque | (Nm)             | 981        | 1275       |                      |        |
| Max speed                  | (rpm)            | 15         | 15         |                      |        |
| Lifetime                   | (hrs)            | 7566       | 6445       |                      |        |
| Load spectrum              |                  | M6 (T6-L2) | M6 (T6-L2) |                      |        |

| Product | Number of layers | i=5.53   | i=37.40  | Lifting of personnel | Rope ø |
|---------|------------------|----------|----------|----------------------|--------|
|         |                  | SWL (kg) | SWL (kg) | SWL (kg)             |        |
| BWE025  | 1 layer          | 1700     | 1700     | 650                  | 10 mm  |
|         | 2 layer          | 1590     | 1590     | 608                  |        |
|         | 3 layer          | 1493     | 1493     | 571                  |        |
|         | 4 layer          | 1408     | 1408     | 538                  |        |
|         | 5 layer          | 1332     | 1332     | 509                  |        |
|         |                  |          |          |                      |        |
|         | 1 layer          | 1900     | 2300     | 650                  | 12 mm  |
|         | 2 layer          | 1755     | 2125     | 601                  |        |
|         | 3 layer          | 1631     | 1975     | 558                  |        |
|         | 4 layer          | 1524     | 1844     | 521                  |        |

| <b>BWE025</b>                     | <b>Number of layers</b> | <b>i=5.53</b> | <b>i=37.40</b> | <b>Lifting of personnel</b> | <b>Rope ø</b> |
|-----------------------------------|-------------------------|---------------|----------------|-----------------------------|---------------|
|                                   |                         | SWL (kg)      | SWL (kg)       | SWL (kg)                    |               |
|                                   | <b>1 layer</b>          | 1900          | 2300           | 650                         | <b>14 mm</b>  |
|                                   | <b>2 layer</b>          | 1735          | 2100           | 593                         |               |
|                                   | <b>3 layer</b>          | 1596          | 1932           | 546                         |               |
| <b>Gearbox max dynamic torque</b> | <b>(Nm)</b>             | 2321          | 2809           |                             |               |
| <b>Max speed</b>                  | <b>(rpm)</b>            | 15            | 15             |                             |               |
| <b>Lifetime</b>                   | <b>(hrs)</b>            | 7589          | 28130          |                             |               |
| <b>Load spectrum</b>              |                         | M6 (T6-L2)    | M8 (T8-L2)     |                             |               |

| <b>Product</b>                    | <b>Number of layers</b> | <b>i=22.93</b> | <b>i=33.57</b> | <b>Lifting of personnel</b> | <b>Rope ø</b> |
|-----------------------------------|-------------------------|----------------|----------------|-----------------------------|---------------|
|                                   |                         | SWL (kg)       | SWL (kg)       | SWL (kg)                    |               |
| <b>BWE035</b>                     | <b>1 layer</b>          | 2500           | 2500           | 900                         | <b>12 mm</b>  |
|                                   | <b>2 layer</b>          | 2324           | 2324           | 836                         |               |
|                                   | <b>3 layer</b>          | 2170           | 2170           | 781                         |               |
|                                   | <b>4 layer</b>          | 2036           | 2036           | 733                         |               |
|                                   | <b>5 layer</b>          | 1918           | 1918           | 690                         |               |
|                                   |                         |                |                |                             |               |
|                                   | <b>1 layer</b>          | 3400           | 3100           | 900                         | <b>14 mm</b>  |
|                                   | <b>2 layer</b>          | 3125           | 2849           | 827                         |               |
|                                   | <b>3 layer</b>          | 2892           | 2636           | 765                         |               |
|                                   | <b>4 layer</b>          | 2690           | 2453           | 712                         |               |
|                                   |                         |                |                |                             |               |
|                                   | <b>1 layer</b>          | 3400           | 3100           | 900                         | <b>16 mm</b>  |
|                                   | <b>2 layer</b>          | 3092           | 2819           | 818                         |               |
|                                   | <b>3 layer</b>          | 2834           | 2584           | 750                         |               |
| <b>Gearbox max dynamic torque</b> | <b>(Nm)</b>             | 4536           | 4136           |                             |               |
| <b>Max speed</b>                  | <b>(rpm)</b>            | 15             | 15             |                             |               |
| <b>Lifetime</b>                   | <b>(hrs)</b>            | 23917          | 14057          |                             |               |
| <b>Load spectrum</b>              |                         | M7 (T7-L2)     | M7 (T7-L2)     |                             |               |

| <b>Product</b> | <b>Number of layers</b> | <b>i=22.93</b> | <b>i=33.57</b> | <b>Lifting of personnel</b> | <b>Rope ø</b> |
|----------------|-------------------------|----------------|----------------|-----------------------------|---------------|
|                |                         | SWL (kg)       | SWL (kg)       | SWL (kg)                    |               |
| <b>BWE055</b>  | <b>1 layer</b>          | 3900           | 3900           | 1500                        | <b>14 mm</b>  |
|                | <b>2 layer</b>          | 3633           | 3633           | 1397                        |               |
|                | <b>3 layer</b>          | 3400           | 3400           | 1308                        |               |
|                | <b>Number</b>           |                |                | <b>Lifting of</b>           |               |

| <b>BWE055</b>                     | <b>of layers</b> | <b>i=22.93</b> | <b>i=33.57</b> | <b>personnel</b> | <b>14mm</b>  |
|-----------------------------------|------------------|----------------|----------------|------------------|--------------|
|                                   |                  | SWL (kg)       | SWL (kg)       | SWL (kg)         |              |
|                                   | <b>4 layer</b>   | 3195           | 3195           | 1229             |              |
|                                   | <b>5 layer</b>   | 3013           | 3013           | 1159             |              |
|                                   |                  |                |                |                  | <b>16 mm</b> |
|                                   | <b>1 layer</b>   | 5000           | 5000           | 1500             |              |
|                                   | <b>2 layer</b>   | 4614           | 4614           | 1384             |              |
|                                   | <b>3 layer</b>   | 4284           | 4284           | 1285             |              |
|                                   | <b>4 layer</b>   | 3998           | 3998           | 1199             |              |
|                                   |                  |                |                |                  | <b>18 mm</b> |
|                                   | <b>1 layer</b>   | 5000           | 5000           | 1500             |              |
|                                   | <b>2 layer</b>   | 4573           | 4573           | 1372             |              |
|                                   | <b>3 layer</b>   | 4213           | 4213           | 1264             |              |
| <b>Gearbox max dynamic torque</b> | <b>(Nm)</b>      | 8020           | 8020           |                  |              |
| <b>Max speed</b>                  | <b>(rpm)</b>     | 15             | 15             |                  |              |
| <b>Lifetime</b>                   | <b>(hrs)</b>     | 26589          | 10060          |                  |              |
| <b>Load spectrum</b>              |                  | M8 (T8-L2)     | M6 (T6-L2)     |                  |              |

| <b>Product</b>                    | <b>Number of layers</b> | <b>i=22.93</b> | <b>i=33.57</b> | <b>Lifting of personnel</b> | <b>Rope ø</b> |
|-----------------------------------|-------------------------|----------------|----------------|-----------------------------|---------------|
|                                   |                         | SWL (kg)       | SWL (kg)       | SWL (kg)                    |               |
| <b>BWE070</b>                     | <b>1 layer</b>          | 5100           | 5200           | 2000                        | <b>18 mm</b>  |
|                                   | <b>2 layer</b>          | 4716           | 4809           | 1850                        |               |
|                                   | <b>3 layer</b>          | 4386           | 4472           | 1720                        |               |
|                                   | <b>4 layer</b>          | 4100           | 4180           | 1608                        |               |
|                                   | <b>5 layer</b>          | 3848           | 3923           | 1509                        |               |
|                                   |                         |                |                |                             | <b>20 mm</b>  |
|                                   | <b>1 layer</b>          | 5100           | 6400           | 2000                        |               |
|                                   | <b>2 layer</b>          | 4679           | 5872           | 1835                        |               |
|                                   | <b>3 layer</b>          | 4323           | 5425           | 1695                        |               |
|                                   | <b>4 layer</b>          | 4017           | 5040           | 1575                        |               |
|                                   |                         |                |                |                             | <b>22 mm</b>  |
|                                   | <b>1 layer</b>          | 5100           | 6400           | 2000                        |               |
|                                   | <b>2 layer</b>          | 4643           | 5827           | 1821                        |               |
|                                   | <b>3 layer</b>          | 4261           | 5348           | 1671                        |               |
| <b>Gearbox max dynamic torque</b> | <b>(Nm)</b>             | 9506           | 11929          |                             |               |
| <b>Max speed</b>                  | <b>(rpm)</b>            | 15             | 15             |                             |               |
| <b>Lifetime</b>                   | <b>(hrs)</b>            | 231052         | 15187          |                             |               |
| <b>Load spectrum</b>              |                         | M8 (T9-L2)     | M7 (T7-L2)     |                             |               |

Categorization: shipboard, platform, offshore, drilling.

Minimum dynamic amplification factor (DAF) = 1.3

Load spectrum and classes of utilisation according to F.E.M. (1.001 3rd edition – Revised 1998.10.01) are defined below.

| <b>L2<br/>Load</b> | <b>Time</b> |
|--------------------|-------------|
| 100 %              | 3 %         |
| 59 %               | 50%         |
| 53 %               | 47 %        |

Design temperature: -20 °C

### **Application/Limitation**

1. Systems are not covered by this approval.
2. All materials are to be delivered with 3.1 certificates, documenting mechanical properties and chemical composition in accordance with DNVGL-ST-0378 Sec.3
3. Brakes set up on each winch shall satisfy the requirements stated in DNVGL-ST-0378 clause 5.2.1.2 and 5.2.3
4. The winches intended for personnel lifting / man-riding will be set up with a mechanically and functionally independent secondary brake complying with DNVGL-ST-0378 clause 11.5.1:
  1. Winch BWE015 → secondary brake SC1317213 (nominal braking torque: 831.3 Nm)
  2. Winch BWE025 → secondary brake SC1315926 (nominal braking torque: 1662.6 Nm)
  3. Winch BWE035 → secondary brake SC1315927 (nominal braking torque: 2493.9 Nm)
  4. Winch BWE055 → secondary brake SC1317389 (nominal braking torque: 4664.9 Nm)
  5. Winch BWE070 → secondary brake SC1314732 (nominal braking torque: 6997.3 Nm)
5. The winches are not intended to lift one person in a riding belt in accordance to OS-E101 clause 5.4.2.6
6. Welding procedures and NDT reports to be checked out locally by a DNV GL surveyor before issuing any product certificate.
7. It is the responsibility of the holder of the certificate to ensure that both design and production are in compliance with rules, standards and/or regulations listed on page 1 of this type approval certificate.
8. Combinations by increasing DAF and lowering SWL are allowed as long as the maximum dynamic pulling force remains the same. In any case, minimum DAF to be considered is 1.3 and maximum SWL are the values shown in the tables above-mentioned.
9. Every winch to be set up with a second independent turns counter on the drum, ensuring redundancy to keep always at least 3 layers on the drum.
10. Upon final installation of gear unit to foundation/frame the fastening bolts are to be pre-stressed according to procedures acceptable to the attending surveyor. We have assumed that the load carrying bolts are of 8.8 quality or higher.
11. Our gear calculations are based on that optimum hardening depths have been achieved according to recognised standards and manufacturer's experience. Material fatigue values based on 90% reliability of survival have been applied according to the requirements for lifting appliances in our rules. Load distribution factors as stated by the manufacturer (based on his experience) have been used and we have not considered these.
12. The bearing lifetime for the gear units are not evaluated in this Type Approval. It is assumed that the manufacturer delivers bearings with sufficient capacity for the class of utilisation they are intended for with respect to strength and materials.

### **Type Approval documentation**

### **Tests carried out**

Job Id: **262.1-031979-1**  
Certificate No: **TAS00002UG**

The prototype test is considered not required. In order to obtain a DNV Product Certificate, testing is to be carried out in accordance to the applicable standard requirements. DAF and SWL to be specified in the certificate.

### **Marking of product**

Each winch shall be marked according to the DNVGL-ST-0378 "Standard for offshore and platform lifting appliances" Ed. May 2016 Clause 14.5.

### **Periodical assessment**

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.

END OF CERTIFICATE