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|---|-------------|---------------|---|-----------------|--|
| PROJECT: <ul style="list-style-type: none"> • A-FRAME 4870-1 30 T; • TOWING/LIFTING WINCH 5150-1 60/30 T; • STERN SHEAVE 5170-1; • HYDRAULIC POWER UNIT 4850-1 220 kW. | | | | | |
| DOCUMENT TITLE: <p style="text-align: center;">TECHNICAL SPECIFICATION</p> | | | | | |
| PROJECT NUMBER: <p style="text-align: center;">-</p> | | | CUSTOMER PROJECT NUMBER: <p style="text-align: center;">-</p> | | |
| MANUFACTURER: <p style="text-align: center;">DECK Marine Systems OÜ</p> | | | CUSTOMER: | | |
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1 A-Frame 4870-1 30 T

| No | Description | |
|----|------------------------------|---|
| 1 | Classification | Safe Area (Not suitable for oil rig installation) |
| 2 | Type | Hydraulic powered welded A-Frame with guide drum for towing rope, stabilization frame, two cylinders |
| 3 | Configuration | Hydraulic powered A-Frame: <ul style="list-style-type: none"> - Inboard/Outboard luffing; - Stabilization frame; - Sea type fastenings. |
| 4 | Certification | Designed in accordance with DNVG recommendations. The DNVGL approval is negotiated separately. Lifting tests verified by a third party and approved by one of the Classification Societies (DNV / Lloyd / RMRS). |
| 5 | Dynamic Amplification Factor | 2.5 |
| 6 | Safe Working Load (SWL) | SWL 30 tons |
| 7 | Operational dimensions | Length 22600 mm, Width 13650 mm, Height 13370 mm (arc apex) |
| 8 | Dimensions for shipment | Three parts: <ol style="list-style-type: none"> 1. Length 11500 mm, Width 900 mm, Height 1100 mm; 2. Length 11500 mm, Width 900 mm, Height 1100 mm; 3. Length 13100 mm, Width 1300 mm, Height 1300 mm. |
| 9 | Weight | 76 400 kg |
| 10 | Distance (Outboard position) | ≥ 8200 mm |
| 11 | Distance (Inboard position) | ≥ 11800 mm |
| 12 | Distance (Towing position) | ≥ 14800 mm |
| 13 | Clear spacing between legs | ≥ 11550 mm |
| 14 | Pipes, hoses, fittings | Stainless steel pipes, hoses tips and fittings - HDG |
| 15 | A-Frame angles | Outboard – 65 ⁰ (from the vertical axis); Inboard – 45 ⁰ (from the vertical axis) stowed position; Inboard – 70 ⁰ (from the vertical axis) towing position. |
| 16 | Control | Local Control Unit |
| 17 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |
| 18 | Transportation | A-Frame shipment parts are not suitable for road transport. Lifting slings/chains are included to the mounting kit. |

1.1 A-Frame 4870-1 Control Stand

| No | Description | |
|----|-------------------|---|
| 1 | Type | Local control stand (open deck type). |
| 2 | Configuration | Closed steel construction with removable back plate for hydraulic connections. Weather proof lid and PVC protection are included. |
| 3 | Dimensions | Length 850 mm, Width 650 mm, Height 1350 mm. |
| 4 | Controls | <ul style="list-style-type: none"> - A-Frame Inboard / Outboard / Towing; - Stabilization Frame Left / Right; - Stabilization Frame UP / Down. |
| 5 | Indications | <ul style="list-style-type: none"> - Pressure in the system; - Towing pressure; - Bake pressure. |
| 6 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |

2 Towing Winch 5150-1 60 T

| № | Description | |
|----|------------------------------|--|
| 1 | Classification | Safe Area (Not suitable for oil rig installation) |
| 2 | Type | Hydraulic powered winch for towing, lifting and lowering. |
| 3 | Configuration | <ul style="list-style-type: none"> - Hydraulic drive; - Spooling mechanism; - Sea type fastenings; |
| 4 | Dynamic Amplification Factor | 2.5 |
| 5 | Dimensions | Length 3900 mm, Width 3740 mm, Height 2800 mm, |
| 6 | Weight | 20 000 kg (without wire rope) |
| 7 | Safe Working Load (SWL) | SWL 30 tons (wave height 2 m) |
| 8 | Drive | Hydraulic |
| 9 | Towing load range | 10 t up to 60 t |
| 10 | Towing load limit | 60 t |
| 11 | Speed | 30 m/min (Layer 1) |
| 12 | Drum capacity | 1650 m (based on 40 mm diameter wire rope) |
| 13 | Drum type | Parallel-groove drum shells (LEBUS) |
| 14 | Pipes, hoses, fittings | Stainless steel pipes, hoses tips and fittings - HDG |
| 15 | Hydraulic oil | Mineral hydraulic oil ISO 32, viscosity grade 46 |
| 16 | Certificates | Designed in accordance with DNVG recommendations. The DNVGL approval is negotiated separately. Lifting tests verified by a third party and approved by one of the Classification Societies (DNV / Lloyd / RMRS). |
| 17 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |
| 18 | Transportation | Suitable for road transport. Lifting slings/chains are included to the mounting kit. |
| 19 | Mount type | Bolted connection with welded deck foundation. Deck foundation is not included. |

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|----|-----------------|--|
| 20 | Connections | Power cable 50 m (included). |
| 21 | Controls | <ul style="list-style-type: none"> - Local Control Unit; - Remote Control panel. |
| 22 | Tension control | <ul style="list-style-type: none"> - Tension indication; - Automatic tension adjustment. |

2.1 Towing Winch 5150-1 Control Stand

| Nº | Description | |
|----|-------------------|--|
| 1 | Type | Local control stand (open deck type). |
| 2 | Configuration | Closed steel construction with removable back plate for hydraulic connections. Weather proof lid and PVC protection are included. |
| 3 | Dimensions | Length 850 mm, Width 650 mm, Height 1350 mm. |
| 4 | Controls | <ul style="list-style-type: none"> - Winch rotate control; - Fleeting moving control; - Mechanical brake control; - Emergency STOP; - Tension adjust. |
| 5 | Indications | <ul style="list-style-type: none"> - Indication of tension; - Indication of pay-out / pay-in cable; - System pressure. |
| 6 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |

2.2 Tow rope

| Nº | Description | |
|----|-------------------------|---------------------------------------|
| 1 | Manufacturer | Bridon, Veropro, Severstal or similar |
| 2 | Diameter | 40 mm |
| 3 | Length | 1650 m (1500 m + reserve 150 m) |
| 4 | Type | Steel, galvanized |
| 5 | Minimum breaking force | 130 t |
| 6 | Minimum winding tension | 3 t |

3 Stern Sheave 5170-1

| № | Description | |
|----|------------------------------|---|
| 1 | Classification | Stern Sheave for tow rope (Not suitable for oil rig installation) |
| 2 | Dynamic Amplification Factor | 2.5 |
| 3 | Dimensions | Length 1550 mm, Width 1750 mm, Height 1780 mm |
| 4 | Sheave diameter | 1000 mm |
| 5 | Rope diameter | 40 mm |
| 6 | Mount type | Bolted connection with welded deck foundation. Deck foundation is not included. |
| 7 | Weight | 7800 kg |
| 8 | Certificates | Designed in accordance with DNVG recommendations. The DNVGL approval is negotiated separately. Lifting tests verified by a third party and approved by one of the Classification Societies (DNV / Lloyd / RMRS). |
| 9 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |
| 10 | Transportation | Suitable for road transport. Lifting slings/chains are included to the mounting kit. |

4 Hydraulic Power Unit 4850-1 220 kW

| № | Description | |
|---|-------------|--|
| 1 | Type | Hydraulic Power Unit (HPU) 220 kW |
| 2 | Controls | Local control panel |
| 3 | Indications | <ul style="list-style-type: none"> - Main Switch; - Power ON/OFF; - Pump ON/OFF; - Heating ON/OF; - Oil Level - Temperature indicator; - Filters indicator; - Overload indicator; - Emergency STOP; - Lamp test; - Auto Stop reset. |
| 4 | Dimensions | Length 2935 mm, Width 1796 mm, Height 2218 mm |
| 5 | Weight | 3200 kg (without hydraulic oil) |

| | | |
|----|--------------------|---|
| 6 | Surface treatment | According to DECK Surface protective procedure. Color - Yellow RAL1004 |
| 7 | Hydraulic Pressure | 300 bar |
| 8 | Flow capacity | 380 l/min |
| 9 | Tank capacity | 1500 l |
| 10 | Electrical motors | 2 x 110 kW, 380VAC/50Hz Y/D |
| 11 | Heaters | 2 kW |

5 Operating Conditions

| No | Description | |
|----|---------------------|----------------|
| 1 | Relative humidity | 90% |
| 2 | Working temperature | -10°C to +40°C |

6 Technical Documentation

The following documentation to be delivered after signed contract:

- Installation manual;
- Technical specification;
- Operational manual;
- Maintenance manual;
- General Arrangement drawings, electrical circuits, hydraulic diagrams ;
- Test reports.

7 Tests

Factory acceptance test are carried out at the DECK Marine Systems factory in accordance with FAT procedure FAT-P05240.01.

8 Reservations

THE FOLLOWING IS NOT INCLUDED IN THE SCOPE OF SUPPLY:

- Tow rope
- Third party cost
- HAT and SAT
- Wire spooling
- Hydraulic oil for HPU
- Oil for gearboxes
- Spare parts