DANA BREVINI® Motion Systems

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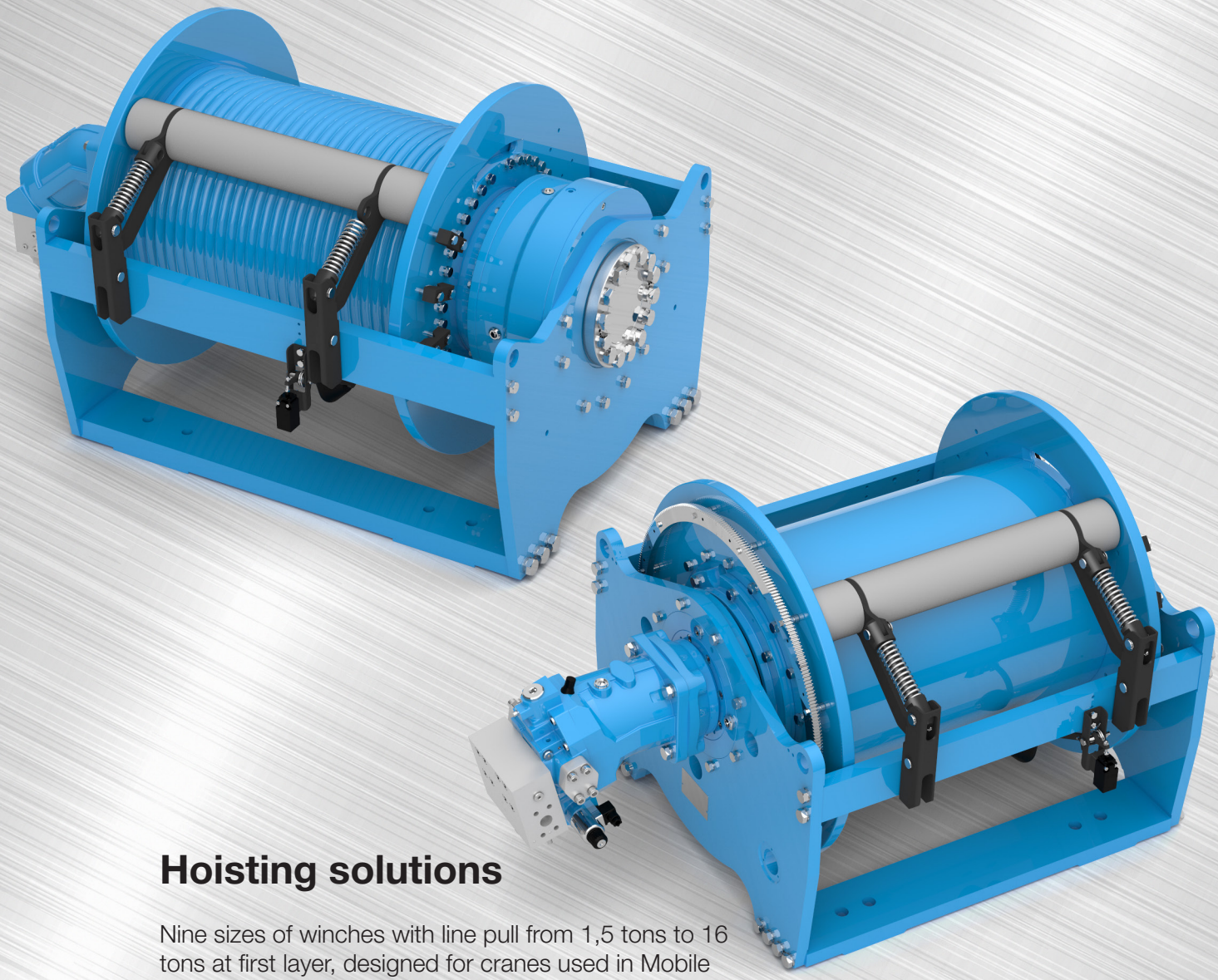
Product Catalog

Brevini Evolution Series™
Hoisting Winches

The new Winch Series for Mobile and Industrial Markets



Hoisting solutions

Nine sizes of winches with line pull from 1,5 tons to 16 tons at first layer, designed for cranes used in Mobile and Industrial market. The winches are equipped with High Speed Hydraulic Motor and a wide range of controls ensure safety, avoid damage to the winch, the crane, and most importantly, people on job site.

Brevini Evolution Series™
Hoisting Winches

The new Winch Series for Mobile and Industrial Markets

Brevini Evolution Series™ Hoisting Winches

The new Brevini Evolution Series™ winches for construction and material-handling vehicles, marine, offshore and many other mobile and stationary applications are the result of years of experience in Engineering and Manufacturing of winches.

With 9 new sizes available

- BWE015
- BWE025
- BWE035
- BWE055
- BWE070
- BWE085
- BWE105
- BWE125
- BWE160

which offer a lifting capacity up to 16 ton (up to 35,300 lbf) we will enhance the product range and give us the opportunity to better serve our customers.

Brevini Evolution Series™ Winches feature high-speed piston motor, fixed or variable displacement, with the 9-piston motor technology we can provide high controllability and smooth operation, even at very low speed, keeping high lifting performance level.

The high configuration flexibility of the new winch series allows the usage of Electric Motor, which can be included in the supply package upon request and can be assembled in line or with bevel gear as input to be compact as much as possible.

The new winch series has been designed to be modular and flexible, featuring multiple configurations that makes the winch able to meet different customer specification and duty cycles, to maximize performances and productivity.

For each size we have different options and accessories available:

- Grooved drum with special profile improve the spooling performances, increase rope capacity and extend rope lifetime.
- Pressure roller to ensure the correct rope spooling.
- Hydraulic or Electric micro-switch as last safety wraps indicator.
- Electric or Hydraulic rotary limit switch as minimum and maximum rope capacity indicator
- Speed sensor for better controllability.
- Torque/overload sensor to ensure safety during winch operation.

For each size is available the “Personnel Lifting” configuration, that, thanks to a secondary brake directly connected to the drum, ensure high level of safety and control in all working condition.

Other accessories like rope, hook and shackle are available, to meet customer requirements.

The new winch series are suitable for marine and offshore environment, thanks to many technical features.
which makes the winch the perfect solution for this application, like steel frame, pressure roller made in stainless steel, marine painting specification, and many more.

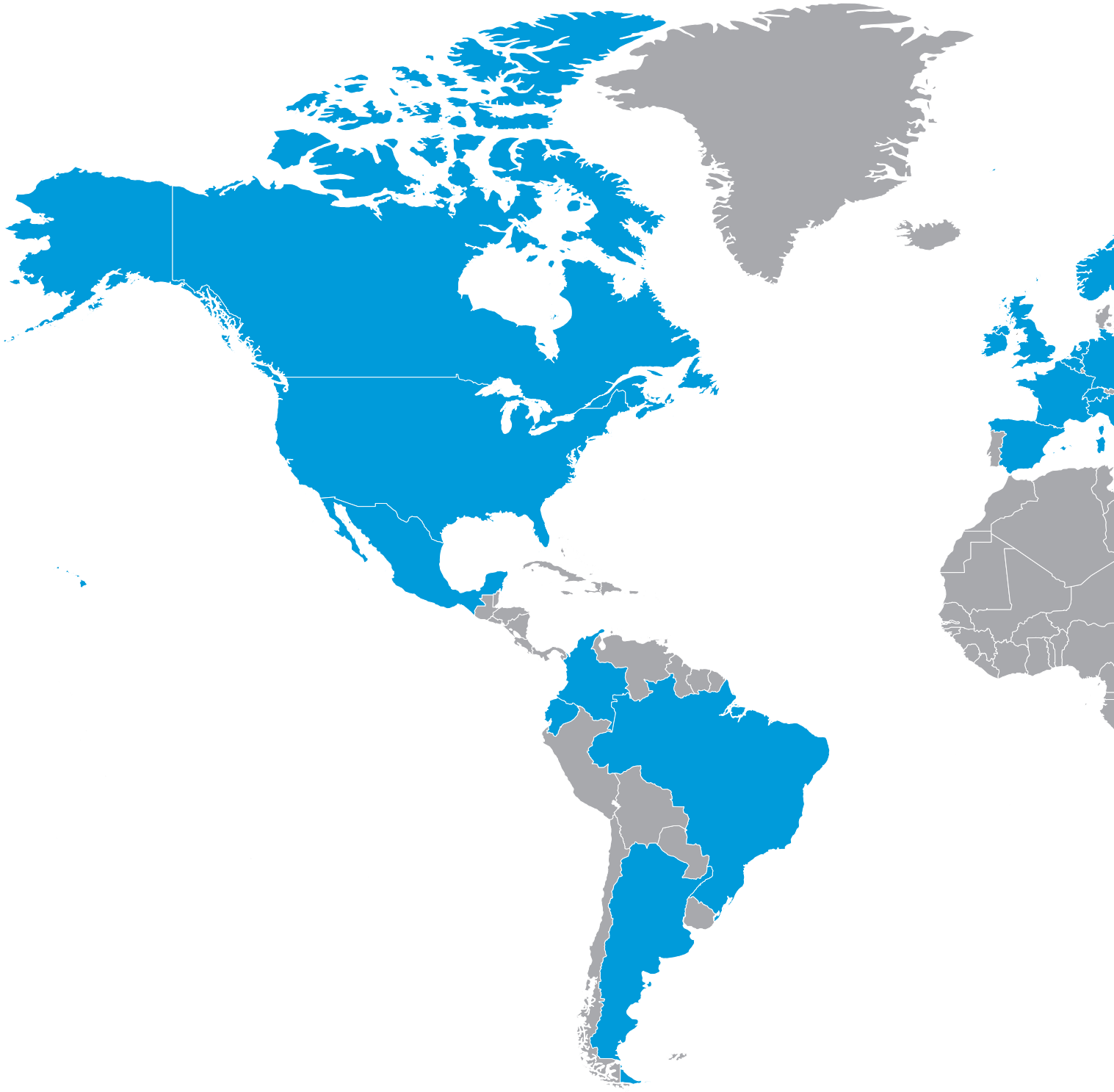
The new winches are designed to meet major international standard applied in marine and offshore application, already approved by DNV, ABS and compliant to API-2c.

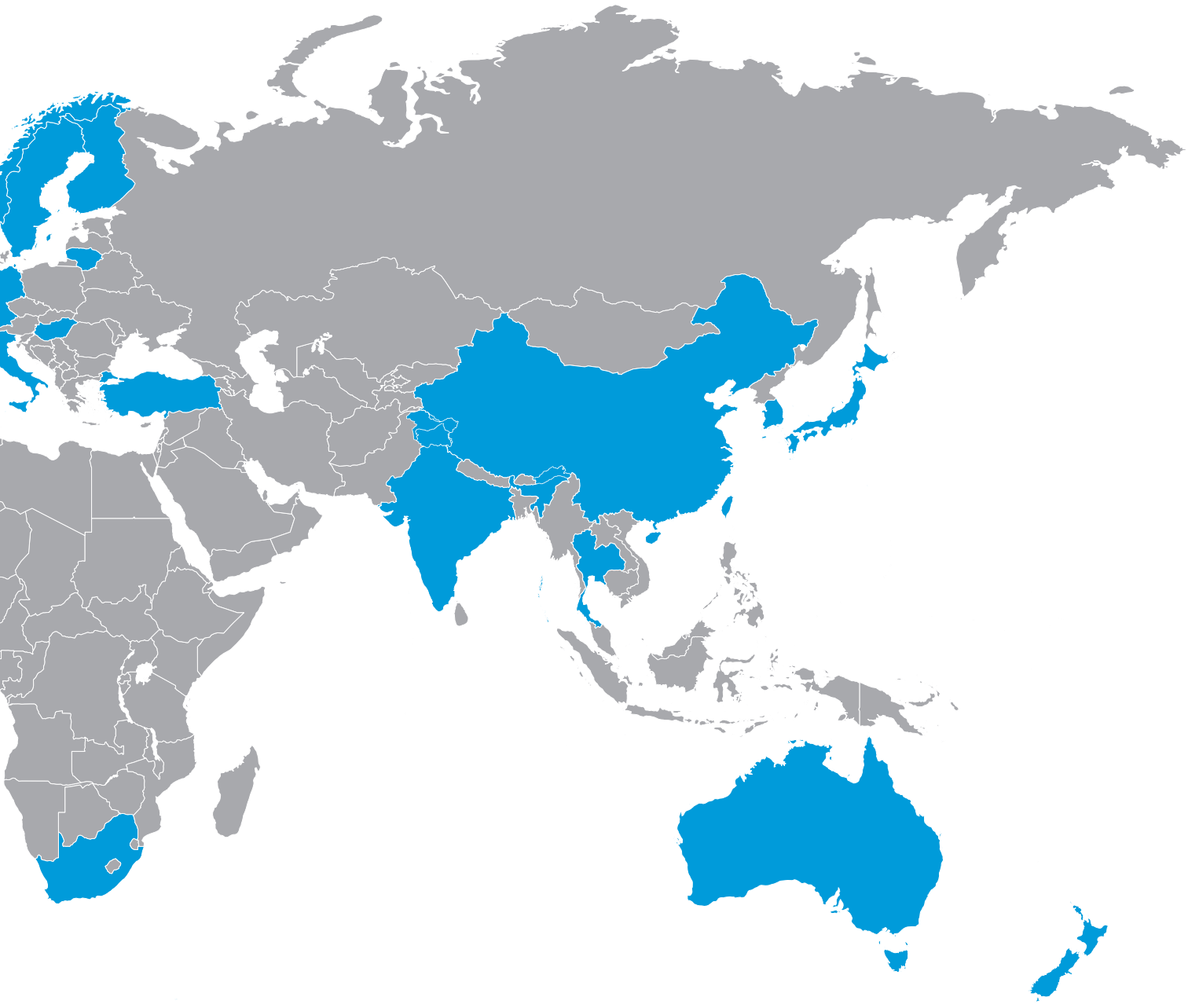
Brevini® winches are suitable for ambient working Temperature between -20°C to +40°C.

Are also suitable for ambient working temperature lower than -20°C, upon application approval by Dana Engineering.

More than 40 years of winches experience in design and application of hoisting winches, makes this new winch series innovative and high-performance products ideal for the new machine’s generation.

DANA OFF-HIGHWAY





INDEX

Dana has introduced the introductive index, page symbols and bookmarks, which allow you to arrive and print the relevant section faster. Clicking the Dana logo at the bottom page, you'll come back to the index.

MAIN MOBILE APPLICATIONS

Rough-Terrain Crane

Crawler Telescopic boom Crane

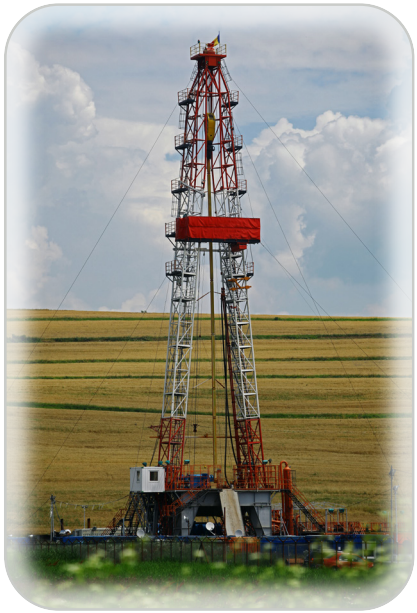
Piling Rig

All Terrain Crane

Stacker and Reclaimer

Off-Shore Cranes

Drill Rig



Marine Cranes

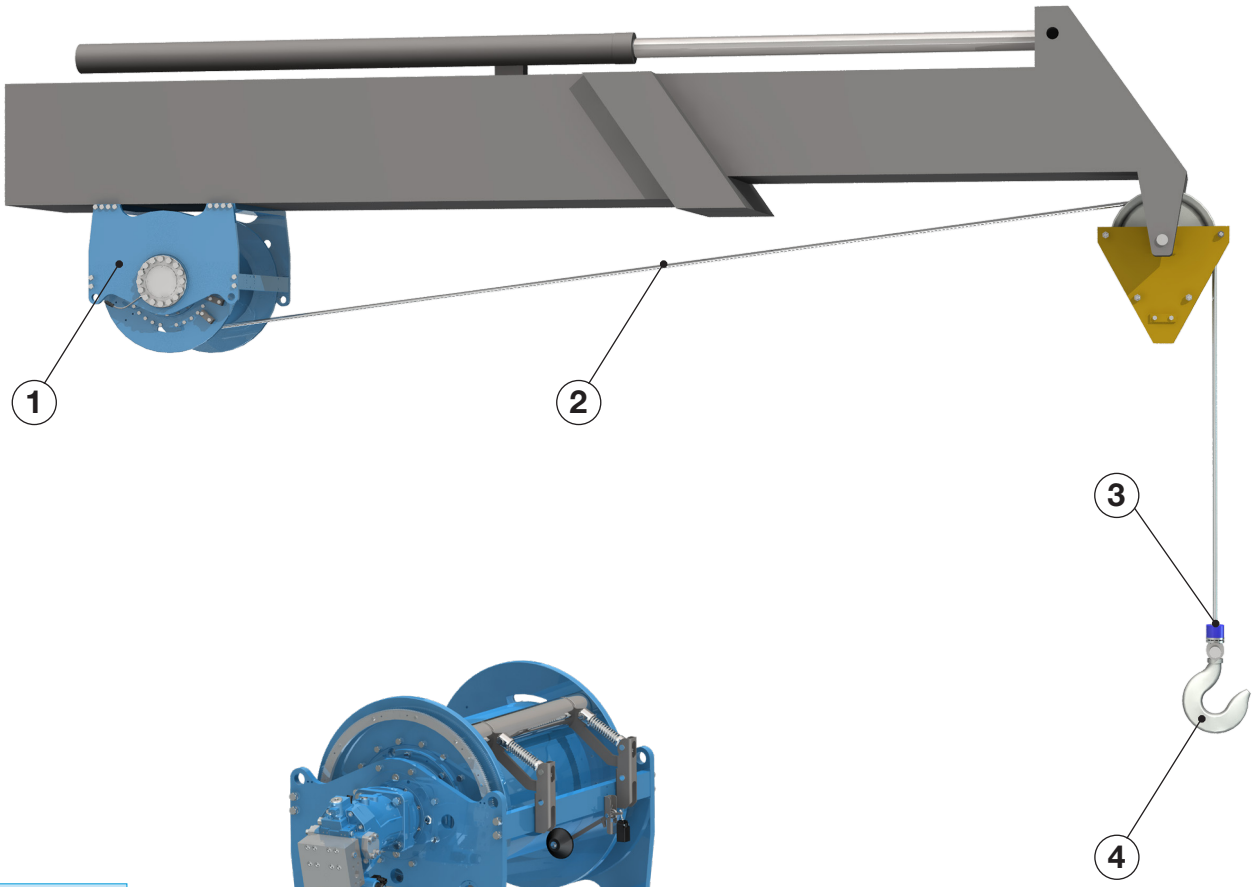
Harbor Crane

Table N° 1

Crane type classification guide		According to FEM (1.001) section I, 3rd edition, Table T.2.1.3.5	
Type of crane	Type of duty	Type of mechanism	
		Hoisting	Luffing
Erection cranes		M2 - M3	M1 - M2
Loading bridge cranes	Hook duty	M5 - M6	-
	Grab or magnet duty	M7 - M8	-
Workshop cranes		M6	-
Overhead travelling cranes, pig-breaking cranes, scrapyard cranes	Grab or magnet duty	M8	-
Bridge cranes for unloading, bridge cranes for containers Other bridge cranes (with crab, and/or slewing jib)	a) Hook or spreader duty	M6 - M7	M3 - M4
	b) Hook duty	M4 - M5	-
Bridge cranes for unloading, bridge cranes (with crab, and/ or slewing jib)	Grab or magnet duty	M8	M3 - M4
Dry dock cranes, shipyard jib cranes, jib ceanes for dismantling	Hook duty	M5 - M6	M4 - M5
Dockside cranes (slewing, on ganty, etc.), floating cranes and pontoon derricks	Hook duty	M6 - M7	M5 - M6
	Grab or magnet duty	M7 - M8	M6 - M7
Floating cranes and pontoon derricks for very heavy loads (usually greater than 100 t)	Hook duty	M3 - M4	M3 - M4
Deck cranes	Hook duty	M4	M3 - M4
	Grab or magnet duty	M5 - M6	M3 - M4
Tower cranes for building		M4	M4
Derricks		M2 - M3	M1 - M2
Railway cranes allowed to run in a train		M3 - M4	M2 - M3
Mobile cranes	Hook duty	M3 - M4	M2 - M3

Table N° 2

Class of utilization								
Classes of utilization (Table T.2.1.3.4.)		T2	T3	T4	T5	T6	T7	T8
		400 < T2 800	800 < T3 1600	1600 < T4 3200	3200 < T5 6300	6300 < T6 12500	12500 < T7 25000	25000 < T8 50000
L1	0 > Km 0.125		M2	M3	M4	M5	M6	M7
L2	0.125 > Km 0.250	M2	M3	M4	M5	M6	M7	M8
L3	0.250 > Km 0.500	M3	M4	M5	M6	M7	M8	-
L4	0.500 > Km 1000	M4	M5	M6	M7	M8	-	-



1 Winch

2 Rope

3 Shackle

4 Hook

WINCHES DESIGNATION

BWE085	/	SD24	01	_s	49.4	-	APV085	_0	-	P
Size		SD24 Drum Configuration SD24 Rope Diameter	Drum Winding Direction	Sprag Clutch	Ratio		APV085 Motor APV085 Displacement	Overcenter valve		Pressure Roller

Size

- BWE015
- BWE025
- BWE035
- BWE055
- BWE070
- **BWE085**
- BWE105
- BWE125
- BWE160

SD24 Drum Configuration / SD24 Rope Diameter

- **SDØ** — Smooth Drum
- **GDØLL** [1] — Special Grooved Left
- **GDØLR** [2] — Special Grooved Right

Drum Winding Direction

- **01** [3] — Clock Wise
- **02** [3] — Counter Clock Wise

Sprag Clutch

- **_s** — w/ Sprag clutch
- **-** — No Sprag Clutch

Ratio

- **49.4**
- **81.0**

APV085 Motor / APV085 Displacement

- **APV** — Axial Pistons Variable
- **APF** — Axial Pistons Fixed
- **ORB** — Orbital
- **00** — Universal Input
- **FI** — Female Input
- **MI** — Male Input
- **ELM** — Electric Motor

Overcenter valve

- **_0** — NO Overcenter
- **_1** — 1 Overcenter
- **_2** — 2 Overcenter

Pressure Roller

- **P** — Present
- **-** — None

[1] Available with sense of rotation counter clockwise 02 only
[2] Available on request with sense of rotation clockwise 01 only
[3] From motor side view (see page A16)

WINCHES DESIGNATION

-	EL	-	RE	-	TS	-	E1	-	AR	-	LP	(	L606	)	GD	-	Q601
	Limit Switch		Safety Wraps Limit Switch		Torque Sensor		Speed Sensor		Rope Mounted [4]		Lifting of Personnel Winch		Drum Length		Structure		Certification

Limit Switch

- **EL** — Electric Switch
- **HY** [5] — Hydraulic Switch
- **-** — None

Safety Wraps Limit Switch

- **RS** — Rotary Shaft (Predisposition for Rotary Switch or Encoder)
- **RE** — Rotary Electric Switch
- **RH** — Rotary Hydraulic Switch
- **-** — None

Torque Sensor

- **TS** [6][7] — Torque Sensor
- **-** — None

Speed Sensor

- **E1** — Proximity Sensor
- **E2** — Absolute Encoder
- **E3** — Speed sensor on the motor
- **-** — None

Rope Mounted [4]

- **R** — Rope
- **AR** — Rope with Accessories
- **-** — None

Lifting of Personnel Winch

- **LP** — Lifting of Personnel
- **-** — None

Drum Length

- **L606** — Drum Length [mm]

Structure

- **GD** — Gear Drum
- **-** — None

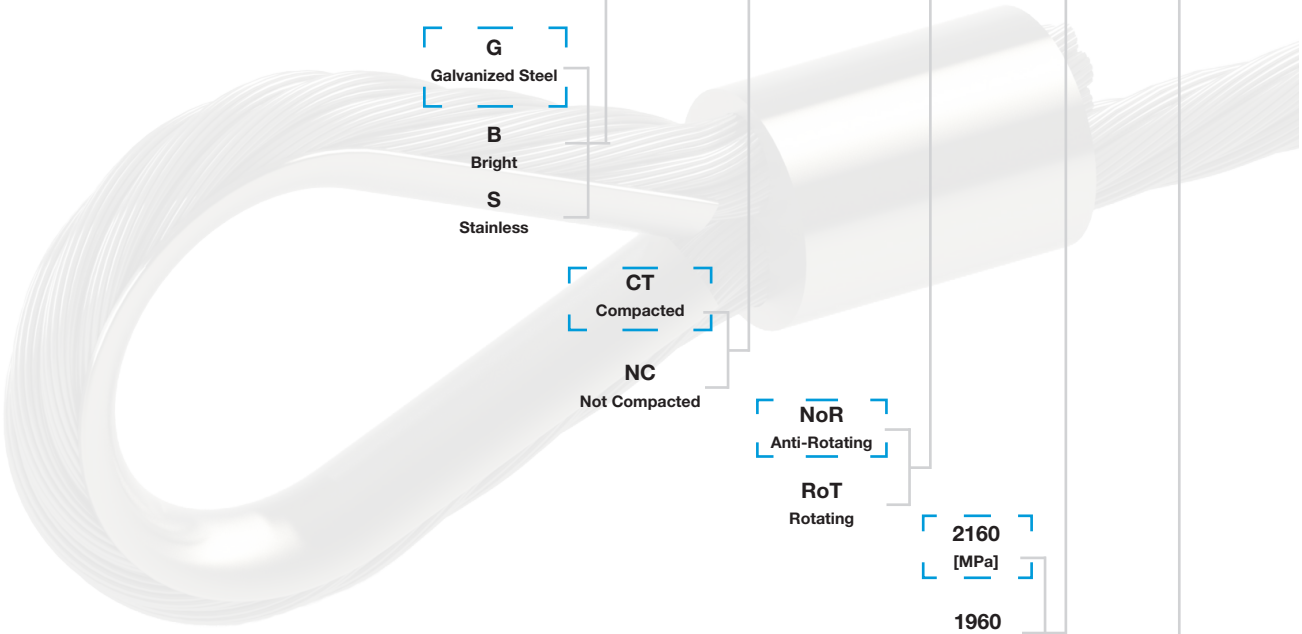
Certification

- **Qxxx** — Certification
- **-** — None

[4] Rope assembly available only for complete winch with hydraulic motor, not available for electric motor and winch without motor
[5] Available with single overcenter valve only (page B13)
[6] Not available for lifting of personnel application
[7] Correct signal depends from drum winding direction

ROPE DESCRIPTION

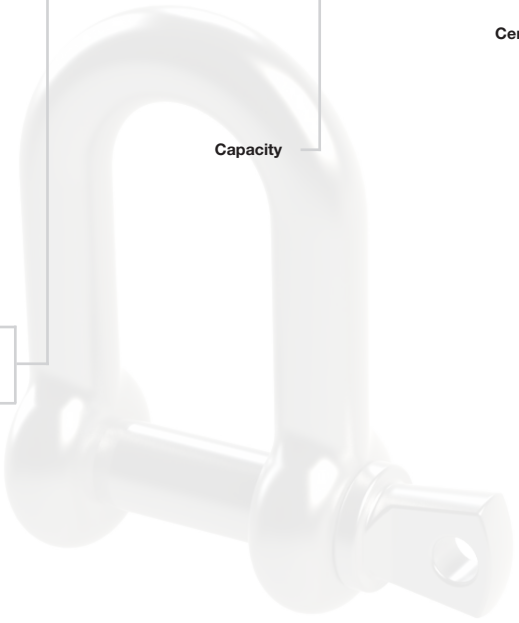
ROPE	18x7	D14x100	RL	G	CT	NoR	2160	A02	DNV
	Rope Class *	Rope Dimensions	Rope Structure*	Rope Mate-rial*	Strands Structures*	Rotation Anti-Rotation*	Rope Strenght*	End Fitting*	Certification
	18x7 (1)	D14x100	RL	G	CT	NoR	2160	A01	
	34x7	Diameter x Length	RR	B	NC	RoT	1960	A02	
		[mm] x [m]	LR	S			1770	A03	
			LL					A04	
								A05	



* The standard supply is highlighted in the boxes, unless otherwise specified
(1) Available for diameter ≤18mm

ROPE ACCESSORIES DESCRIPTION

SHACKLE	BTA	CS	3Ton	DNV
	Shackle Type*	Shackle Material*	Shackle Capacity	Certification
	BTA Bolt Type Ancor SPA Screw Pin Ancor	CS Carbon Steel AS Alloy Steel	Capacity	Certification



HOOK	SH	CS	3Ton	ABS
	Hook Type*	Hook Material*	Hook Capacity	Certification
	SH Swivel Hook BH Bearing Hook EH Eye Hook	CS Carbon Steel AS Alloy Steel	Capacity	Certification

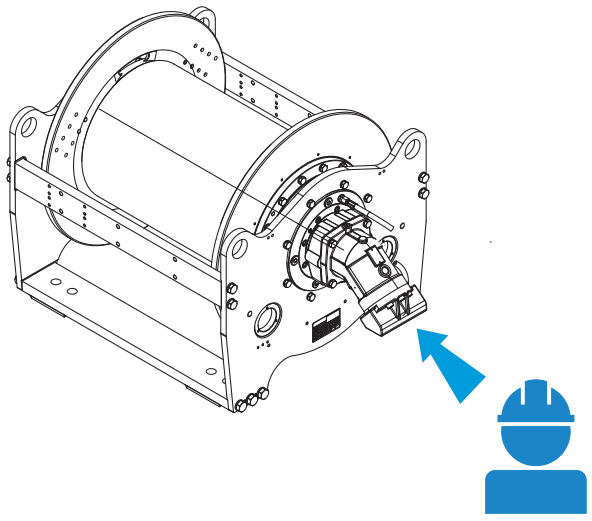
* Our standard shackle and hook are already compliant with major Marine and Offshore Certification

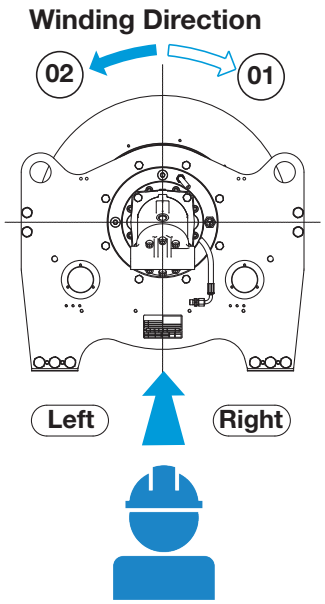
SYMBOLOGY & WINDING DIRECTION

SYMBOLOGY

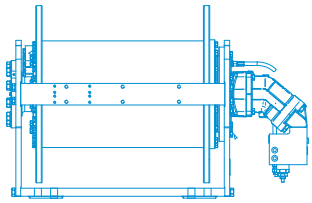
Description	Units		Symbol
	SI	USC	
Minimum Geometrical Displacement	cm^3/rev	in^3/rev	Vg_{min}
Maximum Geometrical Displacement	cm^3/rev	in^3/rev	Vg_{max}
Speed	rpm	rpm	n_2
Filling Plug [1]	-	-	
Oil Level Plug	-	-	
Magnetic Drain Plug	-	-	
Motor Drain Plug [2]	-	-	**DR**
Brake Filling Plug	-	-	
Brake Oil Level Plug	-	-	
Brake Drain Plug	-	-	
Brake Releasing Plug	-	-	
Motor Service Ports [2]	-	-	
	-	-	
Drum Rotation	-	-	
Available	-	-	√
On Request	-	-	Δ
Not Available	-	-	-

WINDING DIRECTION





[1] BWE products are not equipped with Breather plugs
[2] V1, V2 and DR dimensions depend from chosen motor. For more details, see the corresponding motor page, from page B9



Size	Line Pull at first Layer [kg]	Line Pull at first Layer [lbf]
BWE015	1.500	3.300
BWE025	2.500	5.500
BWE035	3.500	7.700
BWE055	5.500	12.100
BWE070	7.000	15.400
BWE085	8.500	18.700
BWE105	10.500	23.100
BWE125	12.500	27.500
BWE160	16.000	35.300

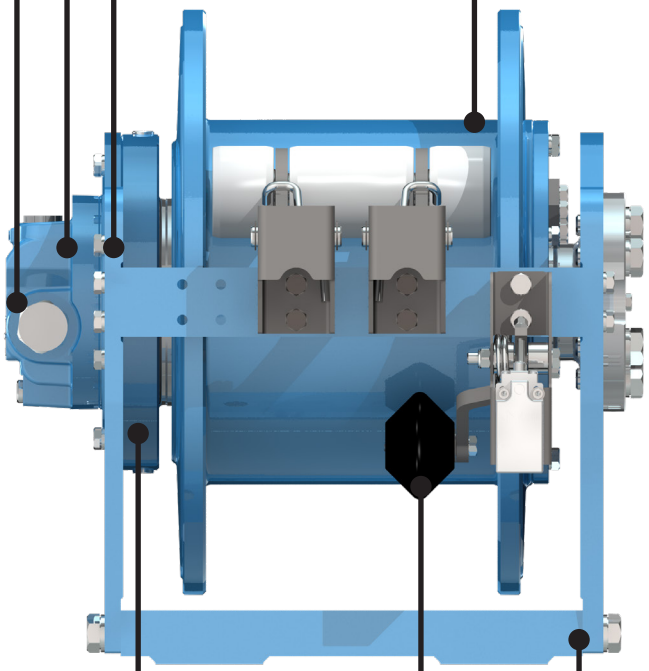
Line Pull at first Layer up to:
1.500 [kg]
3.300 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Spheroidal graphite cast iron,
available in grooved or smooth options



High performance Gears
Low noise and longer life time

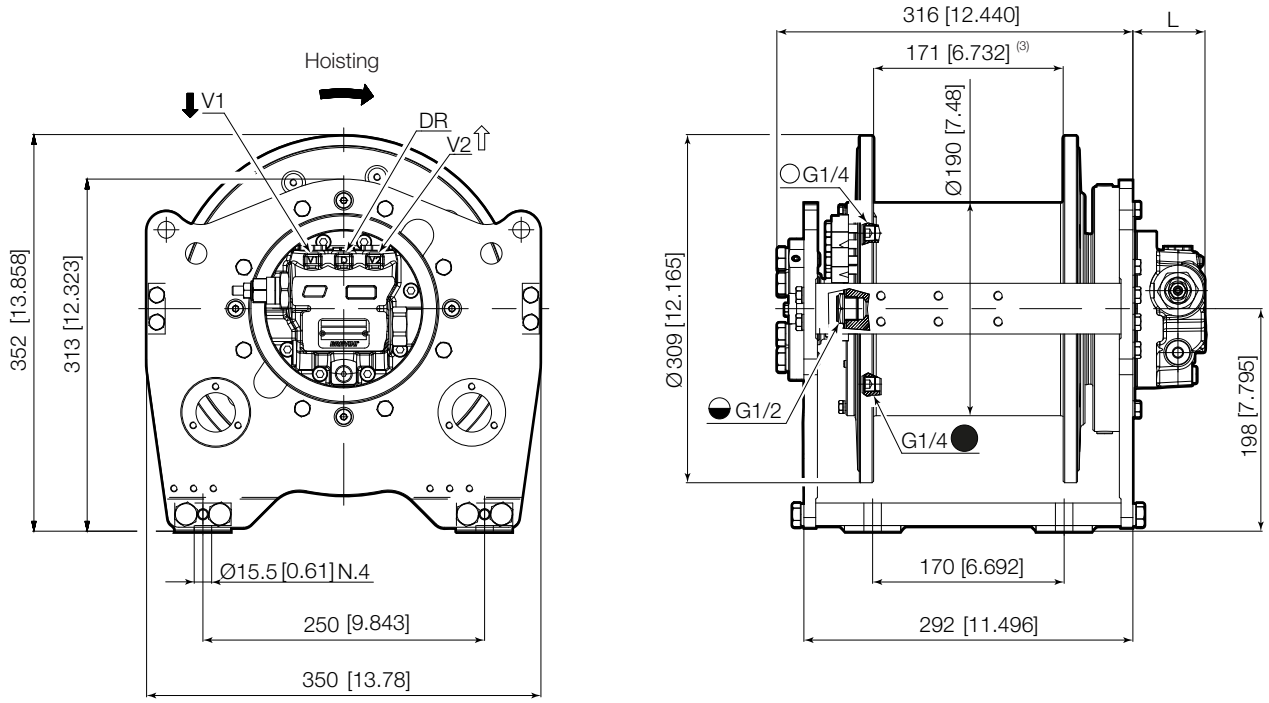
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

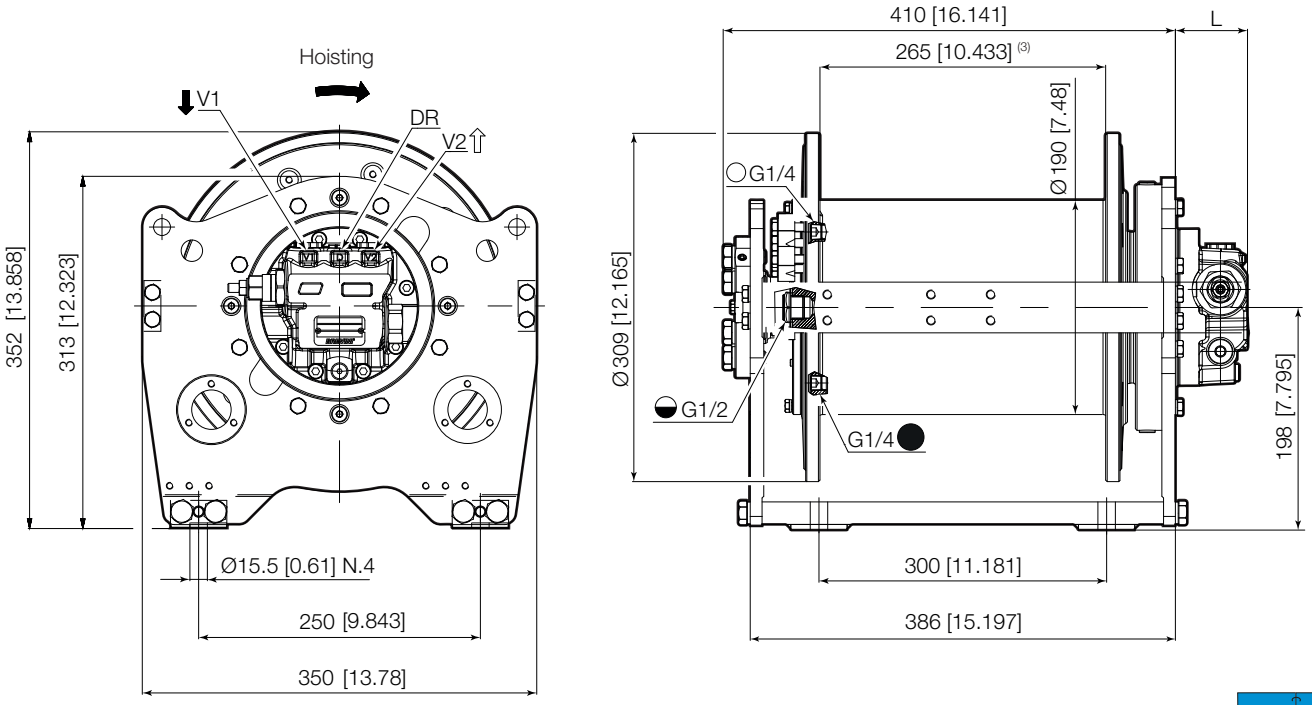
Hydraulic Motor

	Motor type	Displacement	L
Fixed Displacement	B5VA021 (1)	21 cm³/rev [1.28 in³/rev]	64 mm [2.519 in]
Fixed Displacement	BRZV160 (1)	160 cm³/rev [9.76 in³/rev]	90 mm [3.543 in]
With NO Motor	Universal Input Flange 00	-	23 mm [0.906 in]

Winch - standard (2)



Winch - extended drum (2)



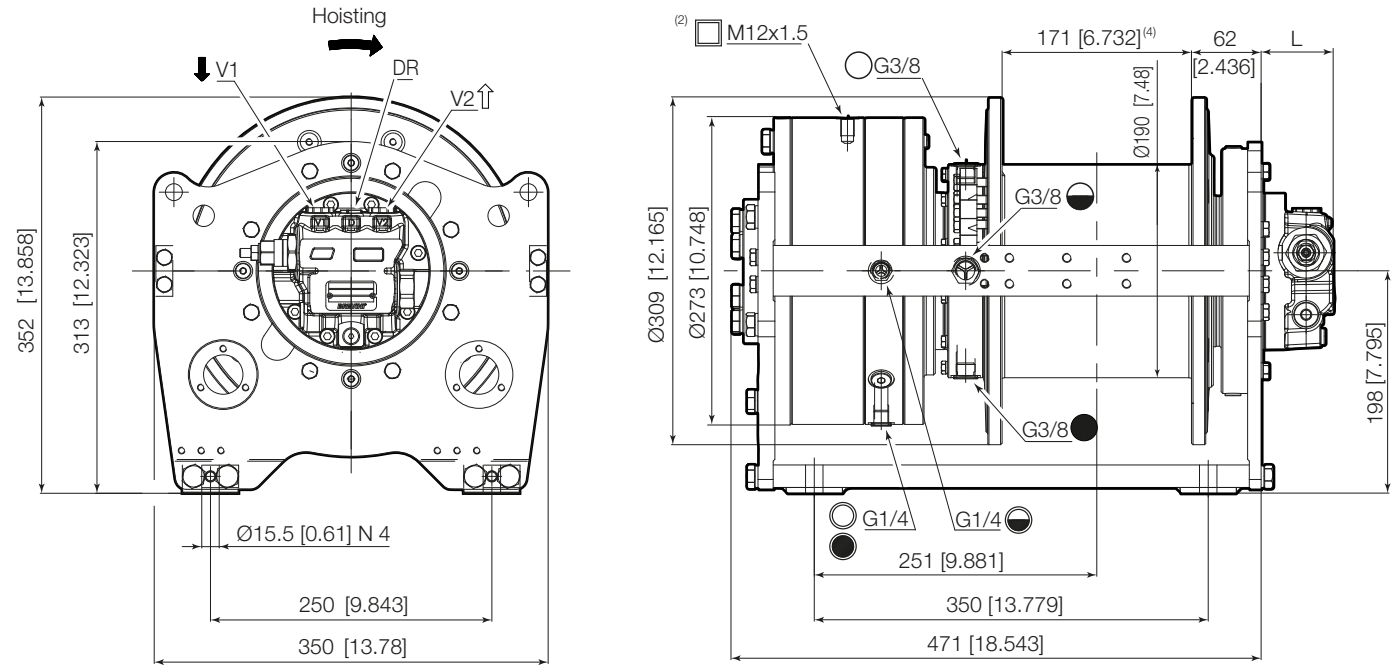
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

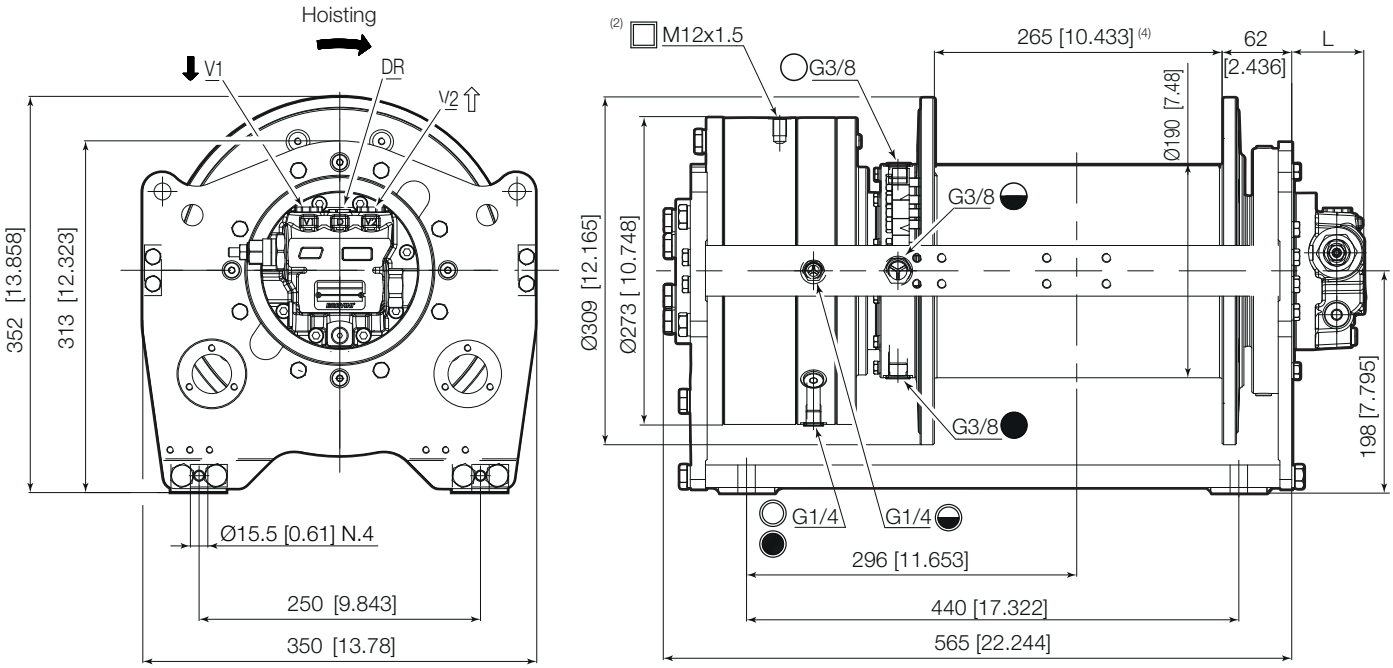
Hydraulic Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	B5VA021 (1)	21 cm³/rev [1.28 in³/rev]	64 mm [2.519 in]
Fixed Displacement	BRZV160 (1)	160 cm³/rev [9.76 in³/rev]	90 mm [3.543 in]
With NO Motor	Universal Input Flange 00	-	23 mm [0.906 in]

Lifting of Personnel Winch - standard (3)



Lifting of Personnel Winch - extended drum (3)



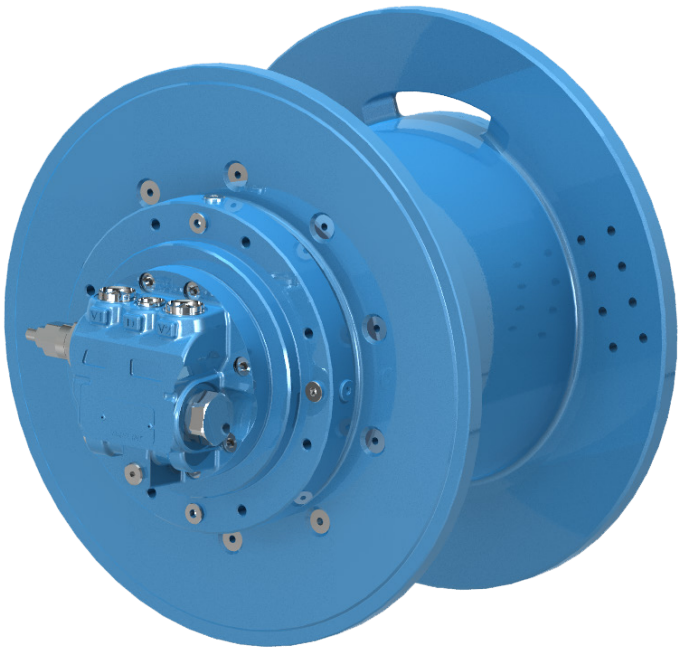
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Lifting of personnel brake release pressure (Release/Max) 27/315 bar [392/4570 psi]
(3) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**B5VA021**	21 [cm³/rev]	1.28 [in³/rev]
	BRZV160	160 [cm³/rev]	9.75 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment	**Other available**
Ratio	19.1 3.95	33.3 28.1

			Smooth Drum		**Grooved Drum**			
			Standard	**Extended**	**Standard LL**	**Standard LR**	**Extended LL**	**Extended LR**
Rope Diameter [1]	Ø 7 [mm]	Ø 0.27 [in]	√	√	Δ	Δ	Δ	√ [2]
	Ø 8 [mm]	Ø 0.31 [in]	√	√	Δ	Δ	Δ	√ [2]
	Ø 10 [mm]	Ø 0.39 [in]	√	√	√	Δ	√	Δ
	Ø 12 [mm]	Ø 0.47 [in]	√	√	Δ	Δ	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE015-SD10..-01-19.1-APF021

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	1500	1380	1280	1190	1120	-
Rope speed	[m/min]	73	79	86	92	98	-
Rope length	[m]	10	20	33	45	59	73

Motor	B5VA021		Advised rope diameter	10	[mm]
Starting lifting pressure	320	[bar]	Oil fill/drain plug	G1/4	T
Operating pressure	270	[bar]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	50	[l/min]	Motor drain port	G1/4	DR
Minimum oil flow at the motor	5.0	[l/min]	Static braking torque (1)	180	[Nm]
Gear ratio	19.1	[i]	Brake release pressure (Release / Max)	34 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [kg]		Oil [l]	
		Cargo	LoP	Cargo	LoP
BWE015/B5VA021	Standard	76	127	0.85	1.5
	Extended drum	84	135	1.75	2.4

United States Customary Units: USC

BWE015-SD10..-01-19.1-APF021

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	3300	3050	2830	2630	2470	-
Rope speed	[fpm]	241	262	282	303	324	-
Rope length	[ft]	34	68	108	148	194	239

Motor	B5VA021		Advised rope diameter	0.39	[in]
Starting lifting pressure	4640	[psi]	Oil fill/drain plug	G1/4	[gal]
Operating pressure	3870	[psi]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	13	[gpm]	Motor drain port	G1/4	DR
Minimum oil flow at the motor	1.32	[gpm]	Static braking torque (1)	132	[ft·lbf]
Gear ratio	19.1	[i]	Brake release pressure (Release / Max)	495 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [lbs]		Oil [gal]	
		Cargo	LoP	Cargo	LoP
BWE015/B5VA021	Standard	168	280	0.22	0.40
	Extended drum	185	298	0.46	0.63

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 8 [mm]	862 (5) (1)	1100	313 (5) (1)	400	862 (5) (1)	1100	392 (5) (1)	500
Ø 10 [mm]	1035 (4) (1)	1300	318 (4) (1)	400	955 (4) (1)	1200	398 (4) (1)	500
Ø 12 [mm]	1081 (3) (1)	1300	333 (3) (1)	400	998 (3) (1)	1200	416 (3) (1)	500

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.31 [in]	1900 (5) (1)	2445	690 (5) (1)	890	1900 (5) (1)	2445	864 (5) (1)	1112
Ø 0.39 [in]	2281 (4) (1)	2890	701 (4) (1)	890	2105 (4) (1)	2667	877 (4) (1)	1112
Ø 0.47 [in]	2383 (3) (1)	2890	734 (3) (1)	890	2200 (3) (1)	2667	917 (3) (1)	1112

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available - standard

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 7 [mm]	Rope length	[m]	14	29	45	62	80	98
Rope Diameter Ø 8 [mm]	Rope length	[m]	12	25	40	55	71	88
Rope Diameter Ø 10 [mm]	Rope length	[m]	10	20	33	45	59 (3)	73
Rope Diameter Ø 12 [mm]	Rope length	[m]	8	17	28	38 (3)	-	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.27 [in]	Rope length	[ft]	45	95	147	203	262	321
Rope Diameter Ø 0.31 [in]	Rope length	[ft]	42	84	132	181	234	288
Rope Diameter Ø 0.39 [in]	Rope length	[ft]	34	68	108	148	194 (3)	239
Rope Diameter Ø 0.47 [in]	Rope length	[ft]	28	57	92	126 (3)	-	-

Ropes available - extended

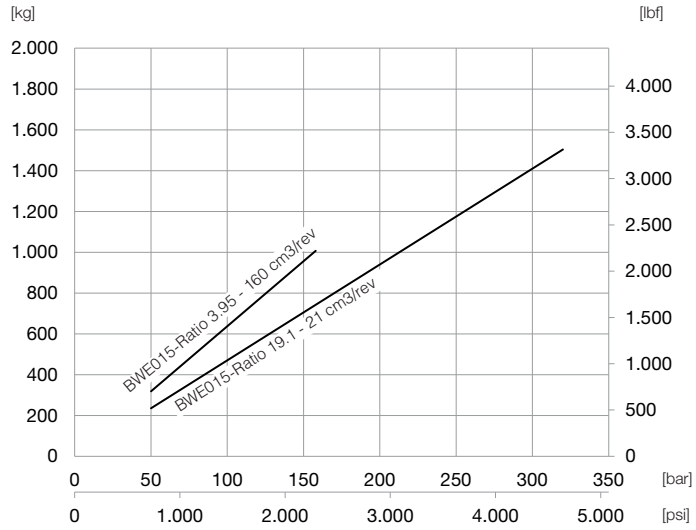
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 7 [mm]	Rope length	[m]	22	45	71	97	125	153
Rope Diameter Ø 8 [mm]	Rope length	[m]	19	40	62	86	111	137
Rope Diameter Ø 10 [mm]	Rope length	[m]	16	32	51	70	92 (3)	114
Rope Diameter Ø 12 [mm]	Rope length	[m]	13	27	43	60 (3)	-	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.27 [in]	Rope length	[ft]	72	147	232	318	410	501
Rope Diameter Ø 0.31 [in]	Rope length	[ft]	65	132	206	282	365	450
Rope Diameter Ø 0.39 [in]	Rope length	[ft]	52	107	168	232	302 (3)	374
Rope Diameter Ø 0.47 [in]	Rope length	[ft]	44	90	143	198 (3)	-	-

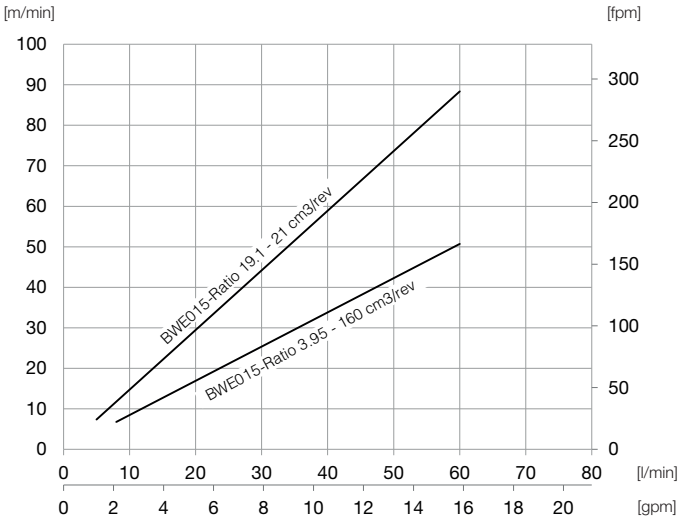
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer



Maximum Speed at first layer



Note:

- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

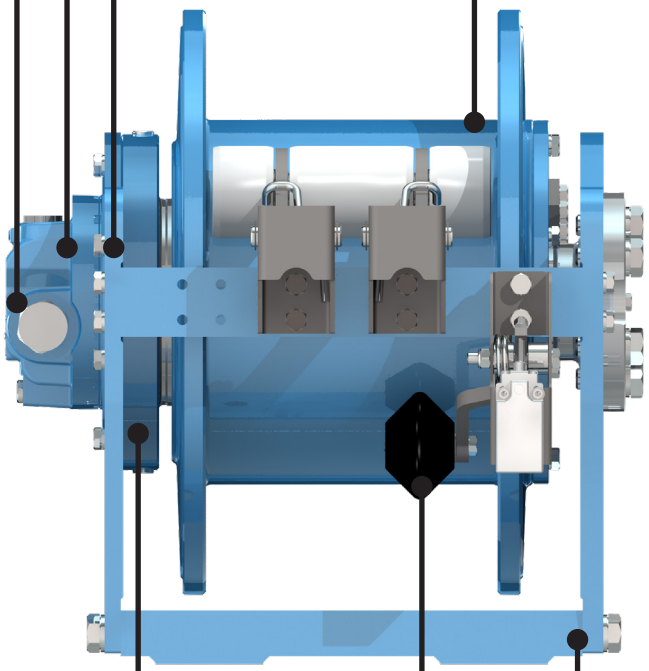
Line Pull at first Layer up to:
2.500 [kg]
5.500 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Spheroidal graphite cast iron,
available in grooved or smooth options



High performance Gears
Low noise and longer life time

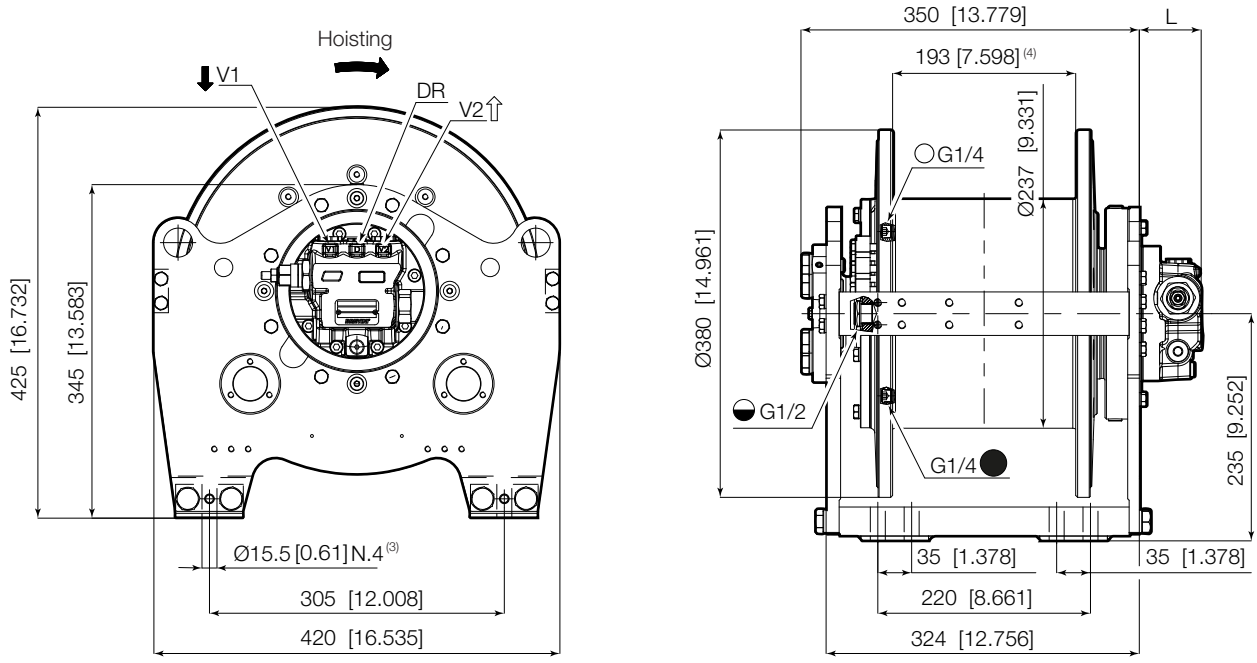
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

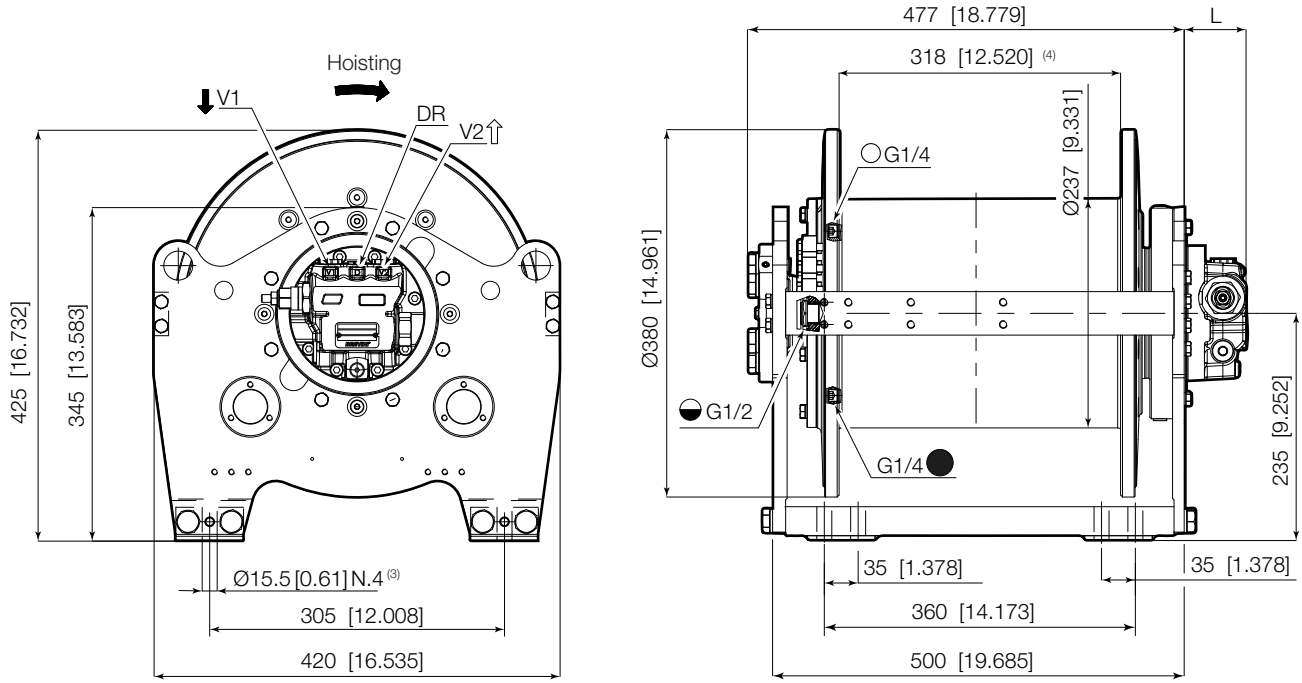
Hydraulic Motor

	Motor type	Displacement	L
Fixed Displacement	B5VA021 (1)	21 cm³/rev [1.28 in³/rev]	64 mm [2.519 in]
Fixed Displacement	BRZV250 (1)	250 cm³/rev [15.24 in³/rev]	105 mm [4.133 in]
With NO Motor	Universal Input Flange 00	-	23 mm [0.906 in]

Winch - standard (2)



Winch - extended drum (2)



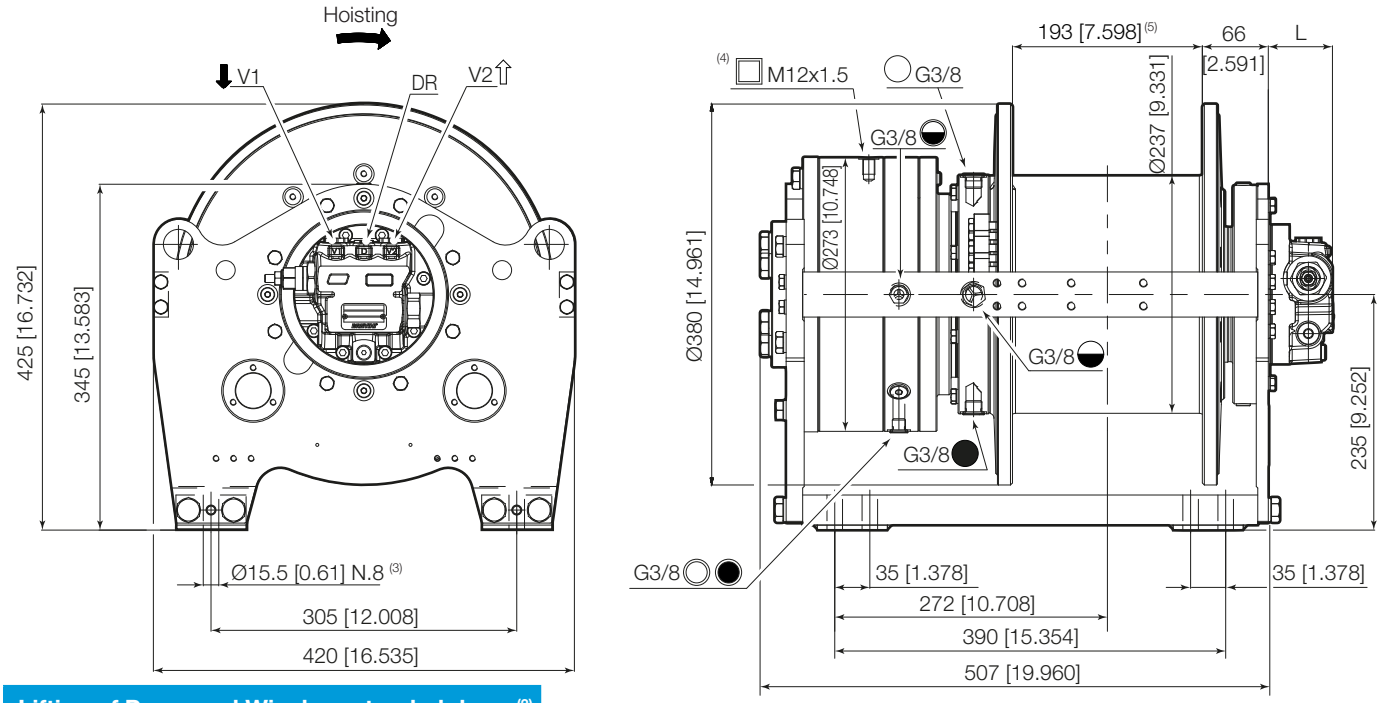
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 8 bolts for ABS certified version only. N. 4 bolts for other versions.
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

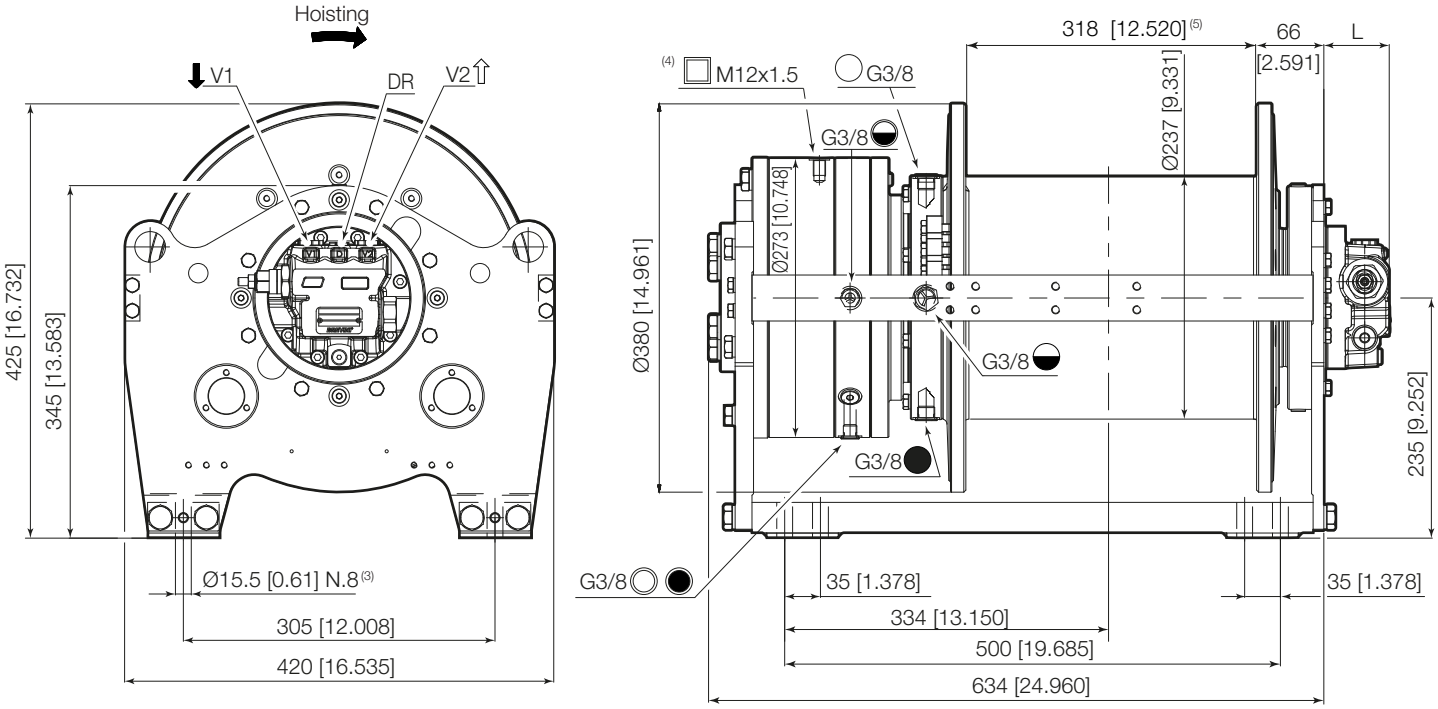
Hydraulic Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	B5VA021 (1)	21 cm³/rev [1.28 in³/rev]	64 mm [2.519 in]
Fixed Displacement	BRZV250 (1)	250 cm³/rev [15.24 in³/rev]	105 mm [4.133 in]
With NO Motor	Universal Input Flange 00	-	23 mm [0.906 in]

Lifting of Personnel Winch - standard (2)



Lifting of Personnel Winch - extended drum (2)



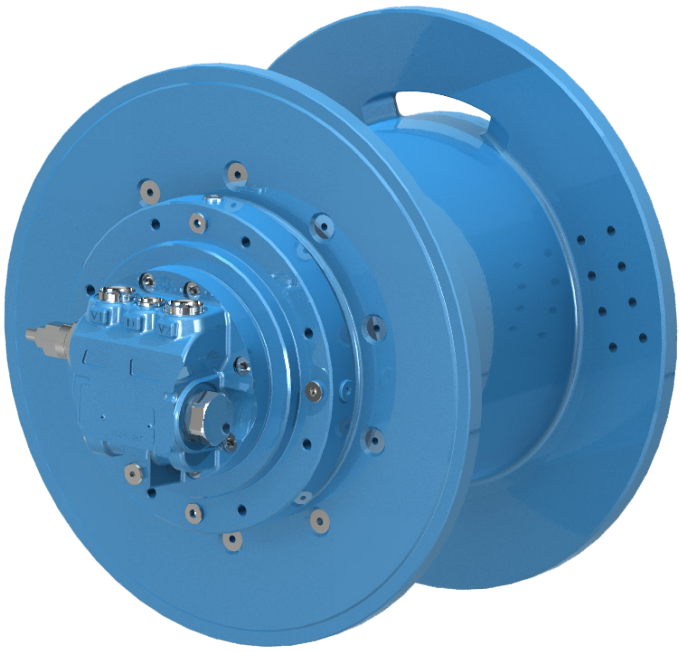
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 8 bolts for ABS certified version only. N. 4 bolts for other versions.
(4) Lifting of personnel brake release pressure (Release / Max) 27/315 bar [392/4570 psi]
(5) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**B5VA021**	21 [cm³/rev]	1.28 [in³/rev]
	BRZV250	250 [cm³/rev]	15.24 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	37.4 5.53

			Smooth Drum		**Grooved Drum**			
			Standard	**Extended**	**Standard LL**	**Standard LR**	**Extended LL**	**Extended LR**
Rope Diameter [1]	Ø 10 [mm]	Ø 0.39 [in]	√	√	Δ	Δ	Δ	Δ
	Ø 12 [mm]	Ø 0.47 [in]	√	√	√	Δ	√	Δ
	Ø 14 [mm]	Ø 0.55 [in]	√	√	Δ	Δ	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.

SYMBOL A 16

International System of Units: SI

BWE025-SD12..-01-37.4-APF021

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	2500	2310	2150	2000	1880	-
Rope speed	[m/min]	46	50	54	58	62	-
Rope length	[m]	12	24	38	52	68	84

Motor	B5VA021		Advised rope diameter	12	[mm]
Starting lifting pressure	335	[bar]	Oil fill / drain plug	G1/4	T
Operating pressure	285	[bar]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	50	[l/min]	Motor drain port	G1/4	DR
Minimum oil flow at the motor	5.0	[l/min]	Static braking torque (1)	180	[Nm]
Gear ratio	37.4	[i]	Brake release pressure (Release / Max)	34 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) M5 (T5-L2) n_2=15 [rpm]

		Weight [kg]		Oil [l]	
		Cargo	LoP	Cargo	LoP
BWE025/B5VA021	Standard	122	177	1.4	2.2
	Extended drum	136	194	3.3	4.2

United States Customary Units: USC

BWE025-SD12..-01-37.4-APF021

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	5500	5100	4740	4420	4150	-
Rope speed	[fpm]	153	166	178	191	204	-
Rope length	[ft]	39	80	126	172	225	278

Motor	B5VA021		Advised rope diameter	0.47	[in]
Starting lifting pressure	4915	[psi]	Oil fill / drain plug	G1/4	T
Operating pressure	4100	[psi]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	13	[gpm]	Motor drain port	G1/4	DR
Minimum oil flow at the motor	1.32	[gpm]	Static braking torque (1)	132	[ft·lbf]
Gear ratio	37.4	[i]	Brake release pressure (Release / Max)	495 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) M5 (T5-L2) n_2=15 [rpm]

		Weight [lbs]		Oil [gal]	
		Cargo	LoP	Cargo	LoP
BWE025/B5VA021	Standard	269	390	0.37	0.58
	Extended drum	300	428	0.87	1.11

Note:
- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 10 [mm]	1332 (5) (1)	1700	509 (5) (1)	650	1332 (5) (1)	1700	627 (5) (1)	800
Ø 12 [mm]	1844 (4) (1)	2300	521 (4) (1)	650	1764 (4) (1)	2200	642 (4) (1)	800
Ø 14 [mm]	1932 (3) (1)	2300	546 (3) (1)	650	1848 (3) (1)	2200	672 (3) (1)	800

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.39 [in]	2936 (5) (1)	3778	1122 (5) (1)	1445	2936 (5) (1)	3778	1382 (5) (1)	1778
Ø 0.47 [in]	4064 (4) (1)	5112	1148 (4) (1)	1445	3888 (4) (1)	4890	1415 (4) (1)	1778
Ø 0.55 [in]	4258 (3) (1)	5112	1203 (3) (1)	1445	4073 (3) (1)	4890	1482 (3) (1)	1778

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available - standard

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 10 [mm]	Rope length	[m]	14	29	45	61	80	98
Rope Diameter Ø 12 [mm]	Rope length	[m]	12	24	38	52	68	84
Rope Diameter Ø 14 [mm]	Rope length	[m]	10	21	33	46	60	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.39 [in]	Rope length	[ft]	47	95	149	203	263	323
Rope Diameter Ø 0,47 [in]	Rope length	[ft]	39	80	126	172	225	278
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	34	69	110	150	198	-

Ropes available - extended

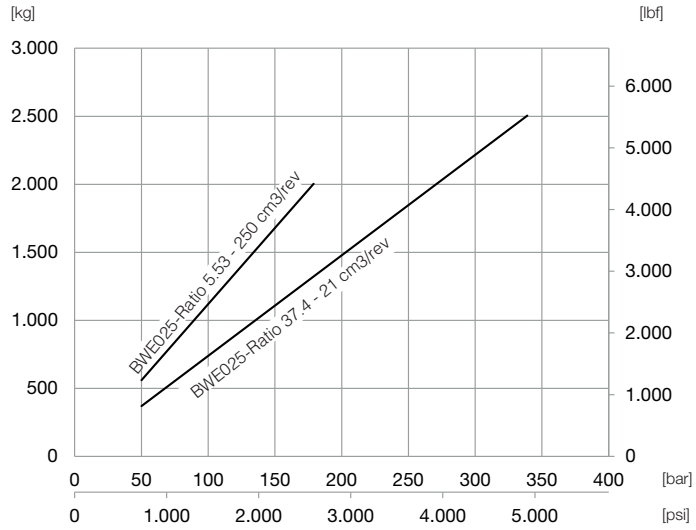
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 10 [mm]	Rope length	[m]	23	48	75	103	133	164
Rope Diameter Ø 12 [mm]	Rope length	[m]	19	40	63	87	114	141
Rope Diameter Ø 14 [mm]	Rope length	[m]	17	35	55	76	100	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.39 [in]	Rope length	[ft]	77	158	247	338	437	538
Rope Diameter Ø 0.47 [in]	Rope length	[ft]	65	133	209	288	375	463
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	56	115	182	252	330	-

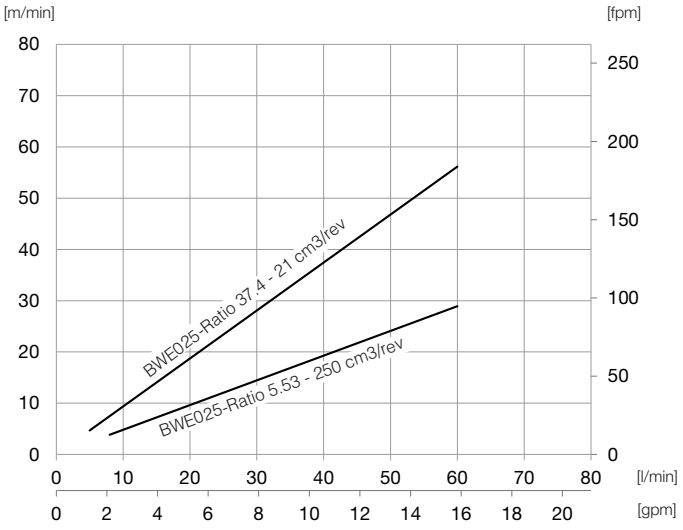
(1) Last working layer
(2) Last indicated Layer is intended only as Storage

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer



Maximum Speed at first layer



Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

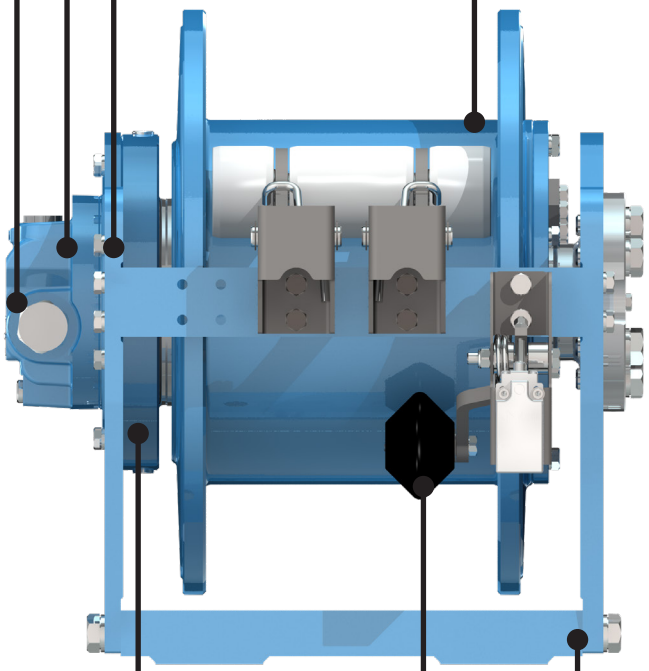
Line Pull at first Layer up to:
3.500 [kg]
7.700 [lbf]

Control Valve
To ensure safe operation with enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement High speed Axial piston motor

Multidisc static Brake
Specifically designed for Winch applications

Drum
Spheroidal graphite cast iron, available in grooved or smooth options



High performance Gears
Low noise and longer life time

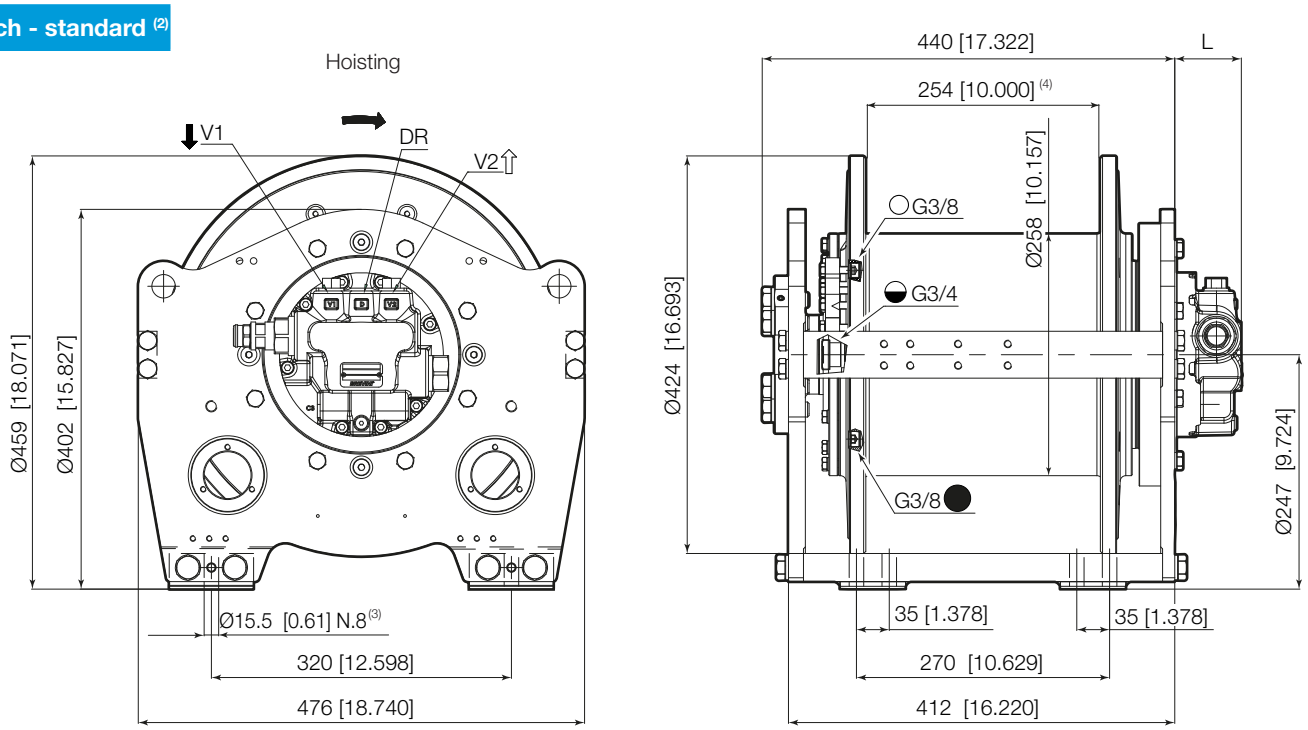
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

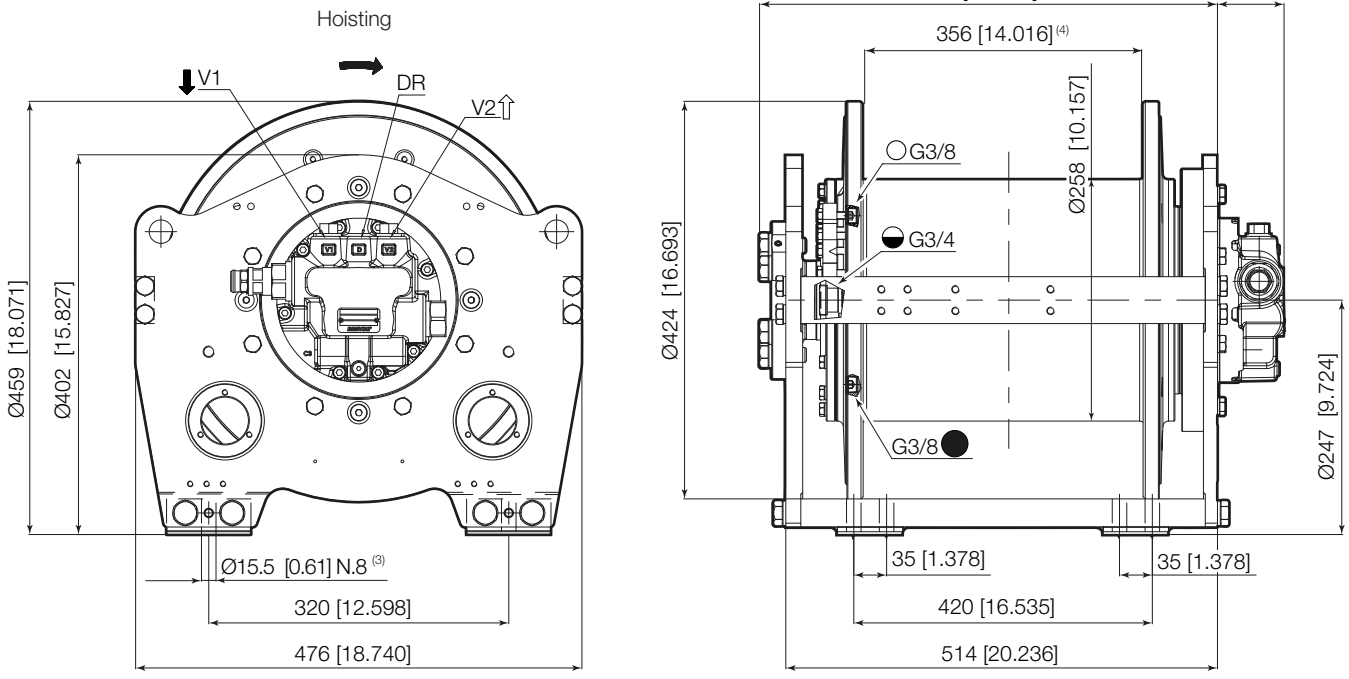
Hydraulic Motor

	Motor type	Displacement	L
Fixed Displacement	B5VA037 (1)	37 cm³/rev [2.25 in³/rev]	71 mm [2.795 in]
Fixed Displacement	B5VA068 (1)	68 cm³/rev [4.14 in³/rev]	98 mm [3.858 in]
Fixed Displacement	BRZV100 (1)	100 cm³/rev [6.1 in³/rev]	61 mm [2.402 in]
With NO Motor	Universal Input Flange 00	-	0 mm

Winch - standard (2)



Winch - extended drum (2)



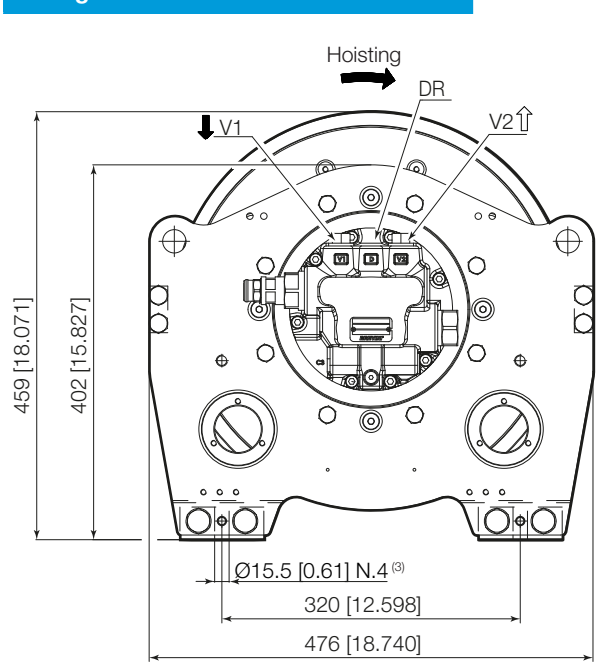
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N.8 bolts required for all versions. Shear stop mandatory for ABS certified versions.
(4) Dimension is approximate and may vary depending on the type of rope selected

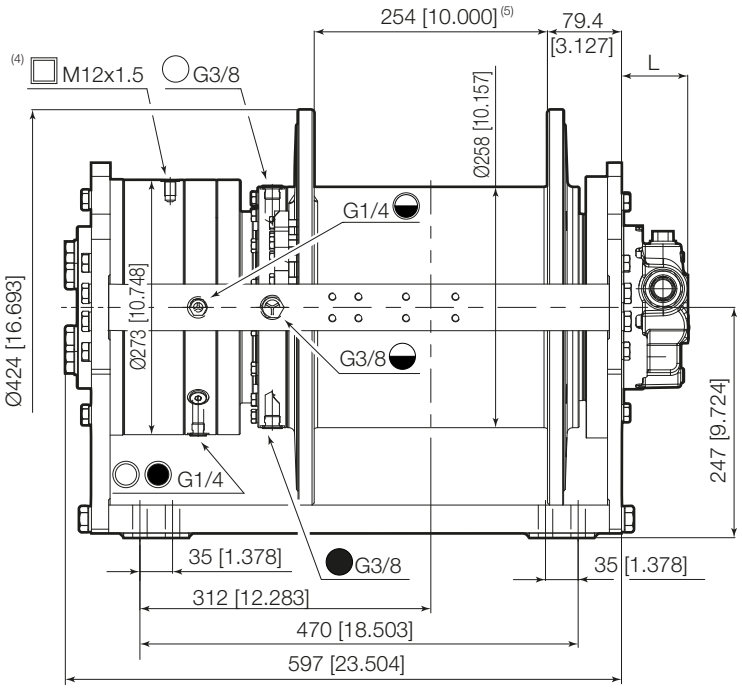
SYMBOL A 16

Hydraulic Motor for Lifting of Personnel Winches

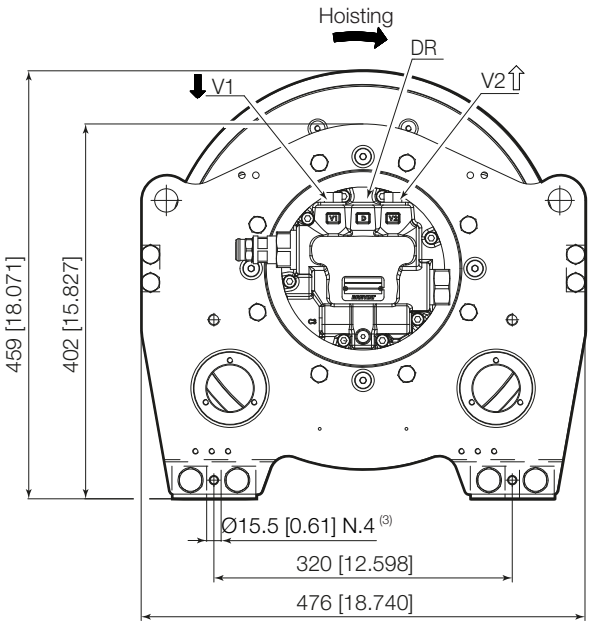
	Motor type	Displacement	L
Fixed Displacement	B5VA037 (1)	37 cm³/rev [2.25 in³/rev]	71 mm [2.795 in]
Fixed Displacement	B5VA068 (1)	68 cm³/rev [4.14 in³/rev]	98 mm [3.858 in]
Fixed Displacement	BRZV100 (1)	100 cm³/rev [6.1 in³/rev]	61 mm [2.402 in]
With NO Motor	Universal Input Flange 00	-	0 mm

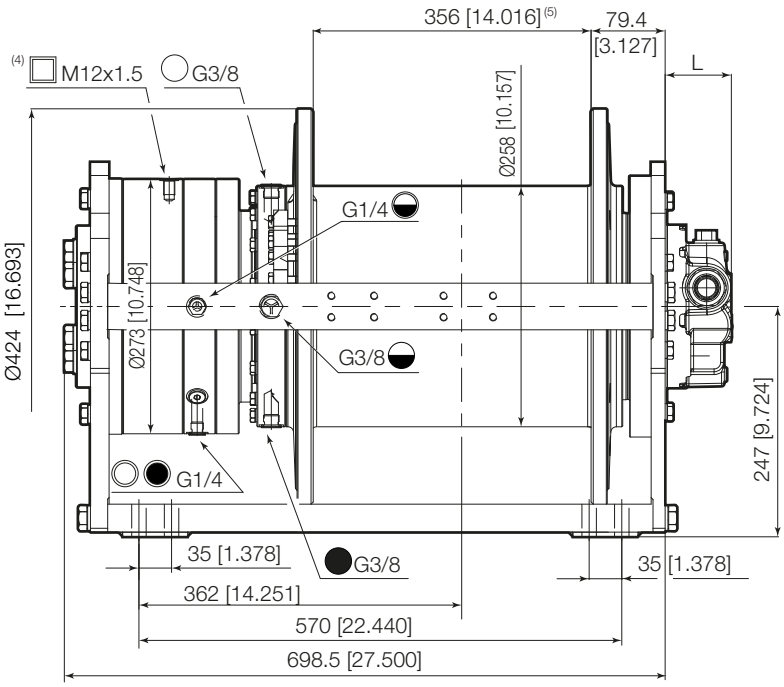
Lifting of Personnel Winch - standard (2)





Lifting of Personnel Winch - extended drum (2)





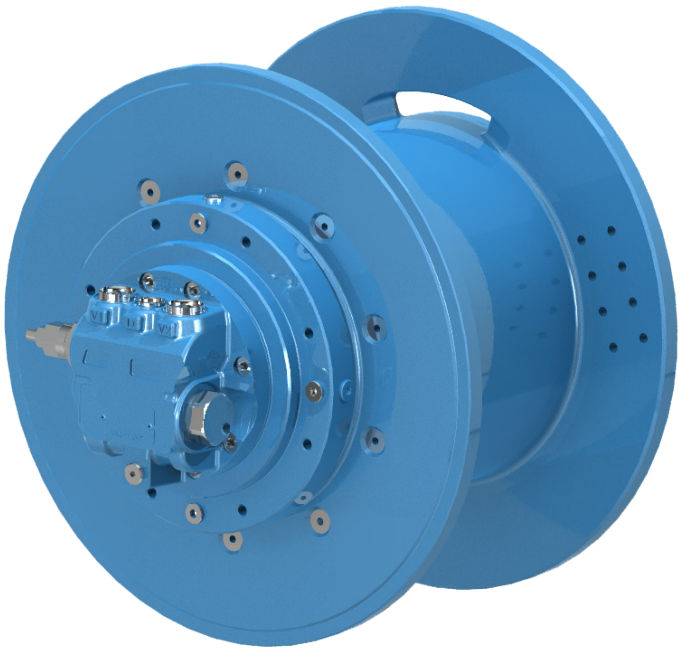
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N.8 bolts required for all versions. Shear stop mandatory for ABS certified versions.
(4) Lifting of personnel brake release pressure (Release / Max) 27/315 bar [392/4570 psi]
(5) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**B5VA037**	37 [cm³/rev]	2.25 [in³/rev]
	B5VA068	68 [cm³/rev]	4.14 [in³/rev]
	BRZV100	100 [cm³/rev]	6.1 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	33.6 22.9

			Smooth Drum		**Grooved Drum**			
			Standard	**Extended**	**Standard LL**	**Standard LR**	**Extended LL**	**Extended LR**
Rope Diameter [1]	Ø 12 [mm]	Ø 0.47 [in]	√	√	Δ	Δ	Δ	Δ
	Ø 14 [mm]	Ø 0.55 [in]	√	√	√	Δ	√	Δ
	Ø 16 [mm]	Ø 0.63 [in]	√	√	Δ	Δ	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.

SYMBOL A 16

International System of Units: SI

BWE035-SD14..-01-33.6-APF037

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	3500	3220	2980	2770	2590	-
Rope speed	[m/min]	32	35	37	40	43	-
Rope length	[m]	14	30	47	65	85	106

Motor	B5VA037		Advised rope diameter	14	[mm]
Starting lifting pressure	325	[bar]	Oil fill / drain plug	G3/4	T
Operating pressure	275	[bar]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	50	[l/min]	Motor drain port	G3/8	DR
Minimum oil flow at the motor	5.0	[l/min]	Static braking torque (1)	352	[Nm]
Gear ratio	33.6	[i]	Brake release pressure (Release / Max)	34 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [kg]		Oil [l]	
		Cargo	LoP	Cargo	LoP
BWE035/B5VA037	Standard	187	250	2.7	3.8
	Extended drum	203	266	4.5	5.3

United States Customary Units: USC

BWE035-SD14..-01-33.6-APF037

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	7700	7100	6570	6110	5710	-
Rope speed	[fpm]	105	115	124	133	143	-
Rope length	[ft]	49	99	157	215	281	348

Motor	B5VA037		Advised rope diameter	0.55	[in]
Starting lifting pressure	4740	[psi]	Oil fill / drain plug	G3/4	[gal]
Operating pressure	3955	[psi]	Lifting / Lowering port	G1/2	V1 / V2
Operating oil flow at the motor	13	[gpm]	Motor drain port	G3/8	DR
Minimum oil flow at the motor	1.32	[gpm]	Static braking torque (1)	259	[ft·lbf]
Gear ratio	33.6	[i]	Brake release pressure (Release / Max)	495 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [lbs]		Oil [gal]	
		Cargo	LoP	Cargo	LoP
BWE035/B5VA037	Standard	412	551	0.71	1.00
	Extended drum	448	586	1.19	1.40

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 12 [mm]	1918 (5) (1)	2500	690 (5) (1)	900	1918 (5) (1)	2500	805 (5) (1)	1050
Ø 14 [mm]	2690 (4) (1)	3400	712 (4) (1)	900	2532 (4) (1)	3200	831 (4) (1)	1050
Ø 16 [mm]	2834 (3) (1)	3400	750 (3) (1)	900	2668 (3) (1)	3200	875 (3) (1)	1050

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.47 [in]	4262 (5) (1)	5556	1533 (5) (1)	2000	4262 (5) (1)	5556	1789 (5) (1)	2333
Ø 0.55 [in]	5978 (4) (1)	7556	1582 (4) (1)	2000	5627 (4) (1)	7111	1847 (4) (1)	2333
Ø 0.63 [in]	6298 (3) (1)	7556	1667 (3) (1)	2000	5929 (3) (1)	7111	1944 (3) (1)	2333

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available - standard

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 12 [mm]	Rope length	[m]	17	35	54	75	97 (3)	120
Rope Diameter Ø 14 [mm]	Rope length	[m]	14	30	47	65	85 (3)	106
Rope Diameter Ø 16 [mm]	Rope length	[m]	13	26	42	58 (3)	76	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.47 [in]	Rope length	[ft]	56	114	180	246	320 (3)	395
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	49	99	157	215	281 (3)	348
Rope Diameter Ø 0.63 [in]	Rope length	[ft]	43	87	139	192 (3)	252	-

Ropes available - extended

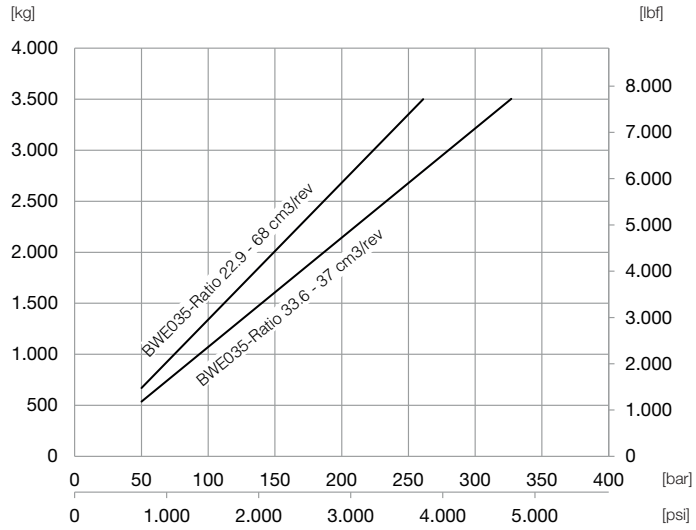
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 12 [mm]	Rope length	[m]	24	49	77	106	137 (3)	169
Rope Diameter Ø 14 [mm]	Rope length	[m]	20	42	67	92	121 (3)	149
Rope Diameter Ø 16 [mm]	Rope length	[m]	18	37	59	82 (3)	108	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.47 [in]	Rope length	[ft]	79	162	253	347	451	557
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	68	140	221	304	397	492
Rope Diameter Ø 0.63 [in]	Rope length	[ft]	60	124	196	271	356	-

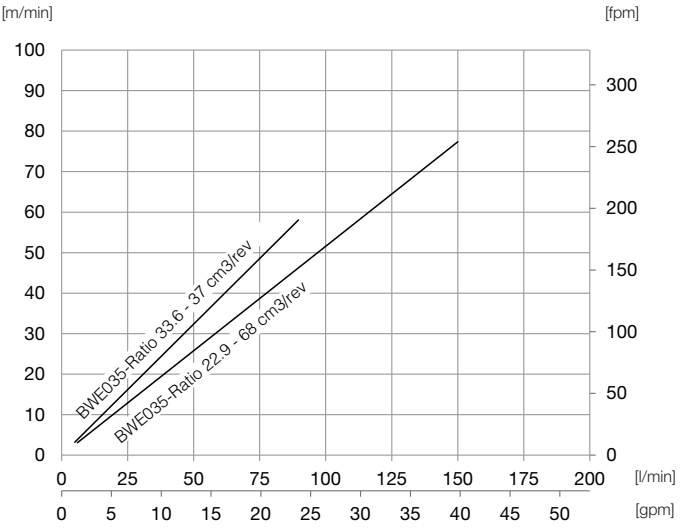
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer



Maximum Speed at first layer



Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

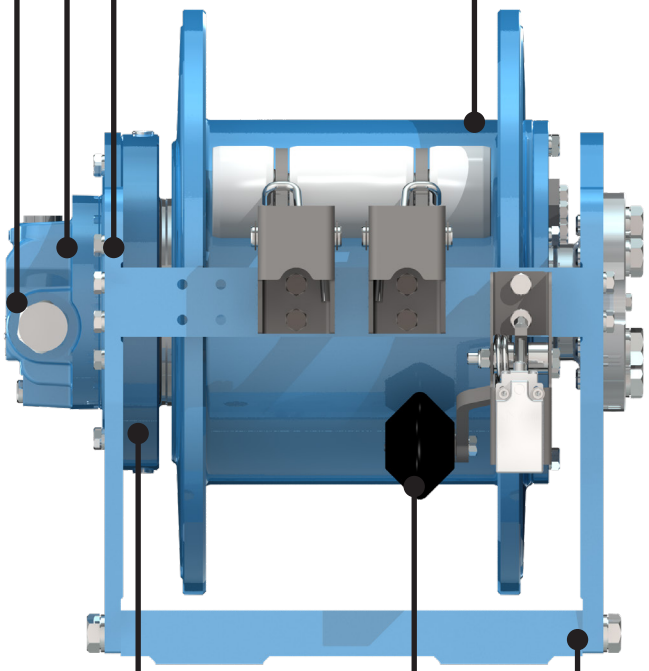
Line Pull at first Layer up to:
5.500 [kg]
12.100 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Spheroidal graphite cast iron,
available in grooved or smooth options



High performance Gears
Low noise and longer life time

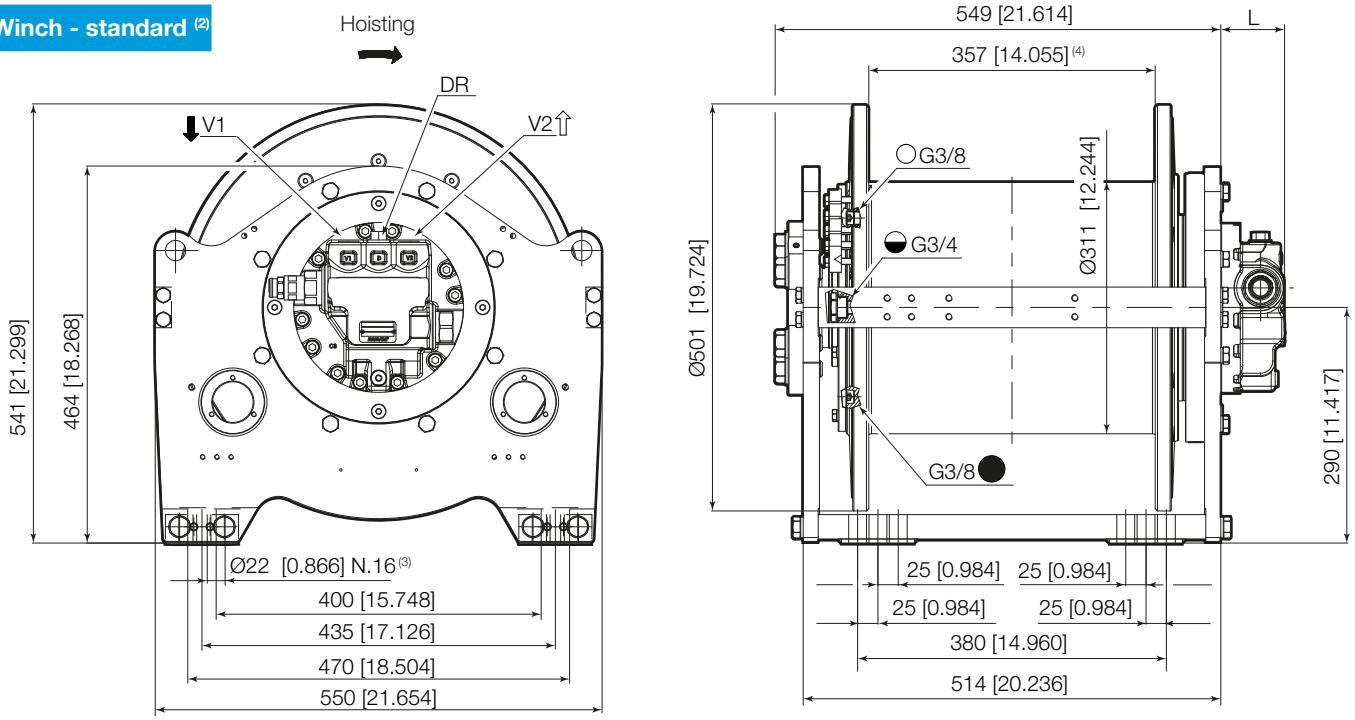
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

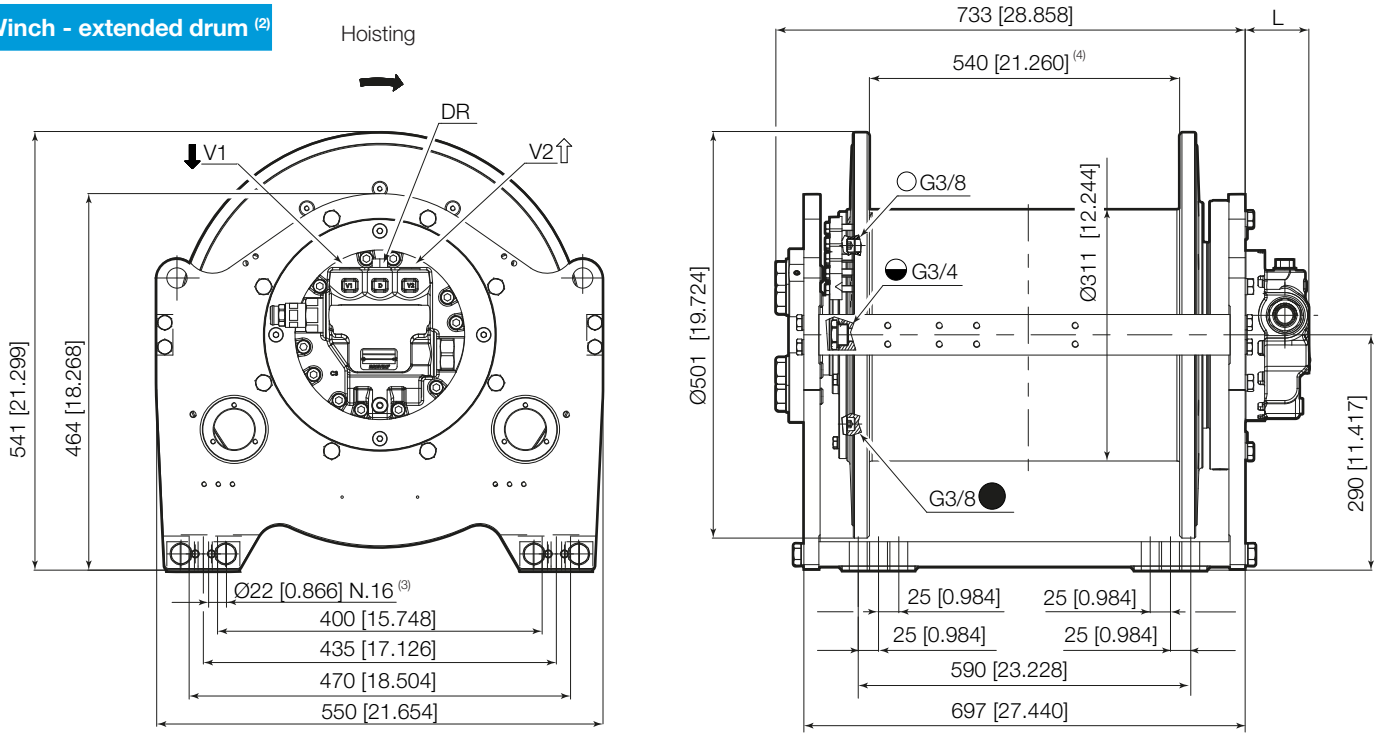
Hydraulic Motor

	Motor type	Displacement	L
Fixed Displacement	B5VA068 (1)	68 cm³/rev [4.14 in³/rev]	80 mm [3.350 in]
Fixed Displacement	HR160 (1)	160 cm³/rev [9.72 in³/rev]	243 mm [9.67 in]
Fixed Displacement	SH11CR090 (1)	90 cm³/rev [5.47 in³/rev]	239 mm [9.409 in]
Variable Displacement max / min	SH9V085 (1)	85.3 cm³/rev [5.203 in³/rev] 40 cm³/rev [2.44 in³/rev]	352 mm [13.858 in]
With NO Motor	Universal Input Flange 00	-	6 mm [0.236 in]

Winch - standard (2)



Winch - extended drum (2)



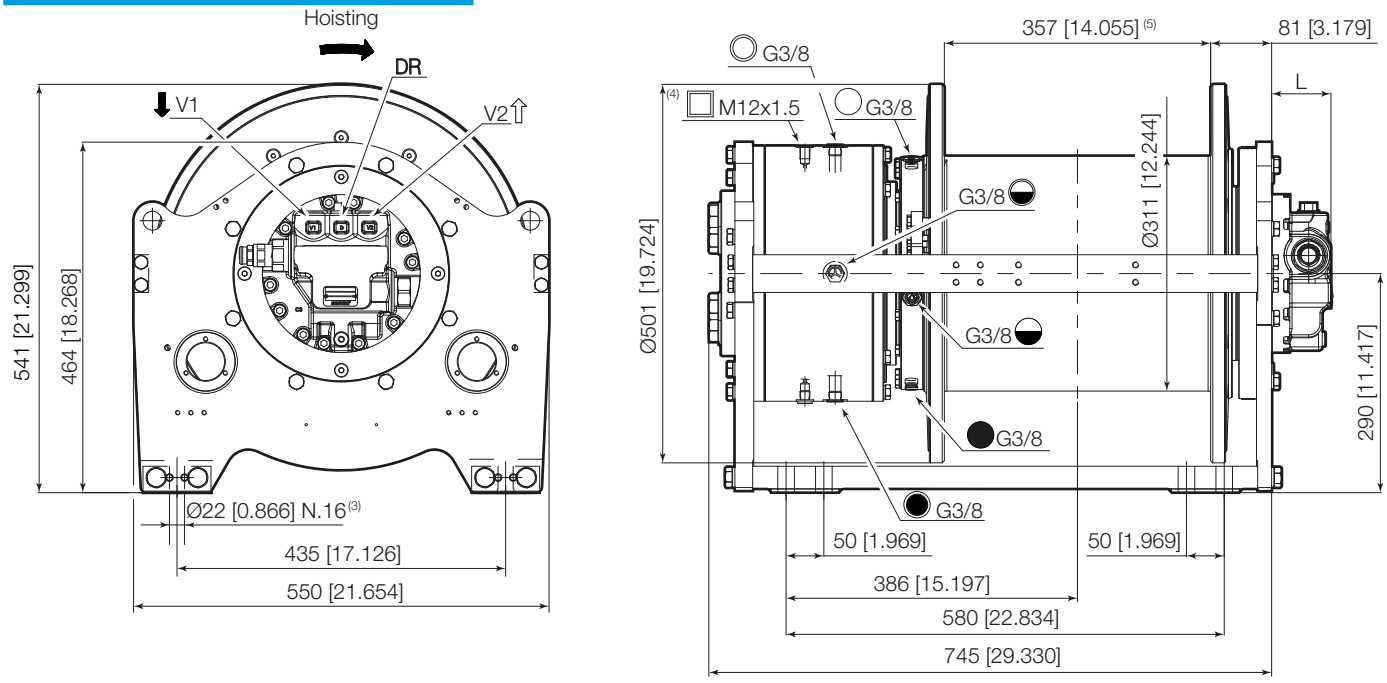
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 16 bolts for ABS certified version only. N. 8 bolts for other versions.
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

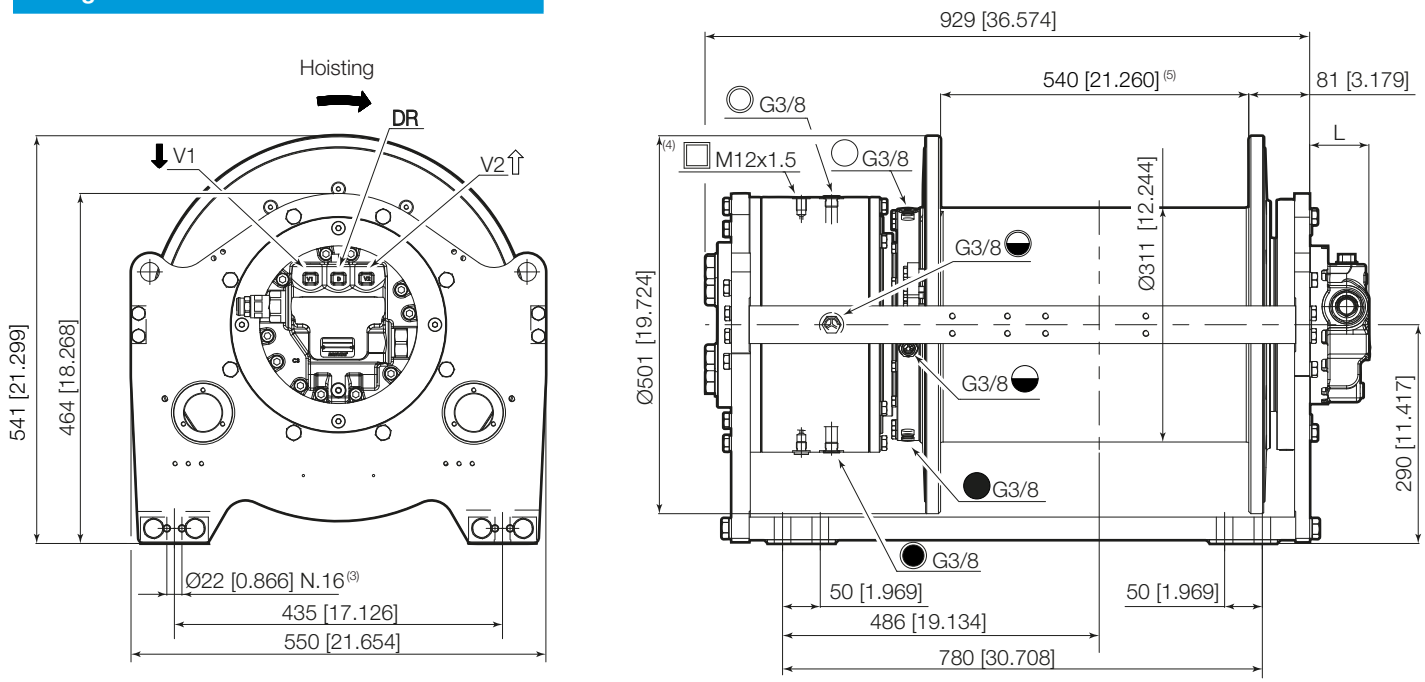
Hydraulic Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	B5VA068 (1)	68 cm³/rev [4.14 in³/rev]	80 mm [3.350 in]
Fixed Displacement	HR160 (1)	160 cm³/rev [9.72 in³/rev]	243 mm [9.67 in]
Fixed Displacement	SH11CR090 (1)	90 cm³/rev [5.47 in³/rev]	239 mm [9.409 in]
Variable Displacement max min	SH9V085 (1)	85.3 cm³/rev [5.203 in³/rev] 40 cm³/rev [2.44 in³/rev]	352 mm [13.858 in]
With NO Motor	Universal Input Flange 00	-	6 mm [0.236 in]

Lifting of Personnel Winch - standard (2)



Lifting of Personnel Winch - extended drum (2)



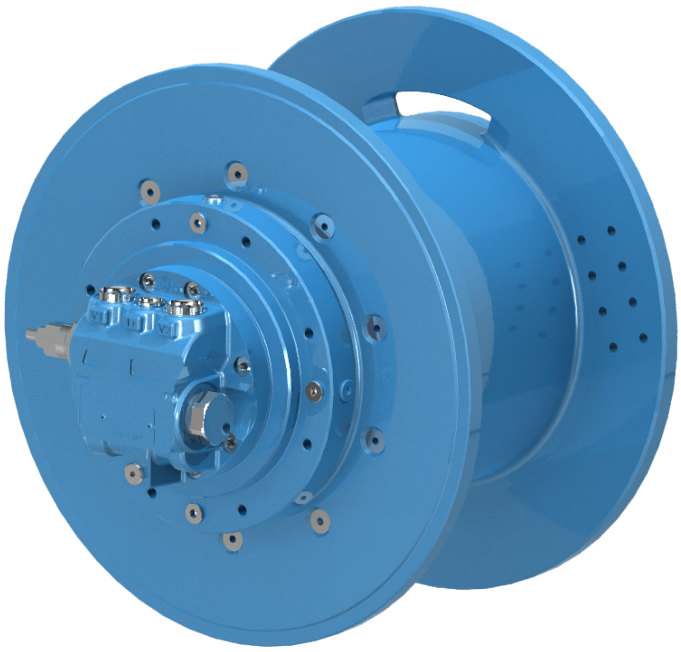
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 16 bolts for ABS certified version only. N. 8 bolts for other versions.
(4) Lifting of personnel brake release pressure (Release / Max) 27/315 bar [392/4570 psi]
(5) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**B5VA068**	68 [cm³/rev]	4.14 [in³/rev]
	HR160	160 [cm³/rev]	9.74 [in³/rev]
	SH11CR090	90 [cm³/rev]	5.47 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V085** max min	85 [cm³/rev] 40 cm³/rev	5.17 [in³/rev] 2.44 in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	33.6 22.9

			Smooth Drum		**Grooved Drum**			
			Standard	**Extended**	**Standard LL**	**Standard LR**	**Extended LL**	**Extended LR**
Rope Diameter [1]	Ø 14 [mm]	Ø 0.55 [in]	√	√	Δ	Δ	Δ	Δ
	Ø 16 [mm	Ø 0.63 [in]	√	√	√	Δ	√	Δ
	Ø 18 [mm]	Ø 0.71 [in]	√	√	Δ	Δ	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.

SYMBOL A 16

International System of Units: SI

BWE055-SD16..-01-22.9-APF090

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	5500	5070	4710	4390	4120	-
Rope speed	[m/min]	73	79	85	91	97	-
Rope length	[m]	22	44	70	97	126	156

Motor	SH11CR090		Advised rope diameter	16	[mm]
Starting lifting pressure	385	[bar]	Oil fill / drain plug	G3/8	T
Operating pressure	325	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	6.0	[l/min]	Static braking torque (1)	778	[Nm]
Gear ratio	22.9	[i]	Brake release pressure (Release / Max)	31 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

		Weight [kg]		Oil [l]	
		Cargo	LoP	Cargo	LoP
BWE055/B5VA068	Standard	310	436	4.9	6.1
	Extended drum	362	480	9	10.2

United States Customary Units: USC

BWE055-SD16..-01-22.9-APF090

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	12100	11190	10390	9690	9090	-
Rope speed	[fpm]	240	260	280	300	321	-
Rope length	[ft]	72	147	231	318	415	513

Motor	SH11CR090		Advised rope diameter	0.62	[in]
Starting lifting pressure	5640	[psi]	Oil fill / drain plug	G3/8	T
Operating pressure	4705	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	1,58	[gpm]	Static braking torque (1)	573	[ft·lbf]
Gear ratio	22.9	[i]	Brake release pressure (Release / Max)	450 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998)	M5 (T5-L2)	n_2=15 [rpm]

		Weight [lbs]		Oil [gal]	
		Cargo	LoP	Cargo	LoP
BWE055/B5VA068	Standard	683	961	1.29	1.61
	Extended drum	798	1058	2.38	2.69

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data (2)

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 14 [mm]	3013 (5) (1)	3900	1159 (5) (1)	1500	3013 (5) (1)	3900	1429 (5) (1)	1850
Ø 16 [mm]	3998 (4) (1)	5000	1199 (4) (1)	1500	3518 (4) (1)	4400	1479 (4) (1)	1850
Ø 18 [mm]	4213 (3) (1)	5000	1264 (3) (1)	1500	3707 (3) (1)	4400	1559 (3) (1)	1850

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.55 [in]	6696 (5) (1)	8667	2576 (5) (1)	3333	6696 (5) (1)	8667	3150 (5) (1)	4111
Ø 0.63 [in]	8884 (4) (1)	11111	2664 (4) (1)	3333	7818 (4) (1)	9778	3261 (4) (1)	4111
Ø 0.71 [in]	9362 (3) (1)	11111	2808 (3) (1)	3333	8238 (3) (1)	9778	3437 (3) (1)	4111

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available - standard

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 14 [mm]	Rope length	[m]	25	50	79	109	141 (3)	174
Rope Diameter Ø 16 [mm]	Rope length	[m]	22	44	70	97	126 (3)	156
Rope Diameter Ø 18 [mm]	Rope length	[m]	19	40	63	87 (3)	114	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	82	167	261	357	464 (3)	572
Rope Diameter Ø 0.63 [in]	Rope length	[ft]	72	147	231	318	415 (3)	513
Rope Diameter Ø 0.71 [in]	Rope length	[ft]	64	131	208	287 (3)	376	-

Ropes available - extended

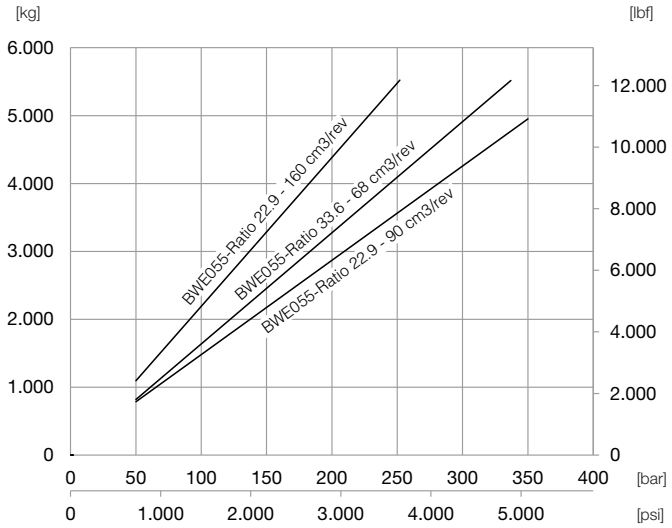
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 14 [mm]	Rope length	[m]	37	77	121	166	215 (3)	265
Rope Diameter Ø 16 [mm]	Rope length	[m]	33	68	107	147	192 (3)	238
Rope Diameter Ø 18 [mm]	Rope length	[m]	29	61	96	133 (3)	174	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.55 [in]	Rope length	[ft]	124	254	397	544	705 (3)	871
Rope Diameter Ø 0.63 [in]	Rope length	[ft]	109	224	352	485	631 (3)	781
Rope Diameter Ø 0.71 [in]	Rope length	[ft]	97	201	317	438 (3)	573	-

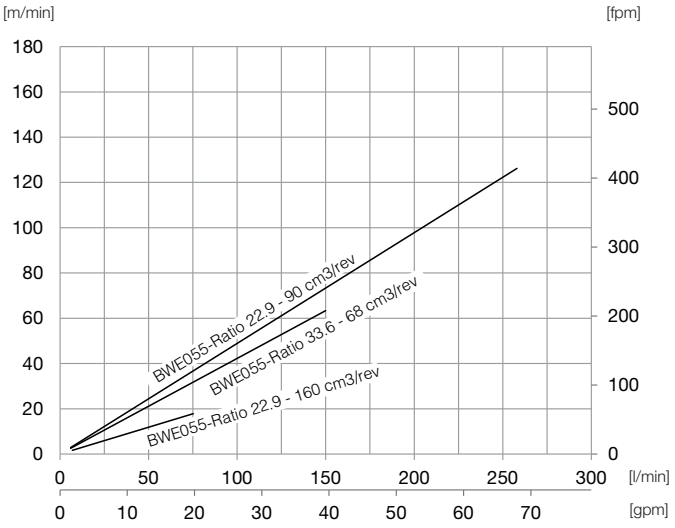
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

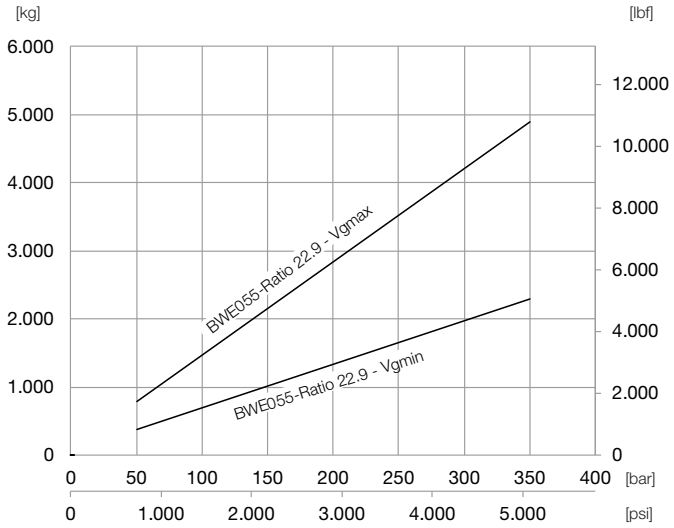


Maximum Speed at first layer



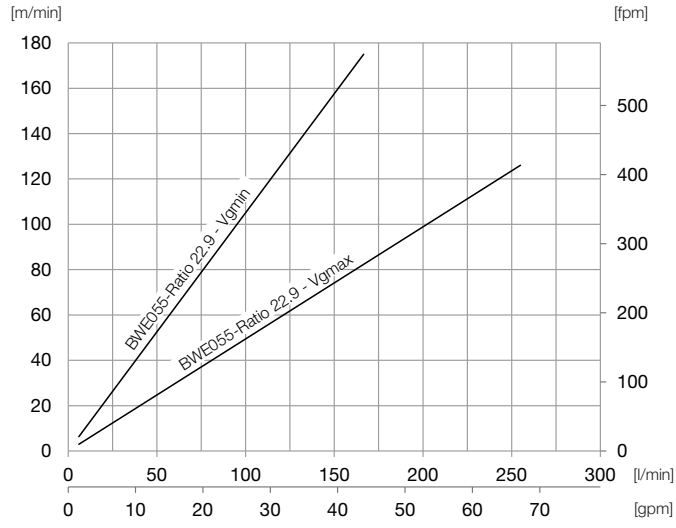
Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Vg_{max} = 85 cm³/rev [5.17 in³/rev]
Vg_{min} = 40 cm³/rev [2.43 in³/rev]

Maximum Speed at first layer



Vg_{max} = 85 cm³/rev [5.17 in³/rev] - Max 255 l/min [67 gpm] allowed
Vg_{min} = 40 cm³/rev [2.43 in³/rev] - Max 166 l/min [44 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

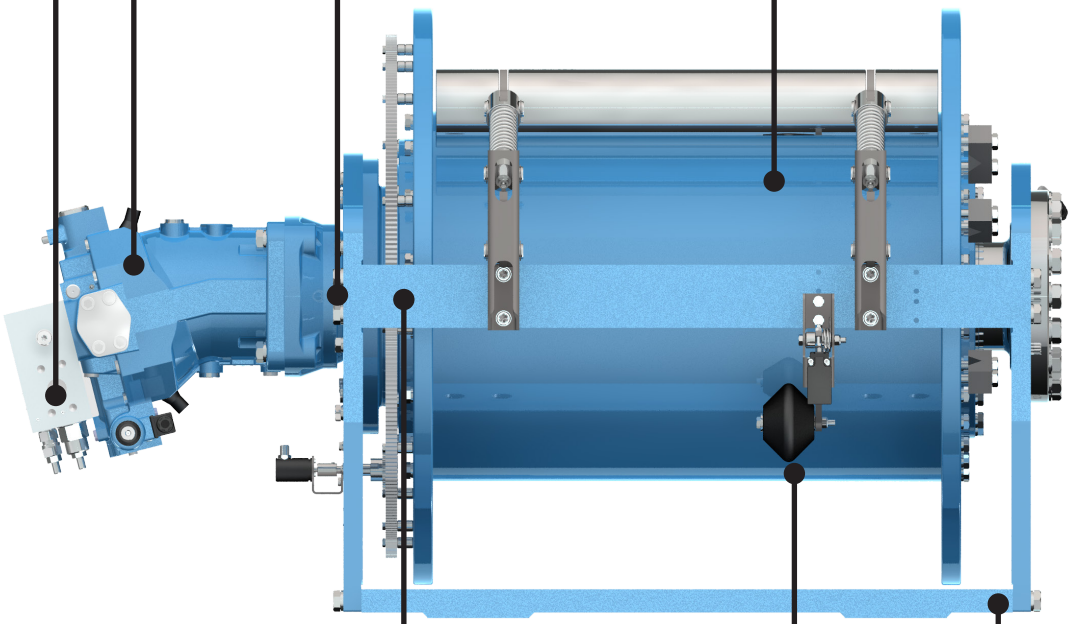
Line Pull at first Layer up to:
7.000 [kg]
15.400 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Spheroidal graphite cast iron,
available in grooved or smooth options



High performance Gears
Low noise and longer life time

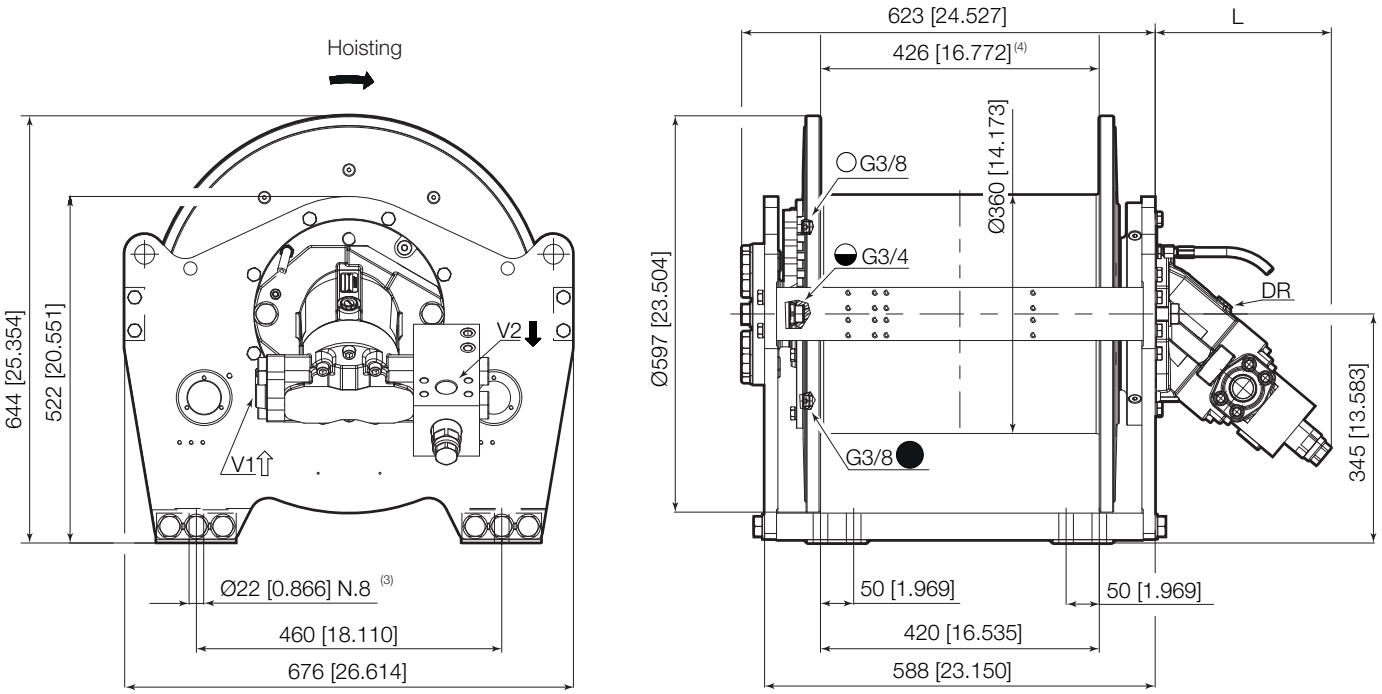
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

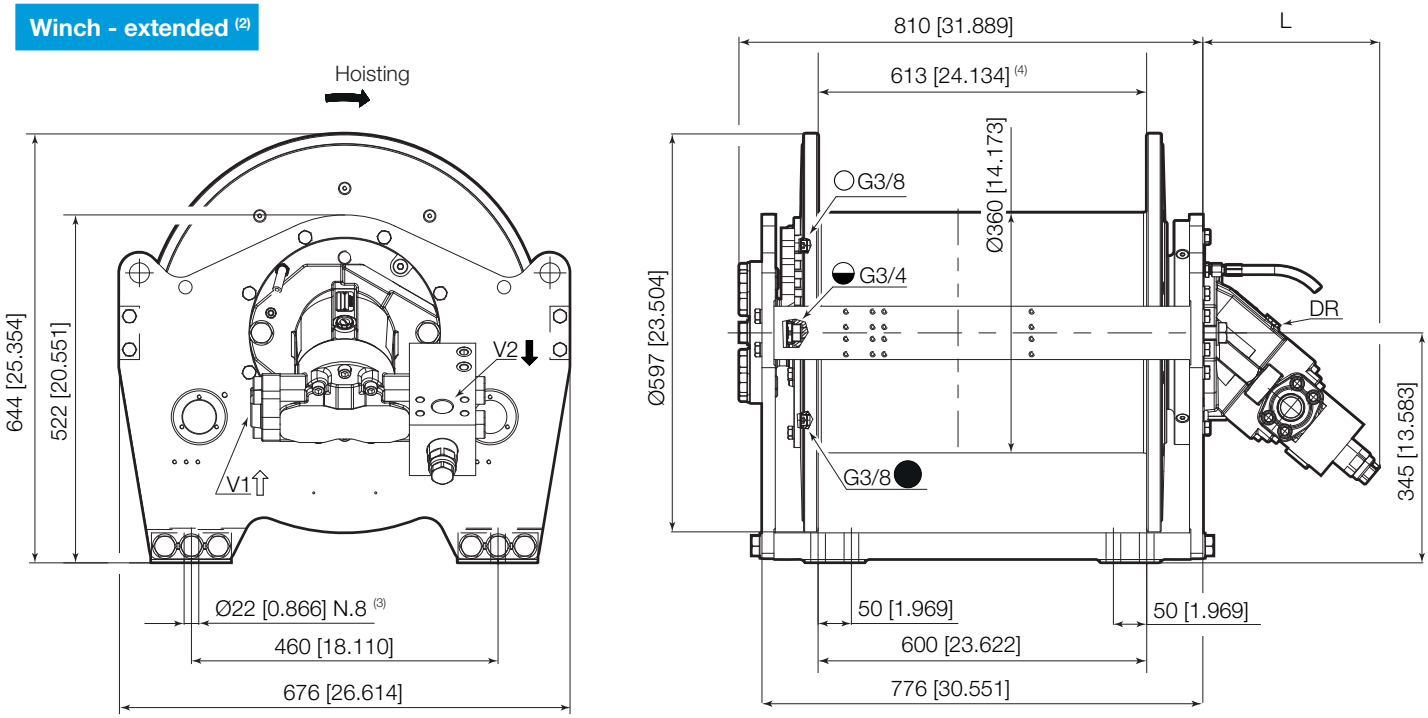
Hydraulic Axial Piston Motor

	Motor type	Displacement	L
Fixed Displacement	SH11CR090 (1)	90 cm³/rev [5.47 in³/rev]	239 mm [9.409 in]
Fixed Displacement	SH11CR125 (1)	125 cm³/rev [7.61 in³/rev]	265 mm [10.433 in]
Variable Displacement max min	SH9V115 (1)	115.7 cm³/rev [7.05 in³/rev] 56 cm³/rev [3.42 in³/rev]	408 mm [16.062 in]
With NO Motor	Universal Input Flange 00	-	6 mm [0.236 in]

Winch - standard (2)



Winch - extended (2)



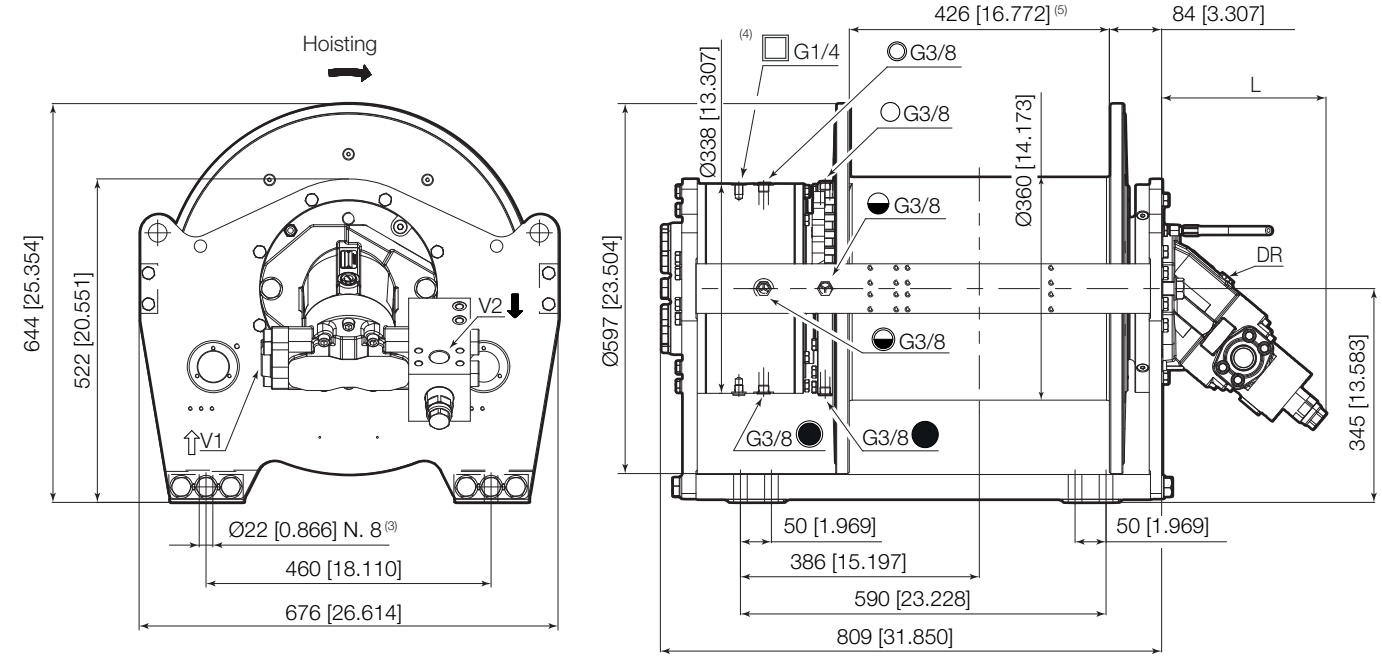
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 4 bolts for DNV certified version only. N. 8 bolts for other versions.
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

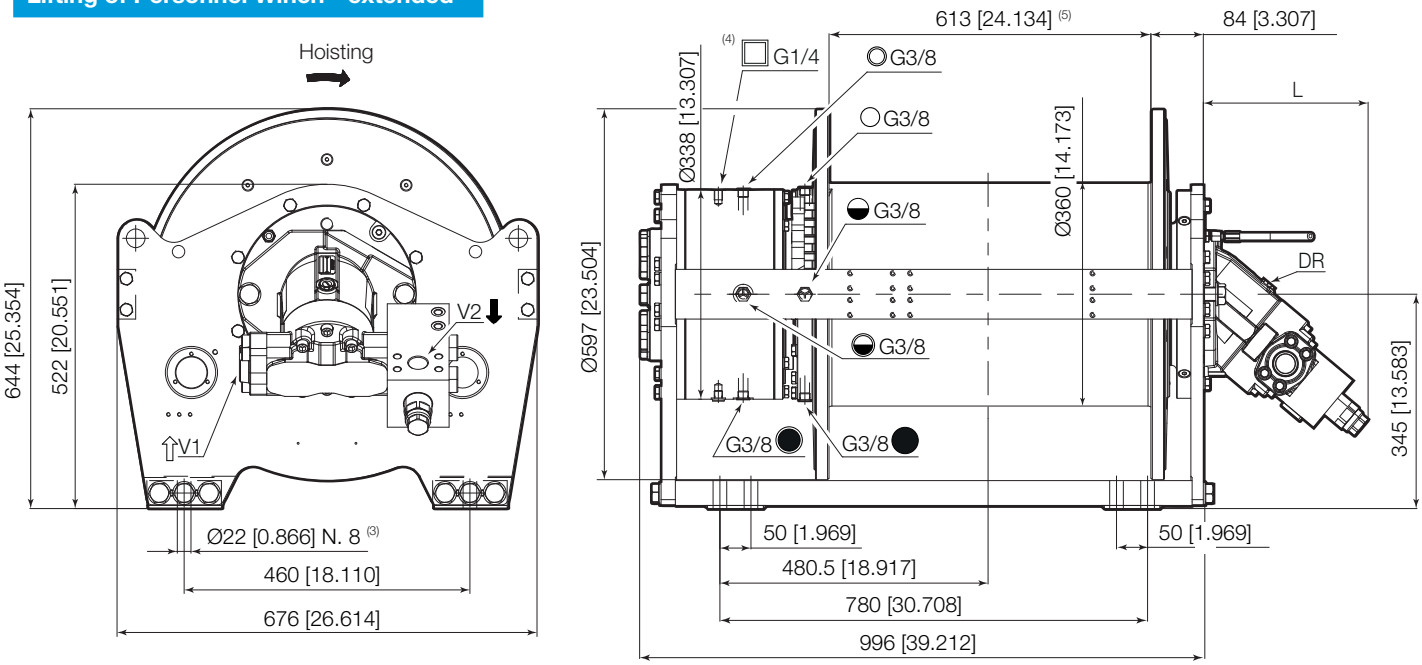
Hydraulic Axial Piston Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	SH11CR090 (1)	90 cm³/rev [5.47 in³/rev]	239 mm [9.409 in]
Fixed Displacement	SH11CR125 (1)	125 cm³/rev [7.61 in³/rev]	265 mm [10.433 in]
Variable Displacement max	SH9V115 (1)	115.7 cm³/rev [7.05 in³/rev]	408 mm [16.062 in]
Variable Displacement min		56 cm³/rev [3.42 in³/rev]	
With NO Motor	Universal Input Flange 00	-	6 mm [0.236 in]

Lifting of Personnel Winch - standard (2)



Lifting of Personnel Winch - extended (2)



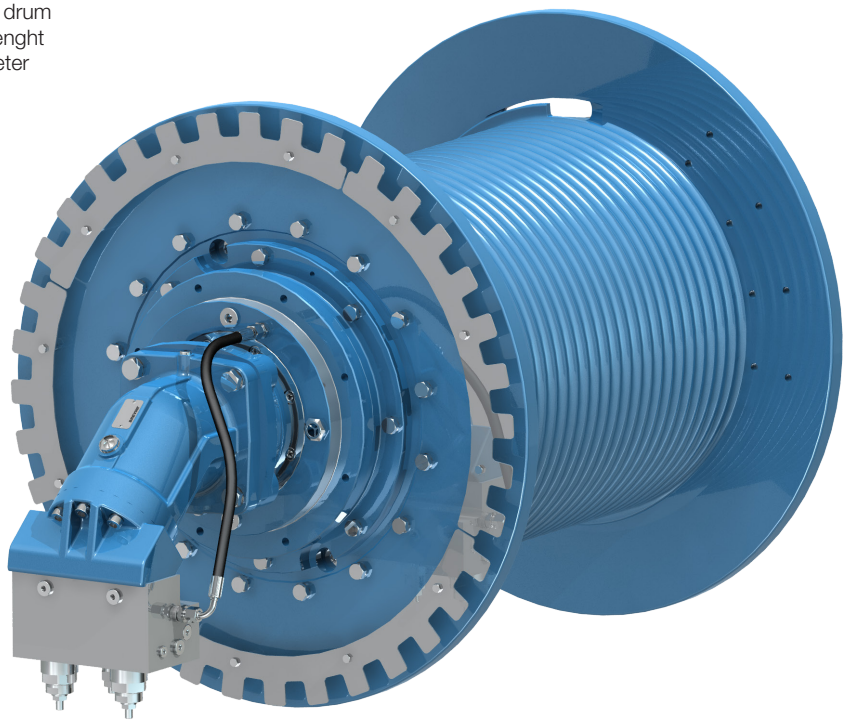
(1) As Standard with single overcenter valve, double overcenter valve available on request.
(2) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(3) N. 4 bolts for DVN certified version only. N. 8 bolts for other versions.
(4) Lifting of personnel brake release pressure (Release / Max) 39/300 bar [566/4355 psi]
(5) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**SH11CR090**	90 [cm³/rev]	5.47 [in³/rev]
	SH11CR125	125 [cm³/rev]	7.61 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V115 max**	115.7 [cm³/rev]	7.05 [in³/rev]
	min	56 [cm³/rev]	3.42 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	33.6 22.9

			Smooth Drum		**Grooved Drum**			
			Standard	**Extended**	**Standard LL**	**Standard LR**	**Extended LL**	**Extended LR**
Rope Diameter [1]	Ø 16 [mm]	Ø 0.63 [in]	√	√	√ [2]	Δ [2]	Δ [2]	Δ [2]
	Ø 18 [mm]	Ø 0.71 [in]	√	√	Δ	Δ	Δ	Δ
	Ø 20 [mm]]	Ø 0.78 [in]	√	√	√	Δ	√	Δ
	Ø 22 [mm]	Ø 0.86 [in]	√	√	Δ	Δ	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE070-SD20..-01-22.9-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	7000	6430	5940	5520	5150	-
Rope speed	[m/min]	58	64	69	74	80	-
Rope length	[m]	24	49	78	108	141	175

Motor	SH11CR125		Advised rope diameter	20	[mm]
Starting lifting pressure	395	[bar]	Oil fill / drain plug	G3/8	T
Operating pressure	335	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	8.0	[l/min]	Static braking torque (1)	778	[Nm]
Gear ratio	22.9	[i]	Brake release pressure (Release / Max)	31 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [kg]		Oil [l]	
		Cargo	LoP	Cargo	LoP
BWE070/SH11CR125	Standard	506	641	8	9.8
	Extended drum	564	699	14.2	16

United States Customary Units: USC

BWE070-SD20..-01-22.9-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	15400	14180	13100	12170	11370	-
Rope speed	[fpm]	193	210	227	245	262	-
Rope length	[ft]	80	163	258	355	464	575

Motor	SH11CR125		Advised rope diameter	0.78	[in]
Starting lifting pressure	5770	[psi]	Oil fill / drain plug	G3/8	T
Operating pressure	4815	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	2.11	[gpm]	Static braking torque (1)	573	[ft·lbf]
Gear ratio	22.9	[i]	Brake release pressure (Release / Max)	450 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2) — M5 (T5-L2) — n_2=15 [rpm]

		Weight [lbs]		Oil [gal]	
		Cargo	LoP	Cargo	LoP
BWE070/SH11CR125	Standard	1115	1413	2.11	2.59
	Extended drum	1243	1541	3.75	4.23

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 18 [mm]	3923 (5) (1)	5200	1509 (5) (1)	2000	3923 (5) (1)	5200	1811 (5) (1)	2400
Ø 20 [mm]	5040 (4) (1)	6400	1575 (4) (1)	2000	4804 (4) (1)	6100	1890 (4) (1)	2400
Ø 22 [mm]	5348 (3) (1)	6400	1671 (3) (1)	2000	5097 (3) (1)	6100	2005 (3) (1)	2400

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.71 [in]	8718 (5) (1)	11556	3353 (5) (1)	4444	8718 (5) (1)	11556	4024 (5) (1)	5333
Ø 0.78 [in]	11200 (4) (1)	14222	3500 (4) (1)	4444	10676 (4) (1)	13556	4200 (4) (1)	5333
Ø 0.86 [in]	11884 (3) (1)	14222	3713 (3) (1)	4444	11327 (3) (1)	13556	4456 (3) (1)	5333

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available - standard

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 16 [mm]	Rope length	[m]	29	60	95	130	168	208
Rope Diameter Ø 18 [mm]	Rope length	[m]	27	55	86	118	154 (3)	190
Rope Diameter Ø 20 [mm]	Rope length	[m]	24	49	78	108	141 (3)	175
Rope Diameter Ø 22 [mm]	Rope length	[m]	22	45	72	99 (3)	130	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.63 [in]	Rope length	[ft]	95	196	311	426	551	682
Rope Diameter Ø 0.71 [in]	Rope length	[ft]	88	180	283	389	506 (3)	626
Rope Diameter Ø 0.78 [in]	Rope length	[ft]	80	163	258	355	464 (3)	575
Rope Diameter Ø 0.86 [in]	Rope length	[ft]	73	149	237	327 (3)	429	-

Ropes available - extended

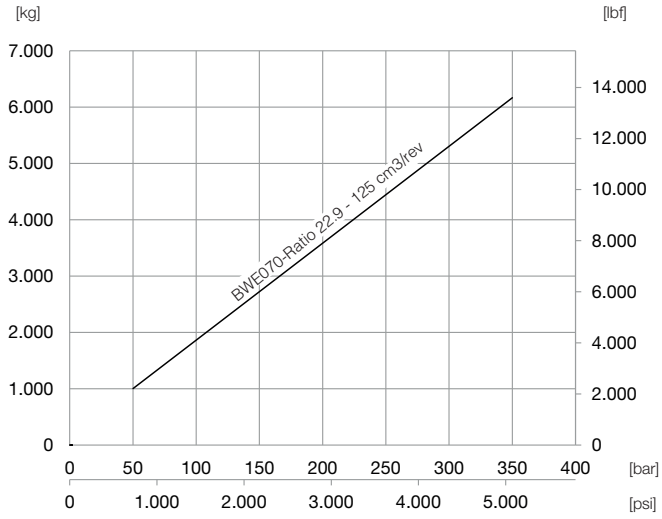
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 18 [mm]	Rope length	[m]	38	79	124	171	223 (3)	276
Rope Diameter Ø 20 [mm]	Rope length	[m]	35	72	113	157	204 (3)	254
Rope Diameter Ø 22 [mm]	Rope length	[m]	32	66	104	144 (3)	189	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.71 [in]	Rope length	[ft]	127	261	410	564	733 (3)	907
Rope Diameter Ø 0.78 [in]	Rope length	[ft]	115	237	373	515	672 (3)	834
Rope Diameter Ø 0.86 [in]	Rope length	[ft]	105	217	343	475 (3)	622	-

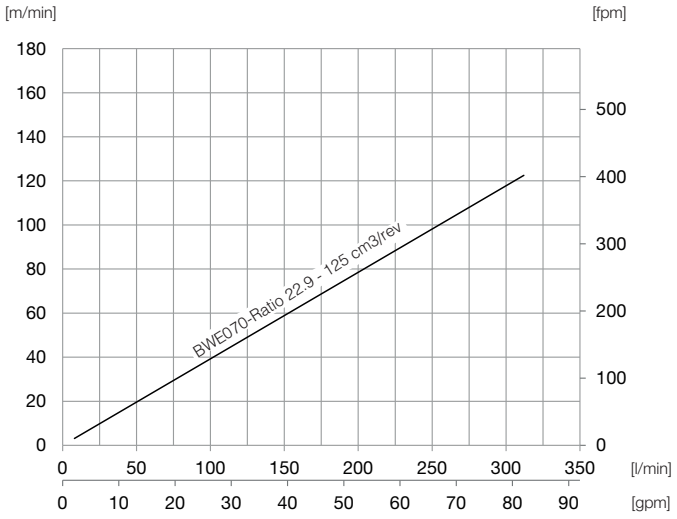
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

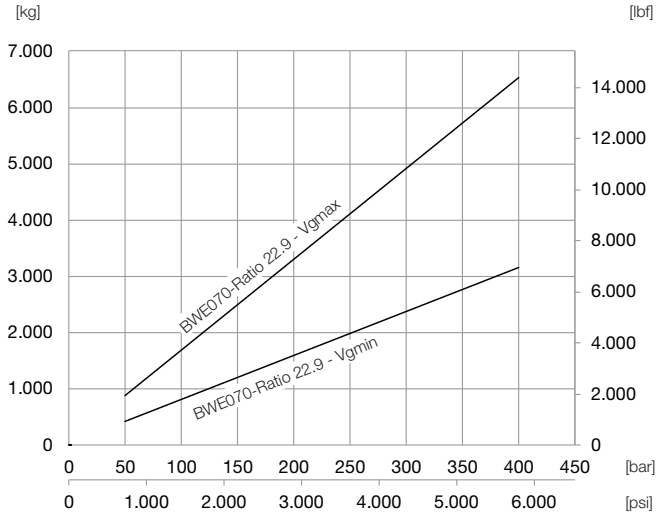


Maximum Speed at first layer

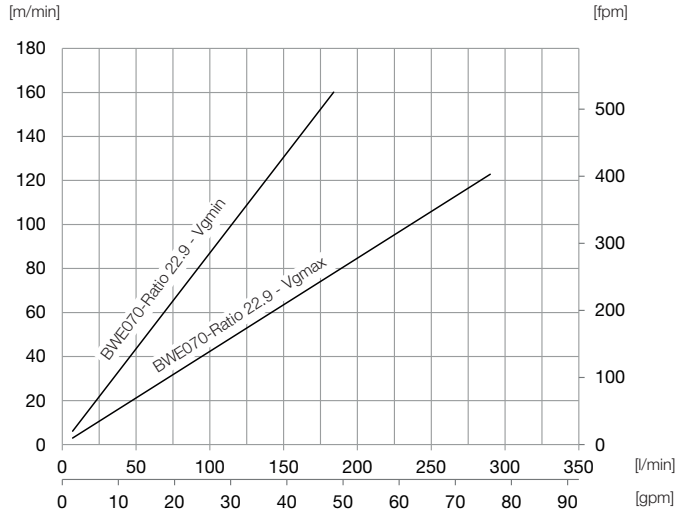


Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Maximum Speed at first layer



Vg_{max} = 115.7 cm³/rev [7.05 in³/rev]
Vg_{min} = 56 cm³/rev [3.416 in³/rev]

Vg_{max} = 115.7 cm³/rev [7.05 in³/rev] - Max 290 l/min [76 gpm] allowed
Vg_{min} = 56 cm³/rev [3.416 in³/rev] - Max 183 l/min [48 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

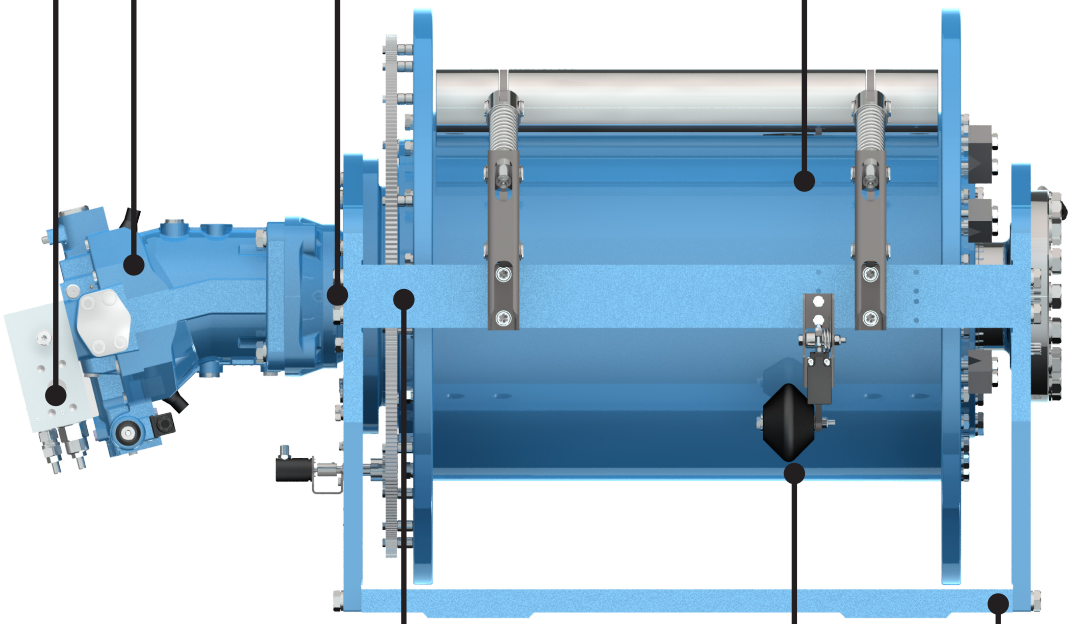
Line Pull at first Layer up to:
8.500 [kg]
18.700 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Robust steel drum, available in
grooved or smooth options



High performance Gears
Low noise and longer life time

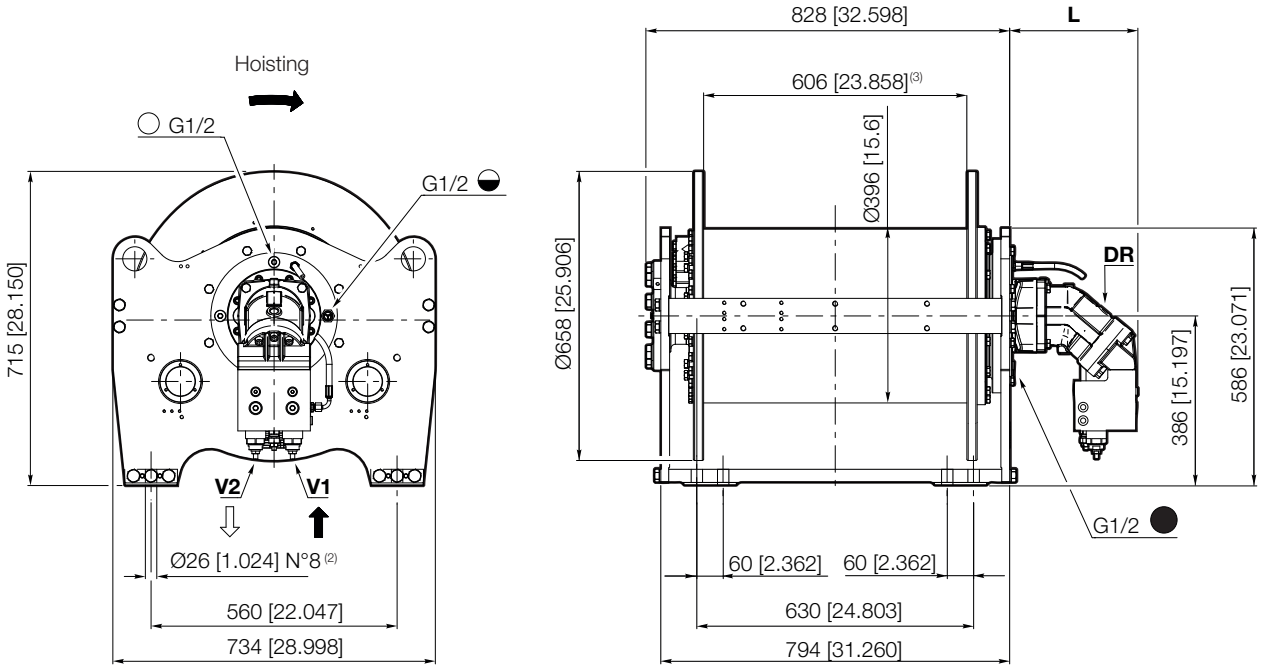
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

Hydraulic Axial Piston Motor

	Motor Type	Displacement	L
Fixed Displacement	SH11C075	77.82 cm³/rev [4.747 in³/rev]	286 mm [11.260 in]
Variable Displacement max min	SH9V085	85.3 cm³/rev [5.203 in³/rev] 40 cm³/rev [2.44 in³/rev]	380 mm [14.961 in]
With NO Motor	Universal Input Flange 00	-	10 mm [0.394 in]

Winch (1)



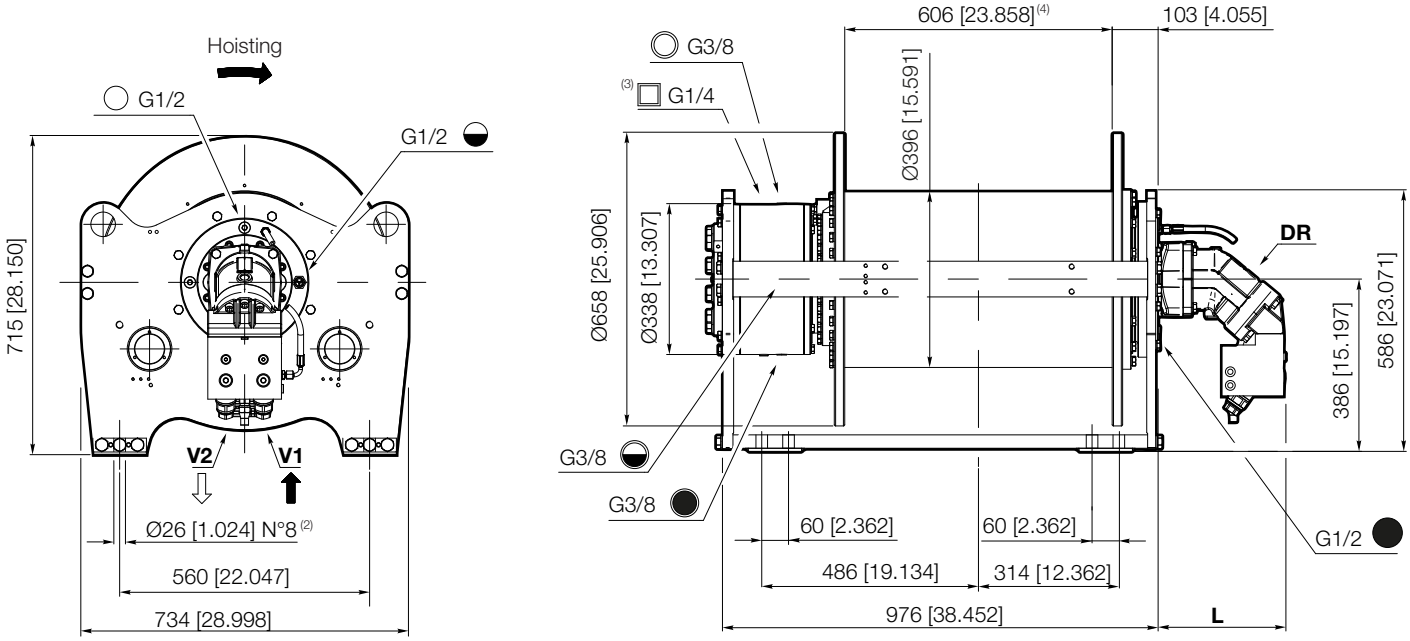
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 8 bolts for ABS certified version only. N. 4 bolts for other versions.
(3) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Hydraulic Axial Piston Motor for Lifting of Personnel Winches

	Motor Type	Displacement	L
Fixed Displacement	SH11C075	77.82 cm³/rev [4.747 in³/rev]	286 mm [11.260 in]
Variable Displacement max min	SH9V085	85.3 cm³/rev [5.203 in³/rev] 40 cm³/rev [2.44 in³/rev]	380 mm [14.961 in]
With NO Motor	Universal Input Flange 00	-	10 mm [0.394 in]

Lifting of Personnel Winch (1)



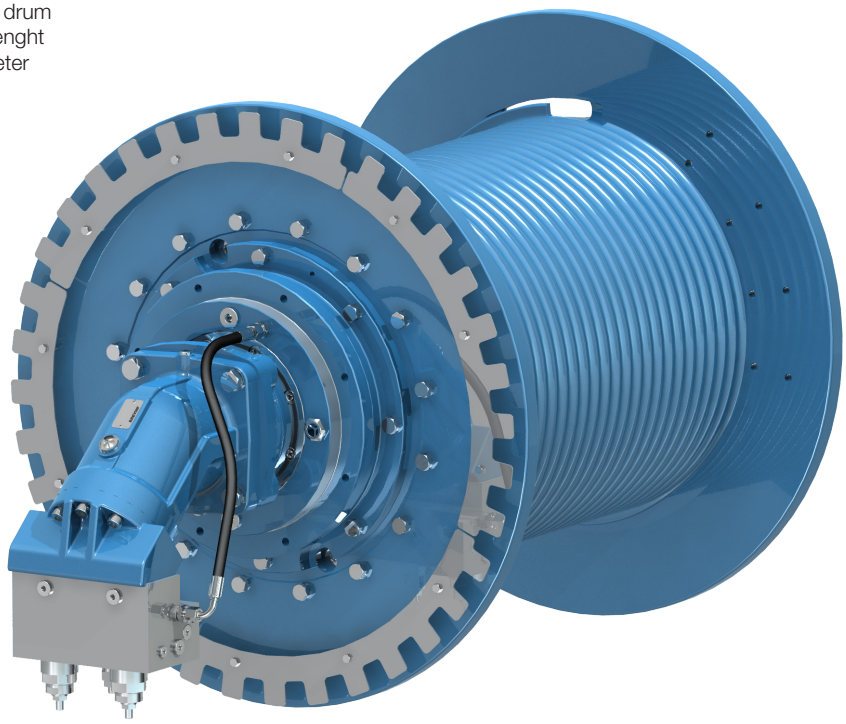
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 8 bolts for ABS certified version only. N. 4 bolts for other versions.
(3) Lifting of personnel brake release pressure (Release / Max) 50/300 bar [725/4355 psi]
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**SH11C075**		77.82 [cm³/rev]	4.74 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V085**	**max**	85.3 [cm³/rev]	5.2 [in³/rev]
		min	40 [cm³/rev]	2.44[in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	49.4 81.0

			Smooth Drum	**Grooved Drum**	
			Standard	**Standard LL**	**Standard LR**
Rope Diameter [1]	Ø 19 [mm]	Ø 0.62 [in]	√	√ [2]	Δ [2]
	Ø 20 [mm]	Ø 0.78 [in]	√	√ [2]	Δ [2]
	Ø 22 [mm	Ø 0.86 [in	√	√	Δ
	Ø 24 [mm]	Ø 0.94 [in]	√	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE085-SD22..-01-81-APF075

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	8500	7820	7230	6720	6270	-
Rope speed	[m/min]	29	32	34	37	39	-
Rope length	[m]	34	71	112	154	202	250

Motor	SH11C075		Advised rope diameter	22	[l]
Starting lifting pressure	245	[bar]	Oil fill / drain plug	G1/2	T
Operating pressure	210	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	6.0	[l/min]	Static braking torque (1)	1172	[Nm]
Gear ratio	81.0	[i]	Brake release pressure (Release / Max)	26 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [kg]		Oil [l]	
	Cargo	LoP	Cargo	LoP
BWE085-SD22..-01-81-APF075	639	774	21	22.5

United States Customary Units: USC

BWE085-SD22..-01-81-APF075

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	18800	17250	15940	14810	13830	-
Rope speed	[fpm]	96	105	113	122	131	-
Rope length	[ft]	114	233	368	507	662	822

Motor	SH11C075		Advised rope diameter	0.86	[in]
Starting lifting pressure	3610	[psi]	Oil fill / drain plug	G1/2	T
Operating pressure	3010	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1	DR
Minimum oil flow at the motor	1.58	[gpm]	Static braking torque (1)	864	[ft·lbf]
Gear ratio	81.0	[i]	Brake release pressure (Release / Max)	380 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [lbs]		Oil [gal]	
	Cargo	LoP	Cargo	LoP
BWE085-SD22..-01-81-APF075	1409	1706	5.55	5.94

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 20 [mm]	4516 (5) (1)	6000	1732 (5) (1)	2300	4516 (5) (1)	6000	2108 (5) (1)	2800
Ø 22 [mm]	5335 (4) (1)	6800	1811 (4) (1)	2300	5355 (4) (1)	6800	2205 (4) (1)	2800
Ø 24 [mm]	5765 (3) (1)	6800	1925 (3) (1)	2300	5689 (3) (1)	6800	2343 (3) (1)	2800

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.78 [in]	9956 (5) (1)	13227	3818 (5) (1)	5070	9956 (5) (1)	13227	4647 (5) (1)	6172
Ø 0.86 [in]	11761 (4) (1)	14991	3992 (4) (1)	5070	11805 (4) (1)	14991	4861 (4) (1)	6172
Ø 0.94 [in]	12709 (3) (1)	14991	4243 (3) (1)	5070	12542 (3) (1)	14991	5165 (3) (1)	6172

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available

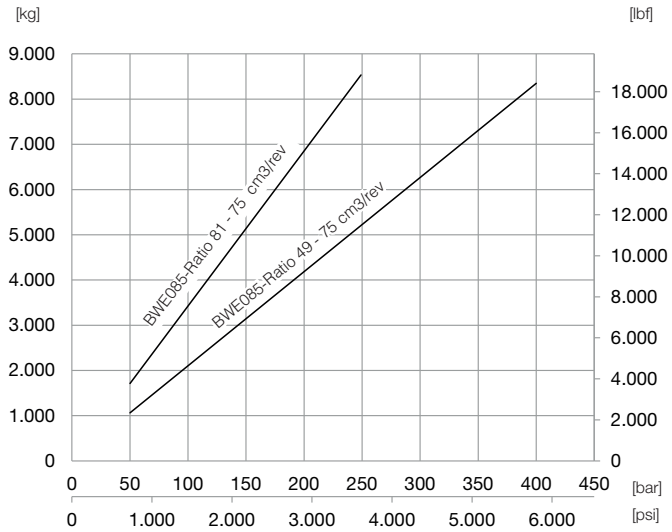
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 19 [mm]	Rope length	[m]	39	81	127	175	228	281
Rope Diameter Ø 20 [mm]	Rope length	[m]	38	77	122	168	218	270
Rope Diameter Ø 22 [mm]	Rope length	[m]	34	71	112	154	202	250
Rope Diameter Ø 24 [mm]	Rope length	[m]	32	65	104	143	188	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.62 [in]	Rope length	[ft]	128	266	417	574	748	922
Rope Diameter Ø 0.78 [in]	Rope length	[ft]	124	255	400	551	717	887
Rope Diameter Ø 0.86 [in]	Rope length	[ft]	114	233	368	507	662	822
Rope Diameter Ø 0.94 [in]	Rope length	[ft]	105	215	341	471	617	-

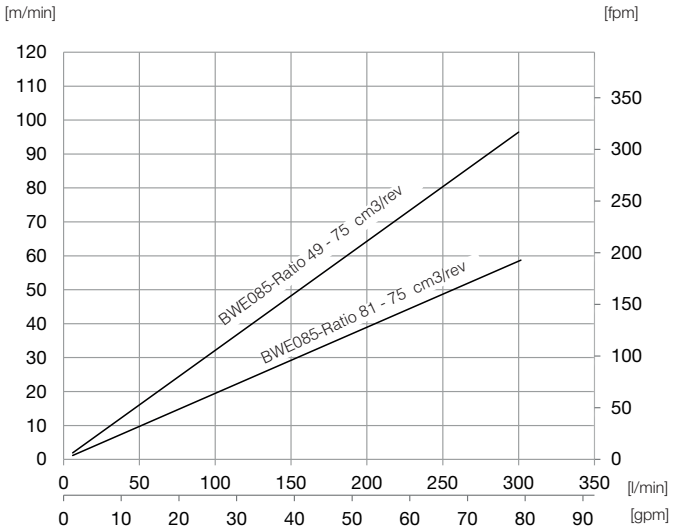
(1) Last working layer
(2) Last indicated Layer is intended only as Storage

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

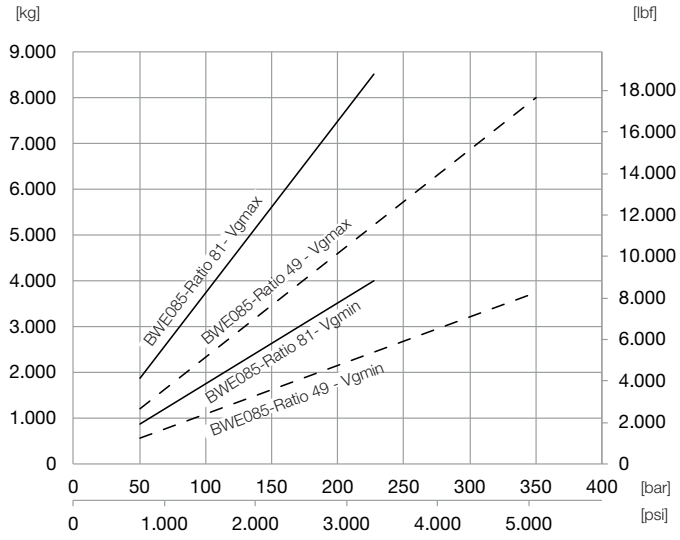


Maximum Speed at first layer



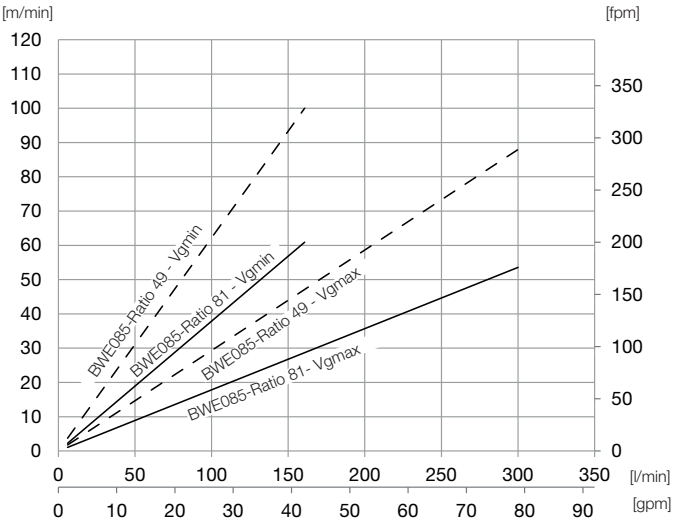
Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Vg_{max} = 85.3 cm³/rev [5.203 in³/rev]
Vg_{min} = 40 cm³/rev [2.44 in³/rev]

Maximum Speed at first layer



Vg_{max} = 85.3 cm³/rev [5.203 in³/rev] - Max 300 l/min [80 gpm] allowed
Vg_{min} = 40 cm³/rev [2.44 in³/rev] - Max 160 l/min [43 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

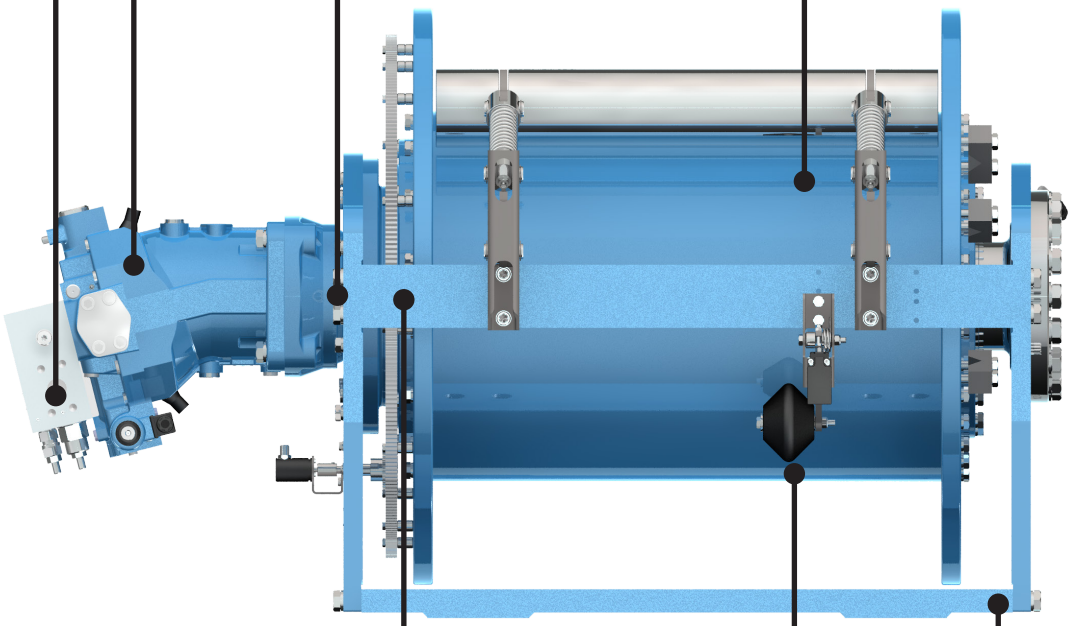
Line Pull at first Layer up to:
10.500 [kg]
23.100 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Robust steel drum, available in
grooved or smooth options



High performance Gears
Low noise and longer life time

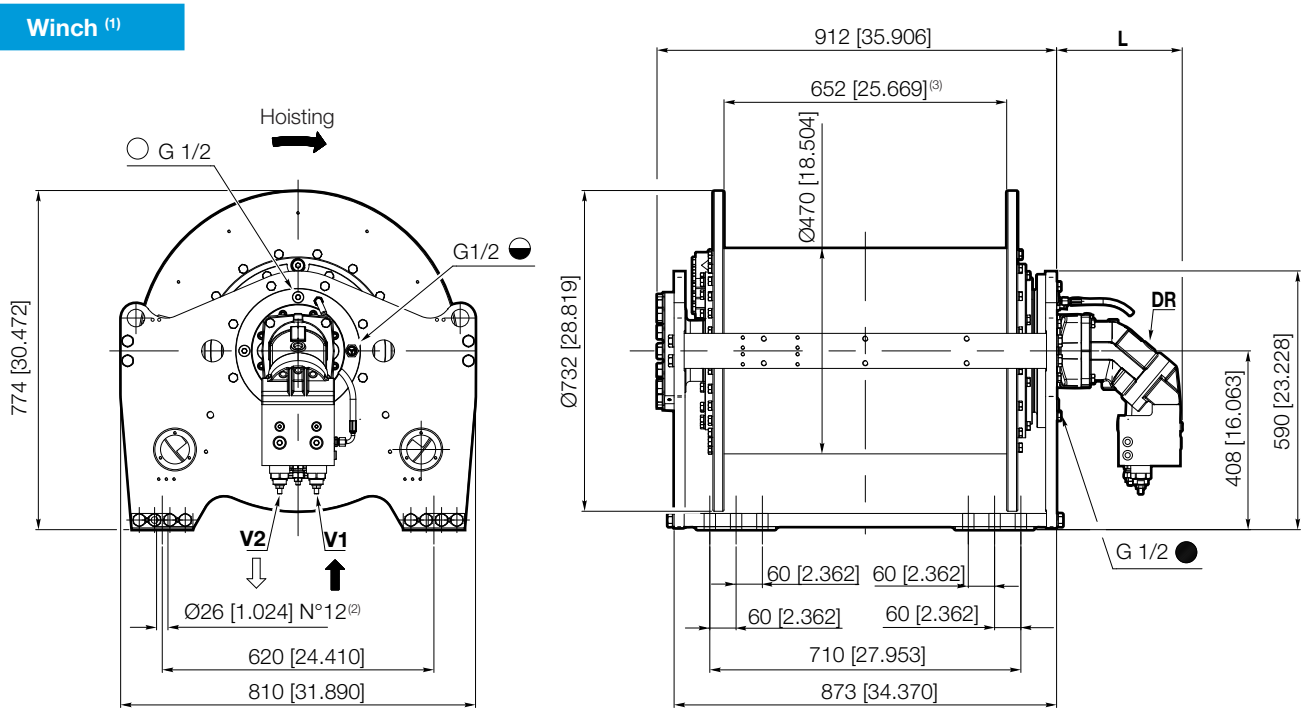
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

Hydraulic Axial Piston Motor

	Motor type	Displacement	L
Fixed Displacement	SH11C090	86.23 cm³/rev [5.26 in³/rev]	286 mm [11.260 in]
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Variable Displacement max	SH9V115	115.7 cm³/rev [7.05 in³/rev]	432 mm [17.008 in]
Variable Displacement min		56 cm³/rev [3.42 in³/rev]	
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Winch (1)



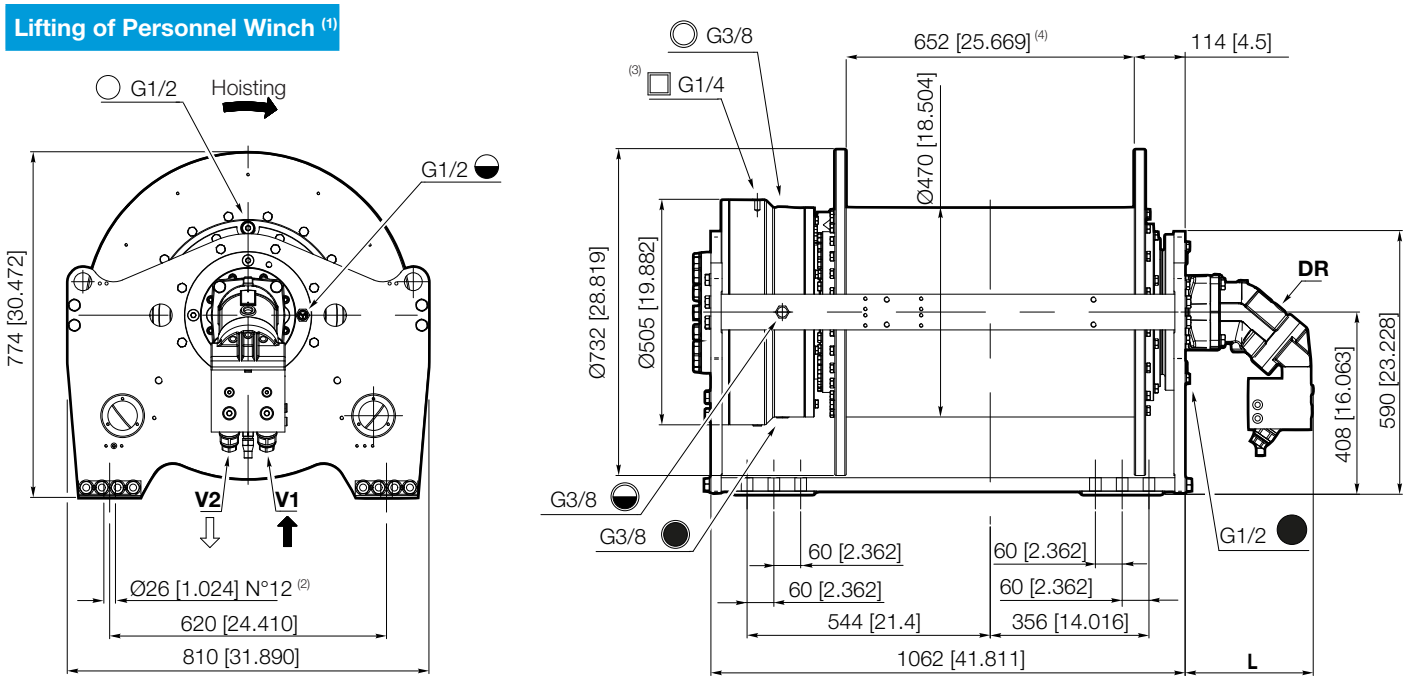
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions
(3) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Hydraulic Axial Piston Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	SH11C090	86.23 cm³/rev [5.26 in³/rev]	286 mm [11.260 in]
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Variable Displacement max min	SH9V115	115.7 cm³/rev [7.05 in³/rev] 56 cm³/rev [3.42 in³/rev]	432 mm [17.008 in]
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Lifting of Personnel Winch (1)



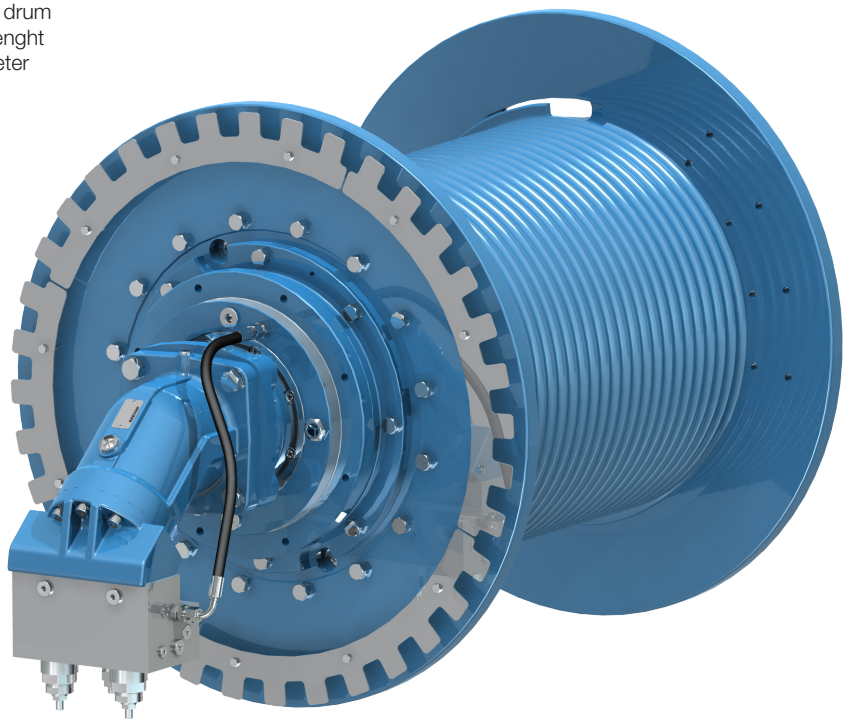
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions.
(3) Lifting of personnel brake release pressure (Release / Max) 23.5/300 bar [341/4355 psi]
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**SH11C090**	86.23 cm³/rev	5.26 [in³/rev]
	SH11C125	124.8 cm³/rev	4.747 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V115 max**	115.7 [cm³/rev]	7.05 [in³/rev]
	min	56 [cm³/rev]	3.42 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment	**Other available**
Ratio	50.8 83.2	58.9

			Smooth Drum	**Grooved Drum**	
			Standard	**Standard LL**	**Standard LR**
Rope Diameter [1]	Ø 20 [mm]	Ø 0.78 [in]	√	Δ	Δ
	Ø 22 [mm	Ø 0.86 [in	√	√	√ [2]
	Ø 24 [mm]	Ø 0.94 [in]	√	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE105-SD22..-01-83.2-APF090

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	10500	9750	9110	8540	8040	-
Rope speed	[m/min]	30	32	35	37	39	-
Rope length	[m]	44	89	140	192	250	309

Motor	SH11C090		Advised rope diameter	22	[mm]
Starting lifting pressure	315	[bar]	Oil fill / drain plug	G1/2	T
Operating pressure	265	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	6.0	[l/min]	Static braking torque (1)	1172	[Nm]
Gear ratio	83.2	[i]	Brake release pressure (Release / Max)	26 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [kg]		Oil [l]	
	Cargo	LoP	Cargo	LoP
BWE105-SD22..-01-83,2-APF090-LP	899	1132	29.5	34

United States Customary Units: USC

BWE105-SD22..-01-83.2-APF090

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	23100	21510	20080	18840	17730	-
Rope speed	[fpm]	99	107	114	122	130	-
Rope length	[ft]	144	294	461	632	821	1014

Motor	SH11C090		Advised rope diameter	0.86	[in]
Starting lifting pressure	4595	[psi]	Oil fill / drain plug	G1/2	T
Operating pressure	3835	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	1.58	[gpm]	Static braking torque (1)	864	[ft·lbf]
Gear ratio	83.2	[i]	Brake release pressure (Release / Max)	380 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [lbs]		Oil [gal]	
	Cargo	LoP	Cargo	LoP
BWE105-SD22..-01-83,2-APF090-LP	1982	2496	7.79	8.98

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 20 [mm]	5630 (5) (1)	7200	2190 (5) (1)	2800	5630 (5) (1)	7200	2659 (5) (1)	3400
Ø 22 [mm]	6834 (4) (1)	8400	2278 (4) (1)	2800	6834 (4) (1)	8400	2766 (4) (1)	3400
Ø 24 [mm]	7204 (3) (1)	8400	2402 (3) (1)	2800	7204 (3) (1)	8400	2916 (3) (1)	3400

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.78 [in]	12412 (5) (1)	15873	4828 (5) (1)	6172	12412 (5) (1)	15873	5862 (5) (1)	7495
Ø 0.86 [in]	15066 (4) (1)	18518	5022 (4) (1)	6172	15066 (4) (1)	18518	6097 (4) (1)	7495
Ø 0.94 [in]	15882 (3) (1)	18518	5295 (3) (1)	6172	15882 (3) (1)	18518	6428 (3) (1)	7495

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available

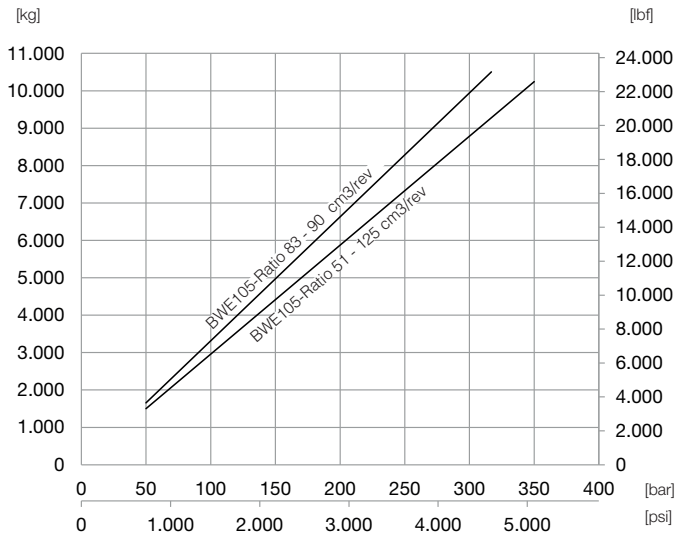
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 20 [mm]	Rope length	[m]	48	98	153	209 (3)	271	334
Rope Diameter Ø 22 [mm]	Rope length	[m]	44	89	140	192 (3)	250	309
Rope Diameter Ø 24 [mm]	Rope length	[m]	40	82	130 (3)	178	232	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.78 [in]	Rope length	[ft]	158	322	502	687 (3)	890	1097
Rope Diameter Ø 0.86 [in]	Rope length	[ft]	144	294	461	632 (3)	821	1014
Rope Diameter Ø 0.94 [in]	Rope length	[ft]	133	271	426 (3)	586	763	-

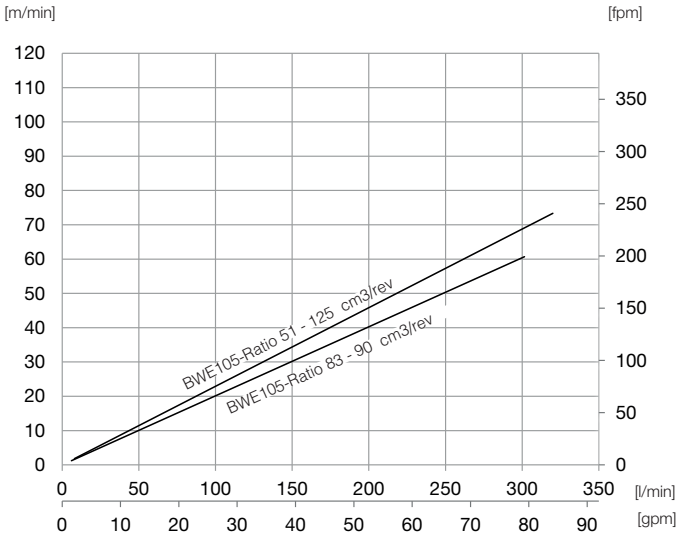
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

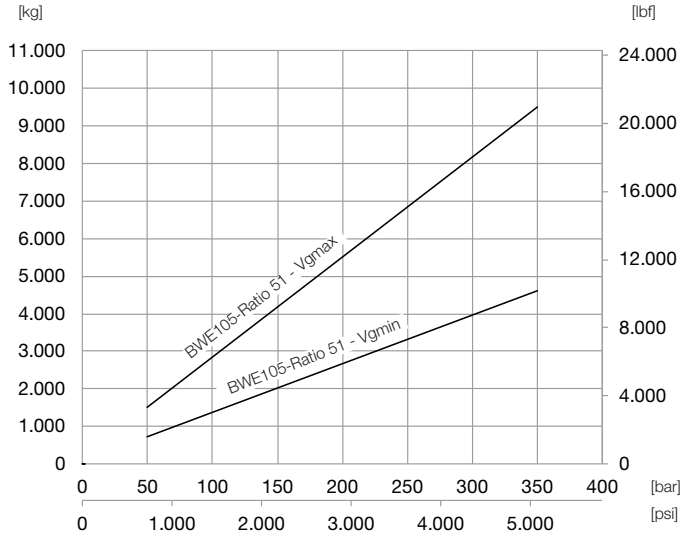


Maximum Speed at first layer



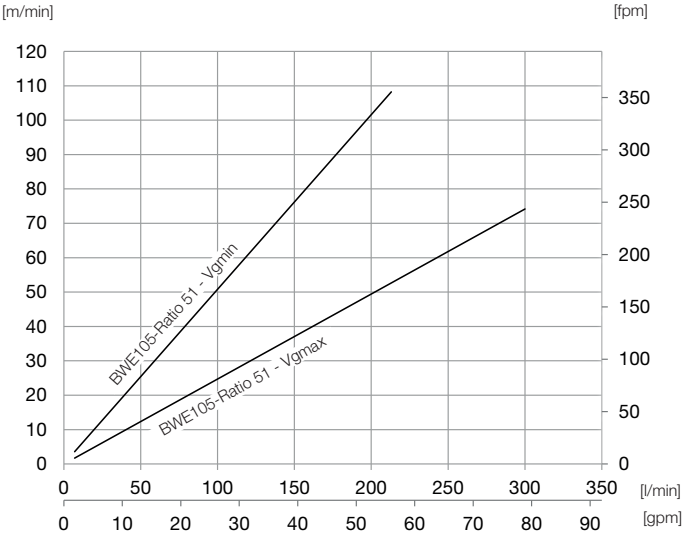
Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Vg_{max} = 115.7 cm^3/rev [7.05 in^3/rev]
Vg_{min} = 56 cm^3/rev [3.416 in^3/rev]

Maximum Speed at first layer



Vg_{max} = 115.7 cm^3/rev [7.05 in^3/rev] - Max 300 l/min [80 gpm] allowed
Vg_{min} = 56 cm^3/rev [3.416 in^3/rev] - Max 212 l/min [56 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

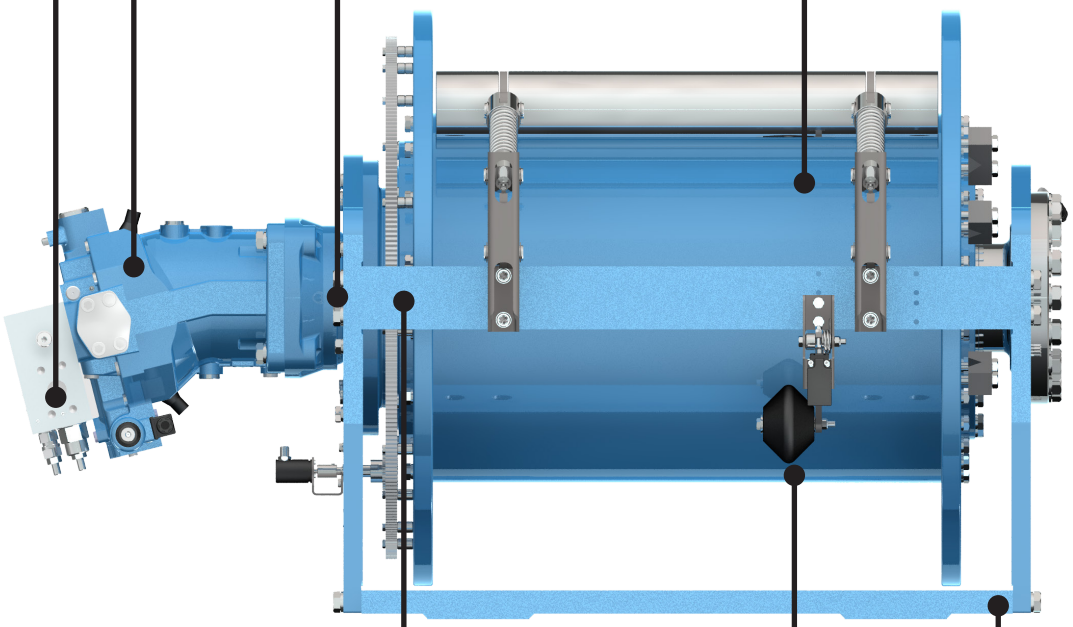
Line Pull at first Layer up to:
12.500 [kg]
27.500 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Robust steel drum, available in
grooved or smooth options



High performance Gears
Low noise and longer life time

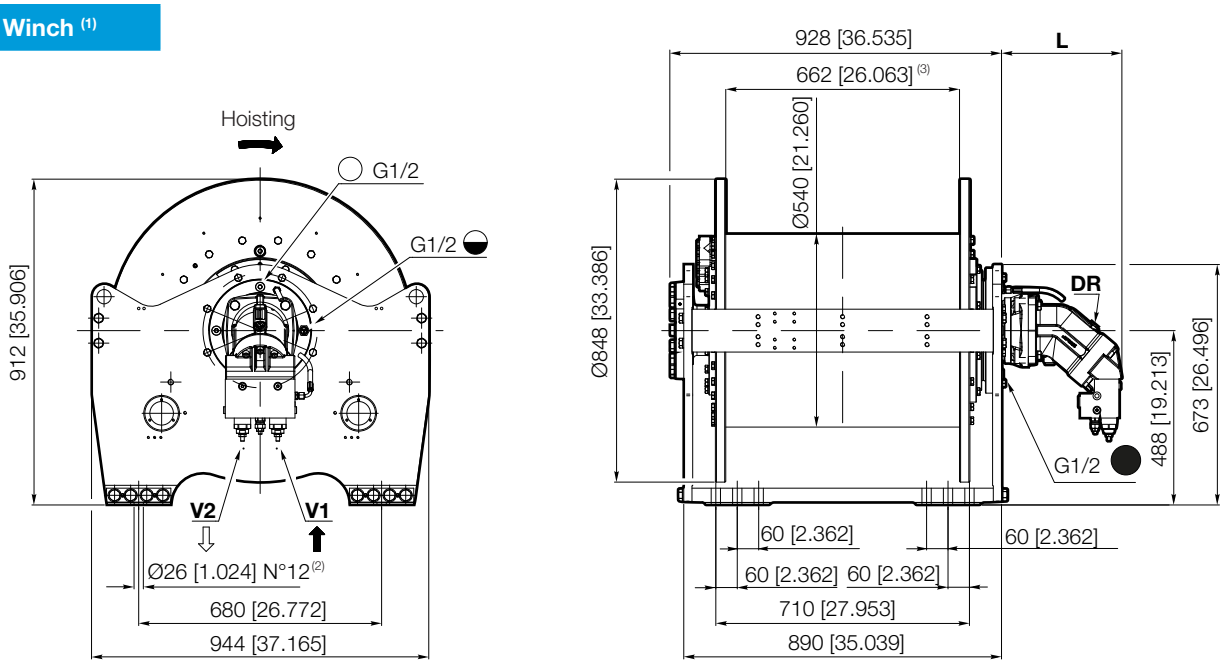
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

Hydraulic Axial Piston Motor

	Motor type	Displacement	L
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Fixed Displacement	SH11C160	163.9 cm³/rev [9.998 in³/rev]	400 mm [15.748 in]
Variable Displacement max	SH9V165	166.2 cm³/rev [10.13 in³/rev]	489 mm [19.252 in]
Variable Displacement min		80 cm³/rev [4.88 in³/rev]	
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Winch (1)



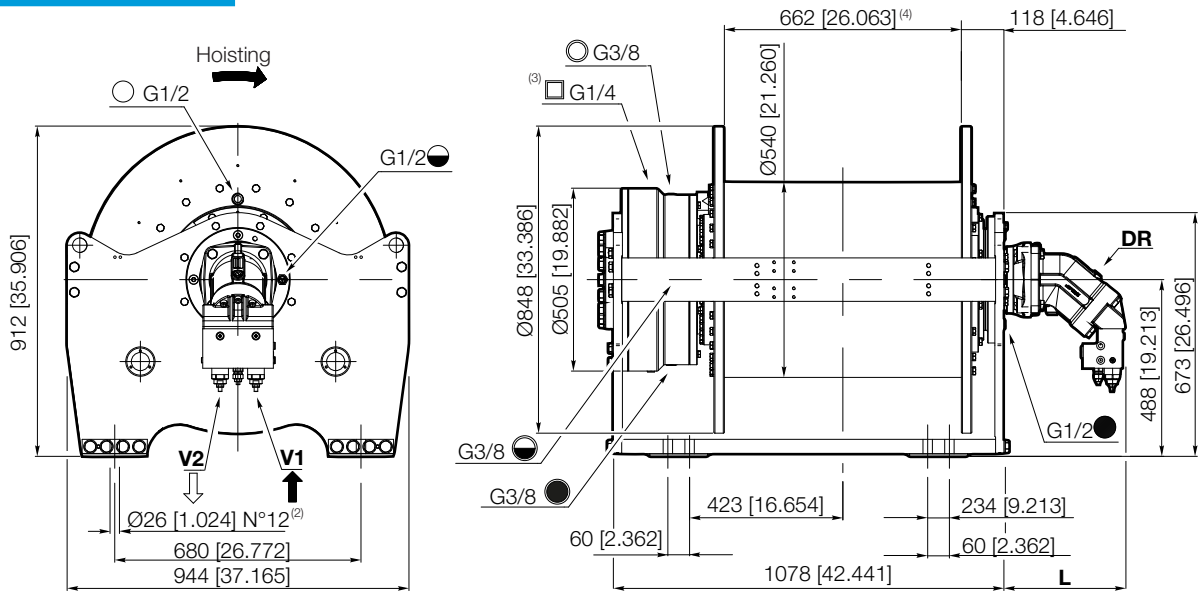
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions.
(3) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Hydraulic Axial Piston Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Fixed Displacement	SH11C160	163.9 cm³/rev [9.998 in³/rev]	400 mm [15.748 in]
Variable Displacement max min	SH9V165	166.2 cm³/rev [10.13 in³/rev] 80 cm³/rev [4.88 in³/rev]	489 mm [19.252 in]
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Lifting of Personnel Winch (1)



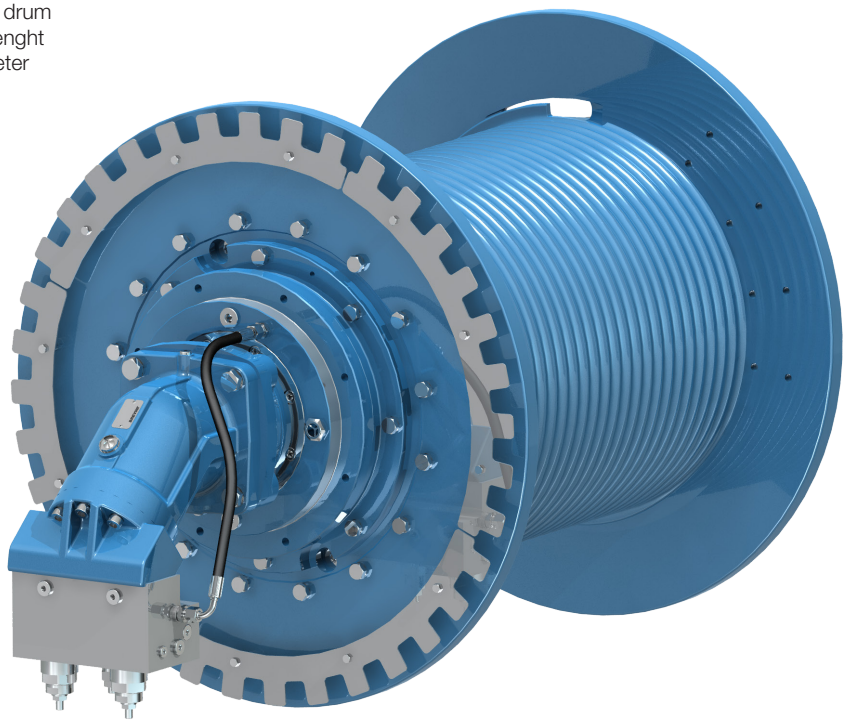
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions.
(3) Lifting of personnel brake release pressure (Release / Max) 33/300 bar [479/4355 psi]
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**SH11C125**	124.8 cm³/rev	7.613 [in³/rev]
	SH11C160	163.9 cm³/rev	9.998 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V165 max**	166.2 [cm³/rev]	10.13 [in³/rev]
	min	80 [cm³/rev]	4.88 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment	**Other available**
Ratio	50.8 83.2	58.9

			Smooth Drum	**Grooved Drum**	
			Standard	**Standard LL**	**Standard LR**
Rope Diameter [1]	Ø 22 [mm	Ø 0.86 [in]	√	√ [2]	Δ [2]
	Ø 24 [mm]	Ø 0.94 [in]	√	Δ	Δ
	Ø 26 [mm]	Ø 1.02 [in]	√	√	Δ
	Ø 28 [mm]	Ø 1.10 [in]	√	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE125-SD26..-01-83.2-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	12500	11590	10810	10120	9510	-
Rope speed	[m/min]	24	26	27	29	31	-
Rope length	[m]	43	88	139	190	247	306

Motor	SH11C125		Advised rope diameter	26	[mm]
Starting lifting pressure	300	[bar]	Oil fill / drain plug	G1/2	T
Operating pressure	250	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	8.0	[l/min]	Static braking torque (1)	1172	[Nm]
Gear ratio	83.2	[i]	Brake release pressure (Release / Max)	26 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [kg]		Oil [l]	
	Cargo	LoP	Cargo	LoP
BWE125-SD26..-01-83,2-APF125-LP	1162	1408	45,5	49,5

United States Customary Units: USC

BWE125-SD26..-01-83.2-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	27500	25560	23830	22310	20980	-
Rope speed	[fpm]	79	85	91	97	104	-
Rope length	[ft]	142	290	456	625	813	1004

Motor	SH11C125		Advised rope diameter	1.02	[in]
Starting lifting pressure	4350	[psi]	Oil fill / drain plug	G1/2	T
Operating pressure	3630	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	2.11	[gpm]	Static braking torque (1)	864	[ft·lbf]
Gear ratio	83.2	[i]	Brake release pressure (Release / Max)	380 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [lbs]		Oil [gal]	
	Cargo	LoP	Cargo	LoP
BWE125-SD26..-01-83,2-APF125-LP	2562	3104	12,02	13,08

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 24 [mm]	7127 (5) (1)	9200	2713 (5) (1)	3500	7127 (5) (1)	9200	3254 (5) (1)	4200
Ø 26 [mm]	8500 (4) (1)	10501	2834 (4) (1)	3500	8500 (4) (1)	10501	3400 (4) (1)	4200
Ø 28 [mm]	8987 (3) (1)	10501	2996 (3) (1)	3500	8987 (3) (1)	10501	3595 (3) (1)	4200

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.94 [in]	15712 (5) (1)	20282	5981 (5) (1)	7716	15712 (5) (1)	20282	7173 (5) (1)	9259
Ø 1.02 [in]	18739 (4) (1)	23150	6247 (4) (1)	7716	18739 (4) (1)	23150	7495 (4) (1)	9259
Ø 1.10 [in]	19812 (3) (1)	23150	6605 (3) (1)	7716	19812 (3) (1)	23150	7925 (3) (1)	9259

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available

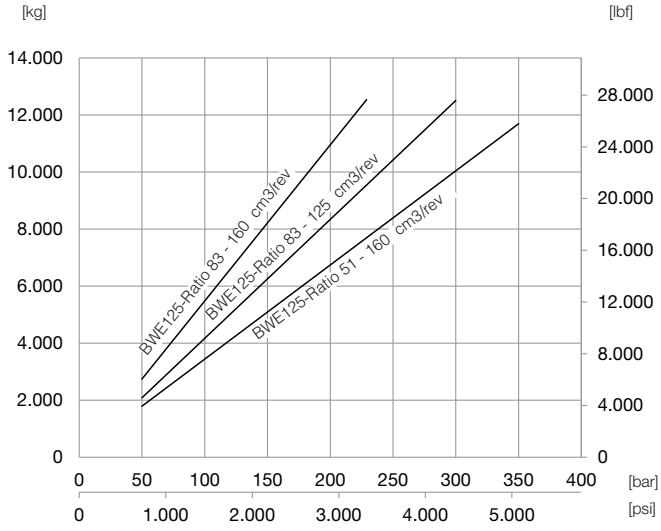
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 22 [mm]	Rope length	[m]	51	103	161	220	285	351
Rope Diameter Ø 24 [mm]	Rope length	[m]	47	95	149	204	265 (3)	326
Rope Diameter Ø 26 [mm]	Rope length	[m]	43	88	139	190 (3)	247	306
Rope Diameter Ø 28 [mm]	Rope length	[m]	40	82	130	178 (3)	232	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.86 [in]	Rope length	[ft]	167	338	528	722	935	1152
Rope Diameter Ø 0.94 [in]	Rope length	[ft]	154	313	490	671	870 (3)	1072
Rope Diameter Ø 1.02 [in]	Rope length	[ft]	142	290	456	625 (3)	813	1004
Rope Diameter Ø 1.10 [in]	Rope length	[ft]	133	271	426	586 (3)	764	-

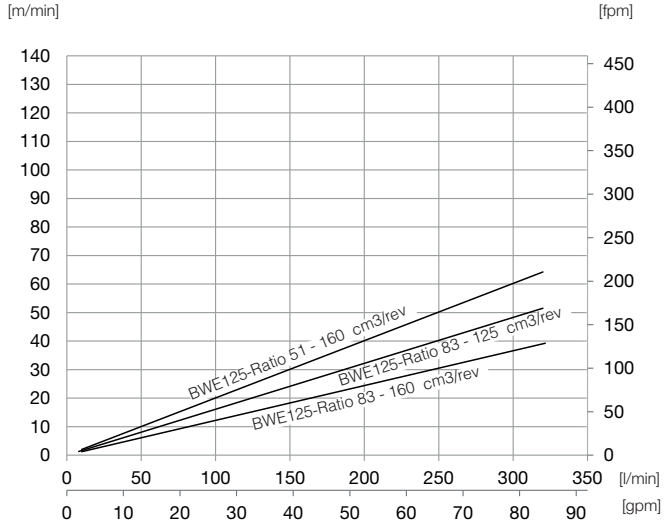
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

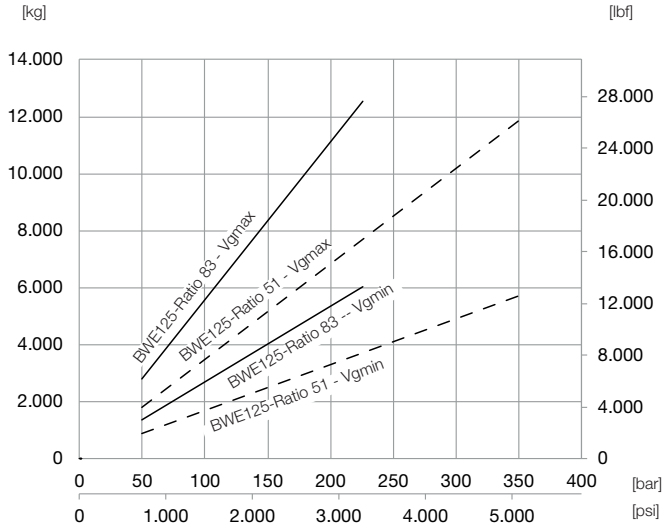


Maximum Speed at first layer



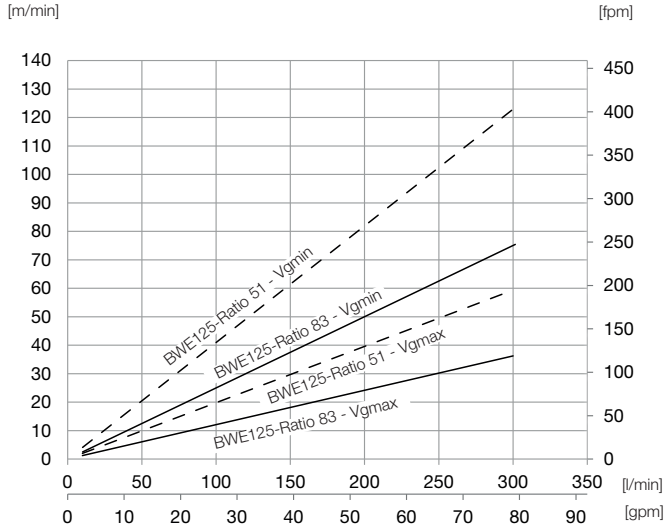
Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Vg_{max} = 166.2 cm³/rev [10.13 in³/rev]
Vg_{min} = 80 cm³/rev [4.88 in³/rev]

Maximum Speed at first layer



Vg_{max} = 166.2 cm³/rev [10.13 in³/rev] - Max 300 l/min [79 gpm] allowed
Vg_{min} = 80 cm³/rev [4.88 in³/rev] - Max 300 l/min [79 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

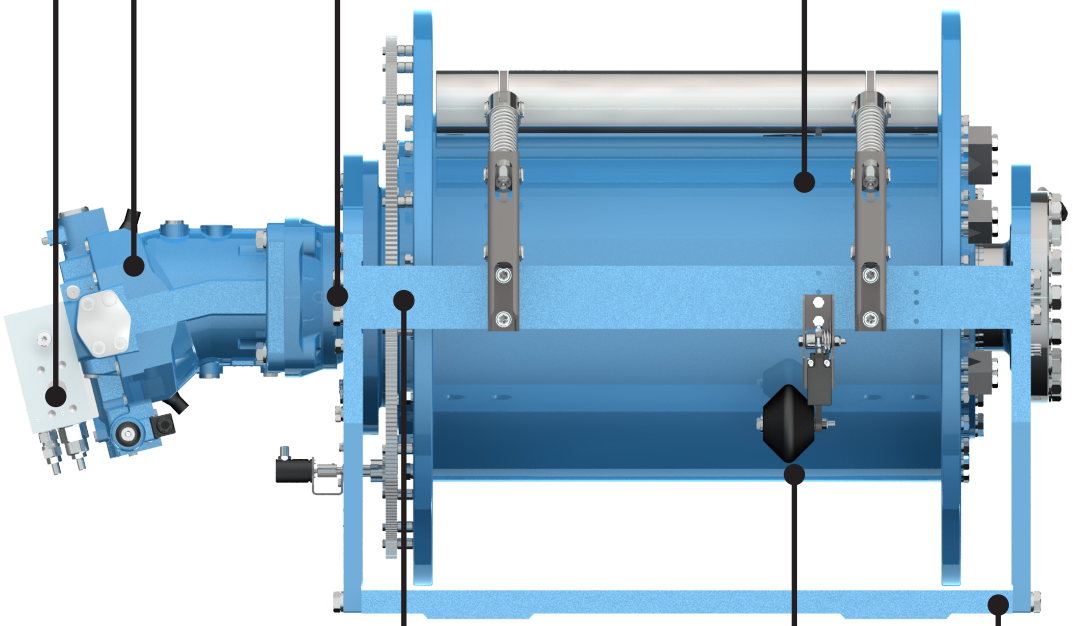
Line Pull at first Layer up to:
16.000 [kg]
35.300 [lbf]

Control Valve
To ensure safe operation with
enhanced control during Load Lowering

Hydraulic Motor
Fixed or Variable displacement
High speed Axial piston motor

Multidisc static Brake
Specifically designed for
Winch applications

Drum
Robust steel drum, available in
grooved or smooth options



High performance Gears
Low noise and longer life time

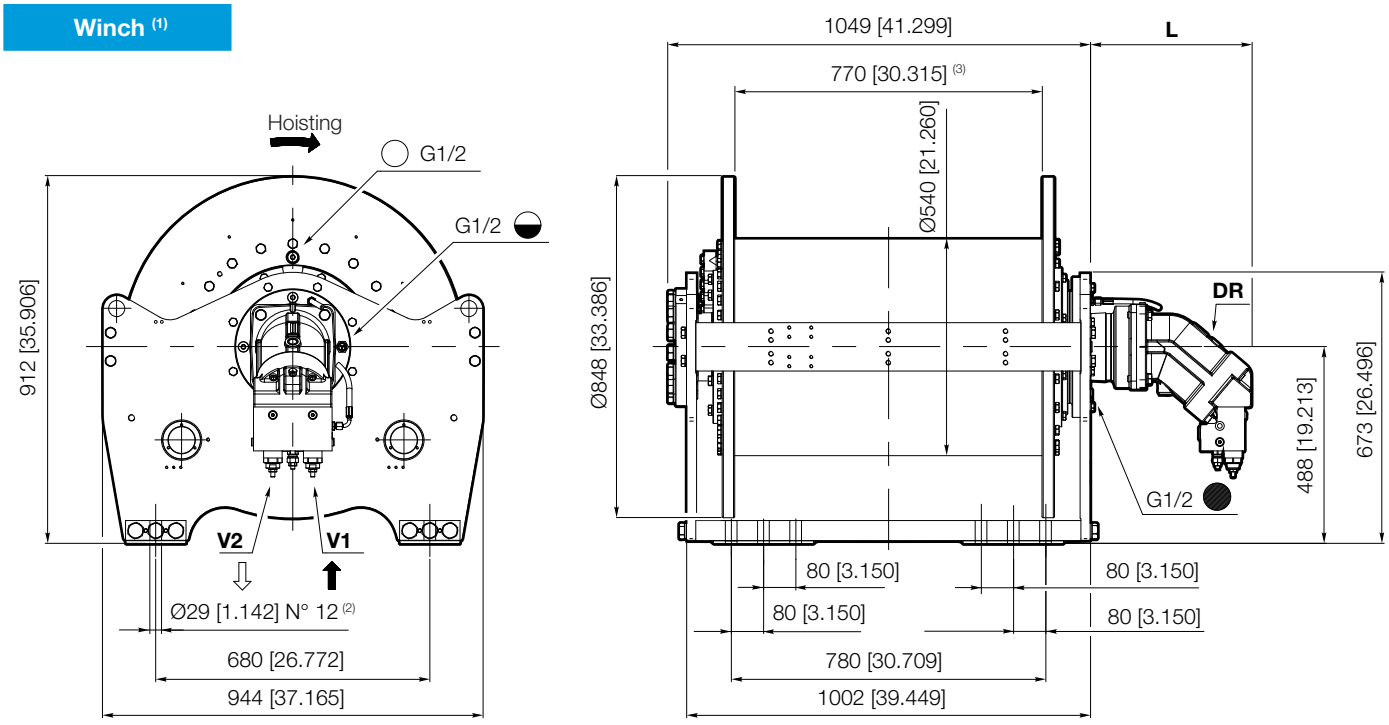
Accessories
Pressure Roller
Electric or Hydraulic Limit Switch
Electric or Hydraulic Rotary Limit Switch
Speed Sensor (proximity and enconder)

Structure
Robust steel frame
Suitable for low temperature applications

Hydraulic Axial Piston Motor

	Motor type	Displacement	L
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Fixed Displacement	SH11C160	163.9 cm³/rev [9.998 in³/rev]	400 mm [15.748 in]
Variable Displacement max	SH9V165	166.2 cm³/rev [10.13 in³/rev]	489 mm [19.252 in]
Variable Displacement min		80 cm³/rev [4.88 in³/rev]	
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Winch (1)



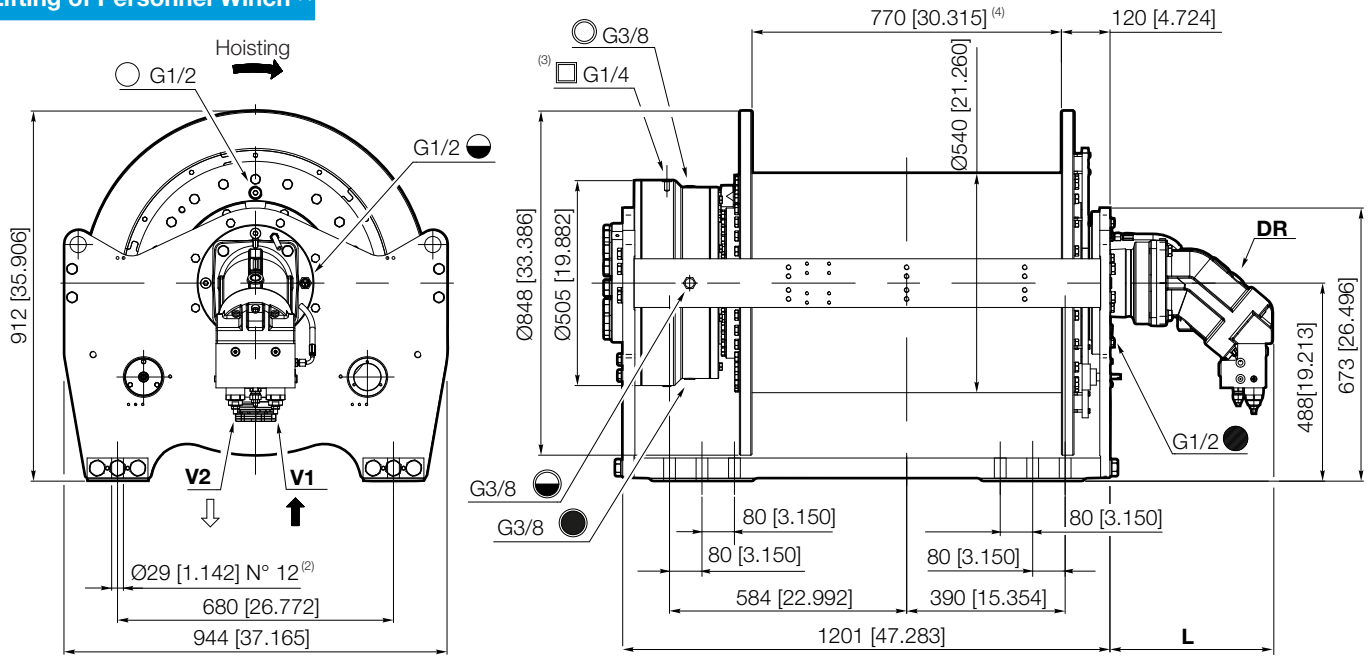
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions.
(3) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Hydraulic Axial Piston Motor for Lifting of Personnel Winches

	Motor type	Displacement	L
Fixed Displacement	SH11C125	124.8 cm³/rev [7.613 in³/rev]	336 mm [13.228 in]
Fixed Displacement	SH11C160	163.9 cm³/rev [9.998 in³/rev]	400 mm [15.748 in]
Variable Displacement max min	SH9V165	166.2 cm³/rev [10.13 in³/rev] 80 cm³/rev [4.88 in³/rev]	489 mm [19.252 in]
With NO Motor	Universal Input Flange 00	-	5 mm [0.197 in]

Lifting of Personnel Winch (1)



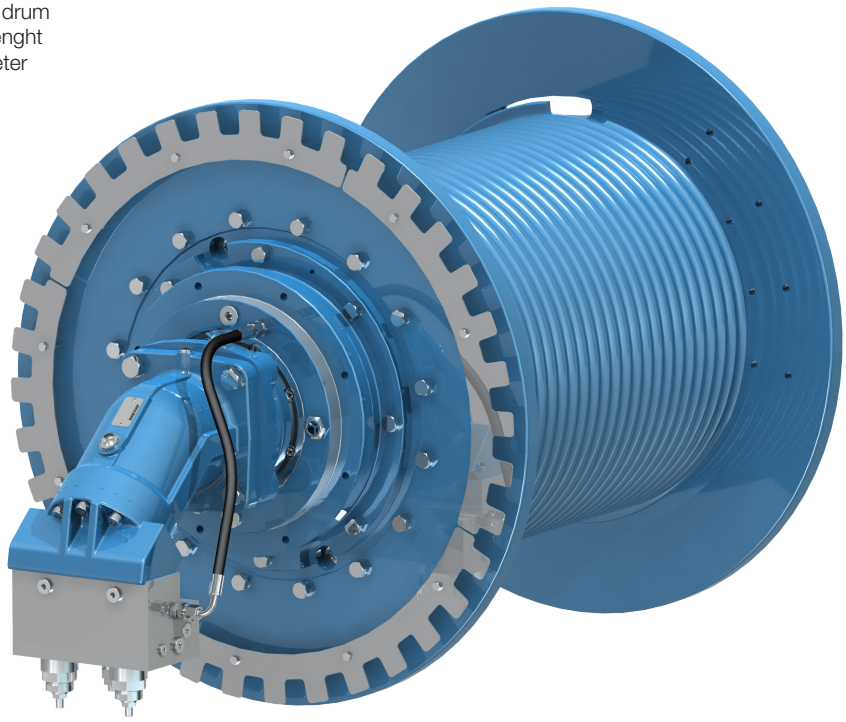
(1) Catalogue dimensions only for reference, see dimensional drawing for detailed information
(2) N. 12 bolts for ABS certified version only. N. 8 bolts for other versions.
(3) Lifting of personnel brake release pressure (Release / Max) 40/300 bar [580/4355 psi]
(4) Dimension is approximate and may vary depending on the type of rope selected

SYMBOL A 16

Motor Drum Winch

Available on request .

- with or without motor
- smooth or grooved drum
- customized drum lenght
- different rope diameter



Our Standard Configurations

Hydraulic Motor Fixed Displacement	**SH11C125**	124.8 cm³/rev	7.613 [in³/rev]
	SH11C160	163.9 cm³/rev	9.998 [in³/rev]
Hydraulic Motor Variable Displacement	**SH9V165 max**	166.2 [cm³/rev]	10.13 [in³/rev]
	min	80 [cm³/rev]	4.88 [in³/rev]

	Included in DNV Type Approval and ABS Product Design Assessment
Ratio	61.5 92.6

			Smooth Drum	**Grooved Drum**	
			Standard	**Standard LL**	**Standard LR**
Rope Diameter [1]	Ø 24 [mm]	Ø 0.94 [in]	√	Δ	Δ
	Ø 26 [mm]	Ø 1.02 [in]	√	√	√ [2]
	Ø 28 [mm]	Ø 1.10 [in]	√	Δ	Δ

√: Available
Δ: On Request

[1] Other rope diameter available on request.
[2] Not included in PDA-ABS and TA-DNV certification

SYMBOL A 16

International System of Units: SI

BWE160-SD26..-01-92.6-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[kg]	16000	14880	13870	12990	12210	-
Rope speed	[m/min]	21	23	25	26	28	-
Rope length	[m]	50	103	162	222	289	357

Motor	SH11C125		Advised rope diameter	26	[mm]
Starting lifting pressure	345	[bar]	Oil fill / drain plug	G1/2	T
Operating pressure	290	[bar]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	150	[l/min]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	8.0	[l/min]	Static braking torque (1)	1172	[Nm]
Gear ratio	92.6	[i]	Brake release pressure (Release / Max)	26 / 350	[bar]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [kg]		Oil [l]	
	Cargo	LoP	Cargo	LoP
BWE160-SD26..-01-92,6-APF125-LP	1470	1770	42	44,6

United States Customary Units: USC

BWE160-SD26..-01-92,6-APF125

Working layer		1	2	3	4	5	6 Storage length
Line pull	[lbf]	35300	32810	30590	28640	26930	-
Rope speed	[fpm]	71	76	82	87	93	-
Rope length	[ft]	166	339	531	729	948	1171

Motor	SH11C125		Advised rope diameter	1.02	[in]
Starting lifting pressure	5015	[psi]	Oil fill / drain plug	G1/2	T
Operating pressure	4185	[psi]	Lifting / Lowering port	G1	V1 / V2
Operating oil flow at the motor	40	[gpm]	Motor drain port	G1/2	DR
Minimum oil flow at the motor	2.11	[gpm]	Static braking torque (1)	864	[ft·lbf]
Gear ratio	92.6	[i]	Brake release pressure (Release / Max)	380 / 5080	[psi]

Winch mechanisms classification in agreement with F.E.M. (1.001) (Third edition revised on 01.10.1998) (2)	M5 (T5-L2)	n_2=15 [rpm]

	Weight [lbs]		Oil [gal]	
	Cargo	LoP	Cargo	LoP
BWE160-SD26..-01-92,6-APF125-LP	3241	3902	11,10	11,78

Note:

- For safety reasons always keep at least 3 wraps of rope wrapped on the drum.
- Technical features may change with no previous notice from the manufacturer.
- The MBL of the Rope must be verified according to the requested Safety Factors.
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

(1) Static braking torque does not affect the winch maximum static line pull which must be considered 125% of the nominal line pull at first layer.
(2) Related to gears only, and may be different according application data

Line pull for Certified Winch Version: SI

Rope Diameter	Line Pull (according to DNV) [kg]				Line Pull (according to ABS) [kg]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 24 [mm]	8522 (5) (1)	11000	3331 (5) (1)	4300	8522 (5) (1)	11000	4029 (5) (1)	5200
Ø 26 [mm]	10361 (4) (1)	12800	3481 (4) (1)	4300	10361 (4) (1)	12800	4209 (4) (1)	5200
Ø 28 [mm]	10955 (3) (1)	12800	3681 (3) (1)	4300	10955 (3) (1)	12800	4450 (3) (1)	5200

Line pull for Certified Winch Version: USC

Rope Diameter	Line Pull (according to DNV) [lbf]				Line Pull (according to ABS) [lbf]			
	Cargo Winch		Lifting of Personnell Winch		Cargo Winch		Lifting of Personnell Winch	
	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer	Last Layer	First Layer
Ø 0.94 [in]	18787 (5) (1)	24250	7343 (5) (1)	9479	18787 (5) (1)	24250	8882 (5) (1)	11464
Ø 1.02 [in]	22842 (4) (1)	28219	7674 (4) (1)	9479	22842 (4) (1)	28219	9279 (4) (1)	11464
Ø 1.10 [in]	24151 (3) (1)	28219	8115 (3) (1)	9479	24151 (3) (1)	28219	9810 (3) (1)	11464

The line pull listed above are just for reference, for this application is strongly recommended to fill up the Winch Application Data Form available at the end of this catalogue and consult the Dana area contact person for final selection and validation.

Ropes available

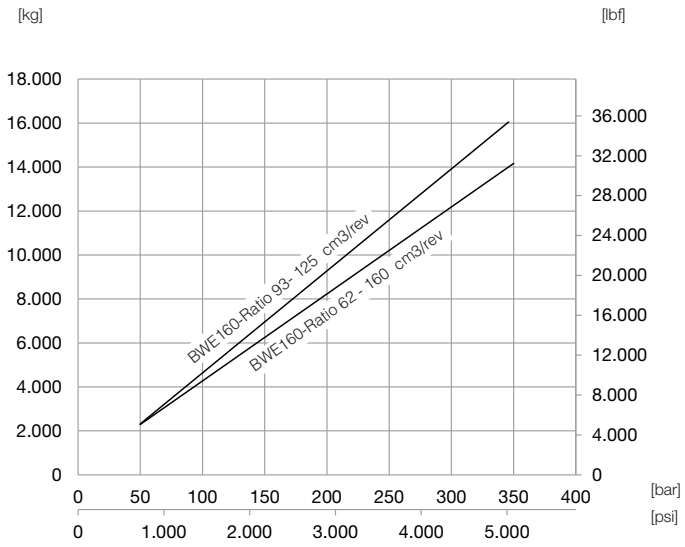
Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 24 [mm]	Rope length	[m]	54	111	174	238 (3)	309	381
Rope Diameter Ø 26 [mm]	Rope length	[m]	50	103	162	222 (3)	289	357
Rope Diameter Ø 28 [mm]	Rope length	[m]	47	96	151	208 (3)	271	-

Working layer (2)			1	2	3	4	5	6
Rope Diameter Ø 0.94 [in]	Rope length	[ft]	179	365	571	782 (3)	1014	1251
Rope Diameter Ø 1.02 [in]	Rope length	[ft]	166	339	531	729 (3)	948	1171
Rope Diameter Ø 1.10 [in]	Rope length	[ft]	154	316	497	684 (3)	891	-

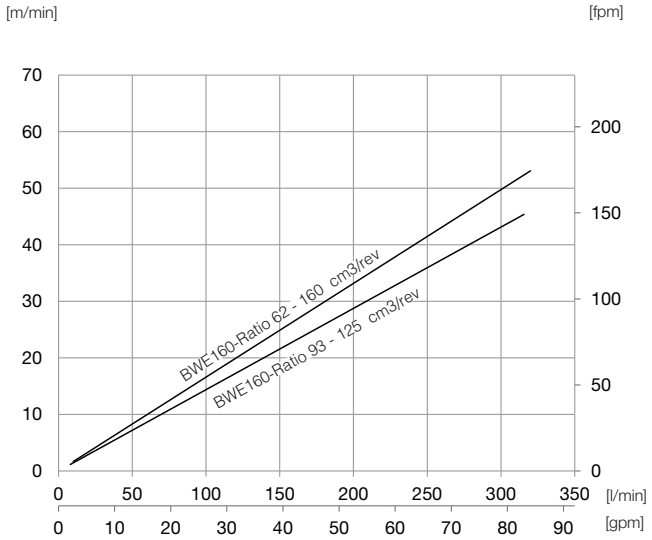
(1) Last working layer
(2) Last indicated Layer is intended only as Storage
(3) Last working and storage layer in case of pressure roller in position Right 02 and Left 02. See page B2 for more details.

Axial Piston Motor Fixed Displacement

Maximum Line pull at first layer

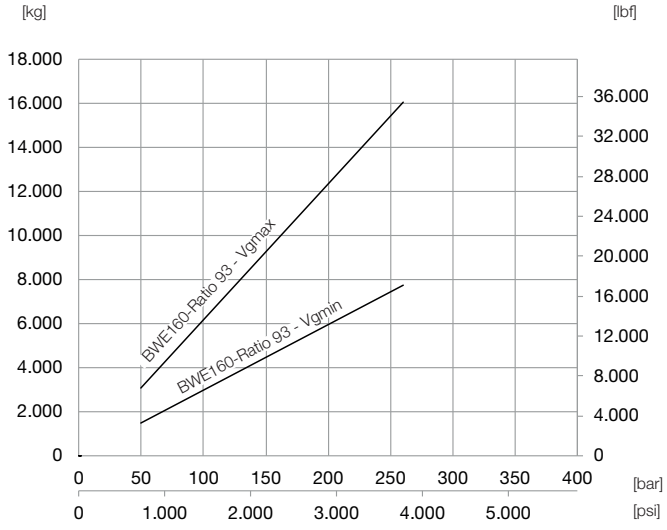


Maximum Speed at first layer



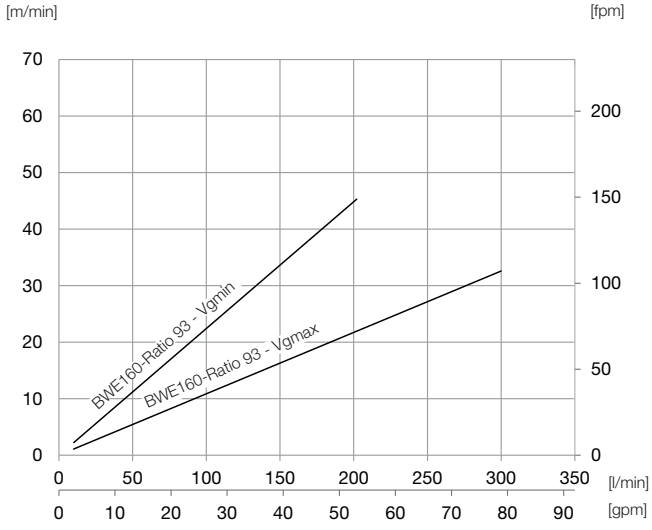
Axial Piston Motor Variable Displacement

Maximum Line pull at first layer



Vg_{max} = 166.2 cm^3/rev [10.13 in^3/rev]
Vg_{min} = 80 cm^3/rev [4.88 in^3/rev]

Maximum Speed at first layer



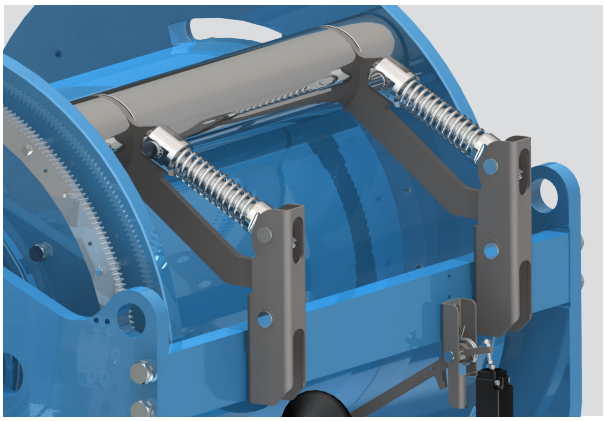
Vg_{max} = 166.2 cm^3/rev [10.13 in^3/rev] - Max 300 l/min [79 gpm] allowed
Vg_{min} = 80 cm^3/rev [4.88 in^3/rev] - Max 201 l/min [53 gpm] allowed

Note:
- All data shown in this page are ONLY FOR INFORMATION. The actual data will be issued according to Customer application and Duty Cycle.

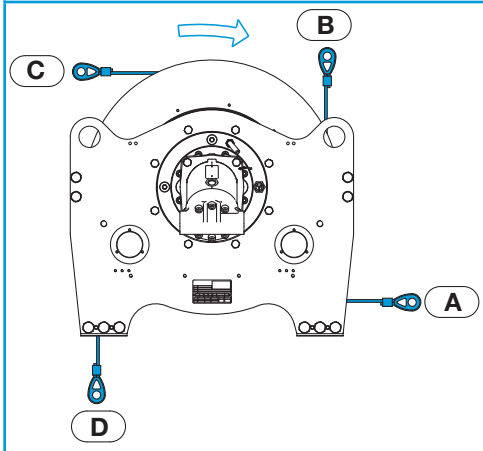
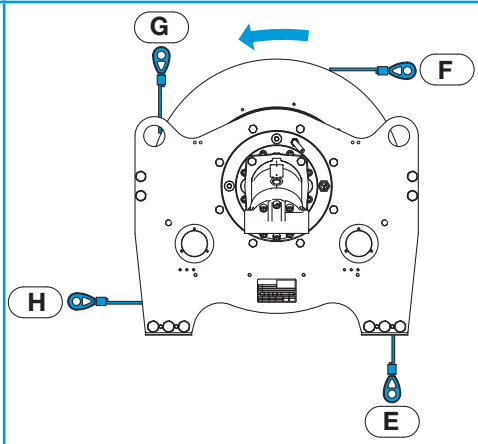
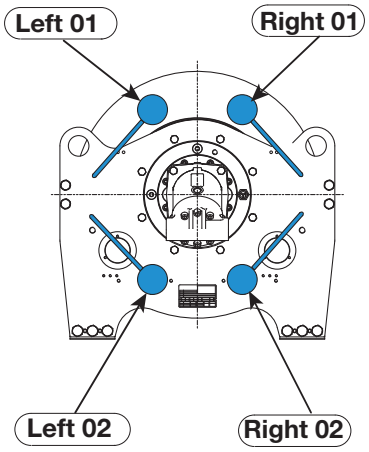
B

PRESSURE ROLLER

P Presence of Pressure Roller



The pressure roller ensures the correct winding of the rope on the drum and is highly recommended when there is more than one layer of rope wounded on the drum.

Rope Exit		Positions of Pressure Roller
Winding Direction 01	Winding Direction 02	
		

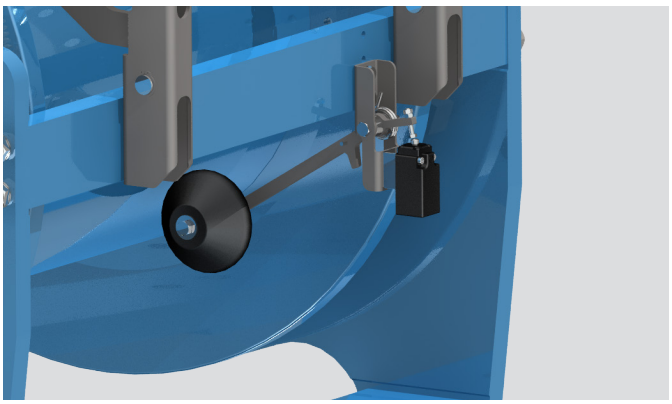
Pressure Roller Position	Rope Exit							
	Winding Direction 01				Winding Direction 02			
	A	B	C	D	E	F	G	H
Right 01			x		x			
Right 02 [1]		x						x
Left 01				x		x		
Left 02 [1]	x						x	

Pressure roller position in the table are the one recommended. Other position available on request
Define the mounting position of Pressure Roller and Electic Min in the order. **Electric / hydraulic limit switch cannot be in the same position of the main pressure roller**

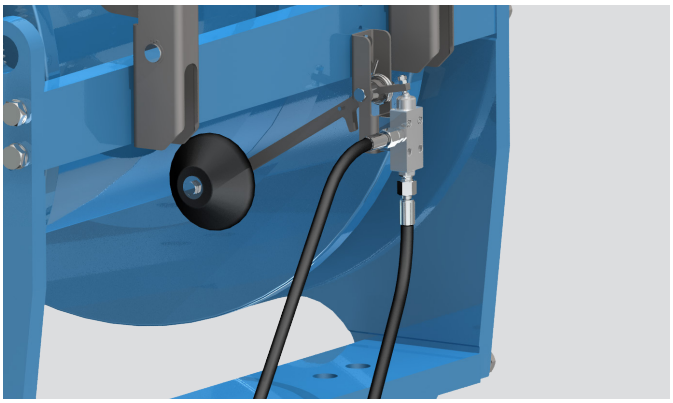
[1] For position Right 02 and Left 02, the maximum layer of rope could be limited. Contact Dana Sales for approval before ordering

SAFETY WRAPS LIMIT SWITCH

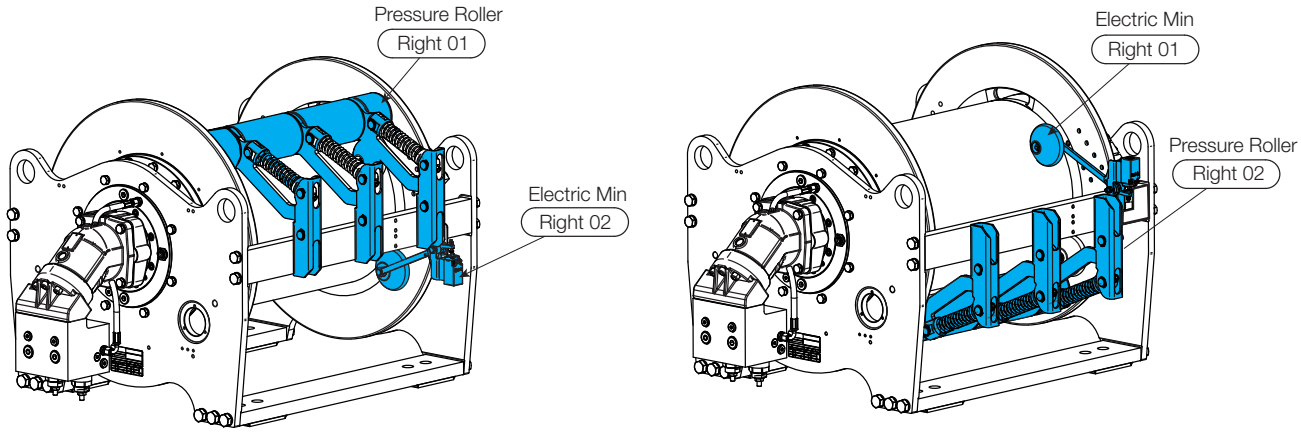
EL Minimum Electric Limit Switch



HY Minimum Hydraulic Limit Switch



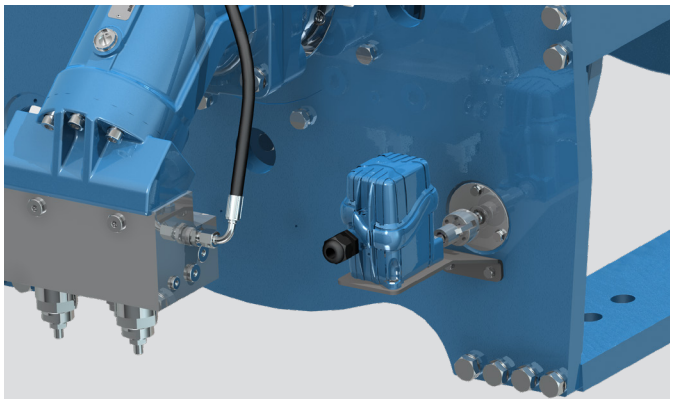
These devices ensure a minimum number of wraps always needed to be wounded on the drum for safety reason, to avoid rope breakage causing the fall of the load.
Rotative Switches also ensure that the maximum rope capacity of the drum is not exceeded.

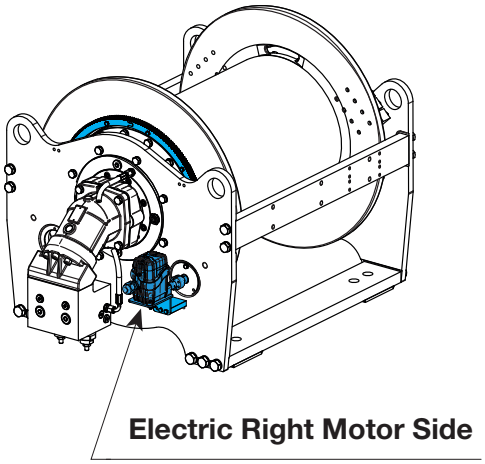


Define the mounting position of Pressure Roller and Electic Min in the order. **They cannot be in the same Position.**
For the positions opposite to the ones shown, referring to the vertical axis os the winch, their labels can be obtained by replacing “Right” with “Left”

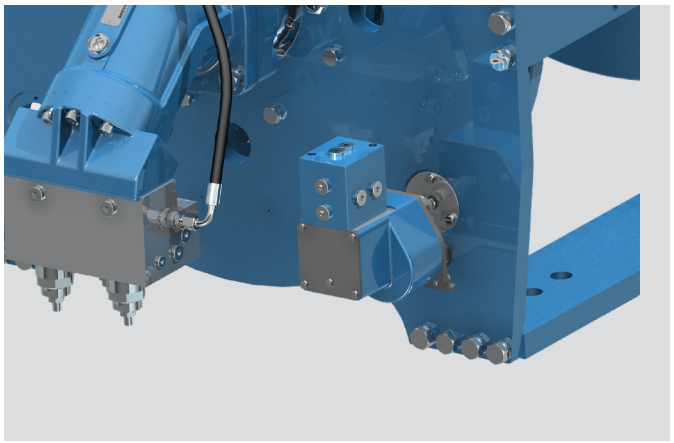
ROTARY LIMIT SWITCH

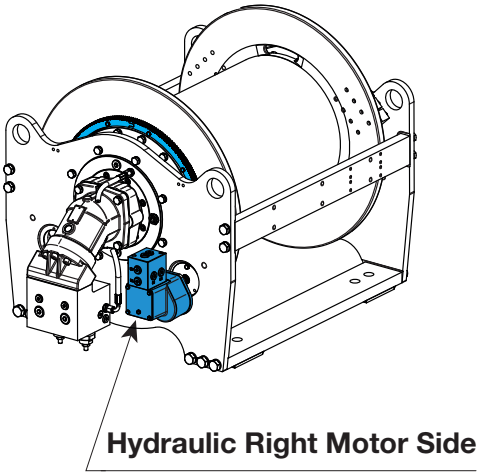
RE [1] Min/Max Rotative Electric Limit Switch



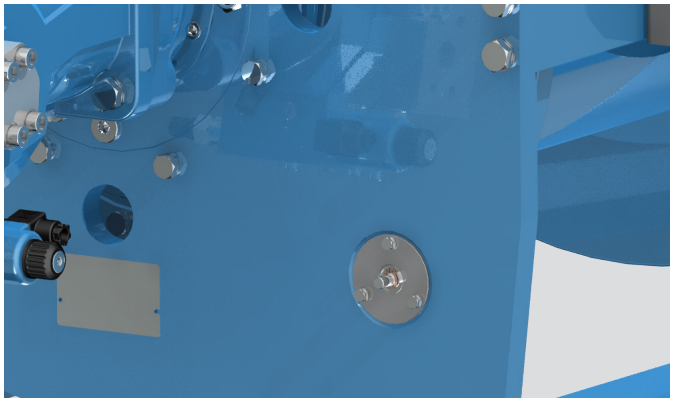


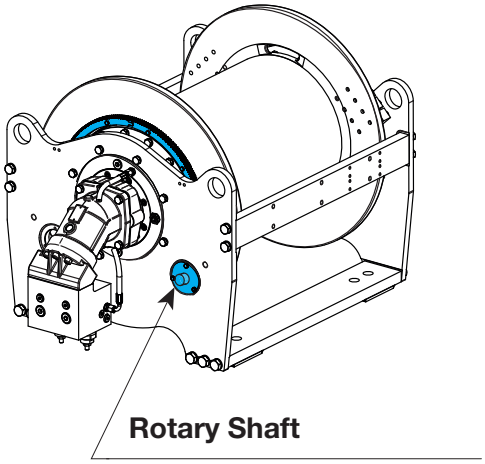
RH [1] Min/Max Rotative Hydraulic Limit Switch





RS Rotary Shaft (Predisposition for Rotary Switch or Encoder)

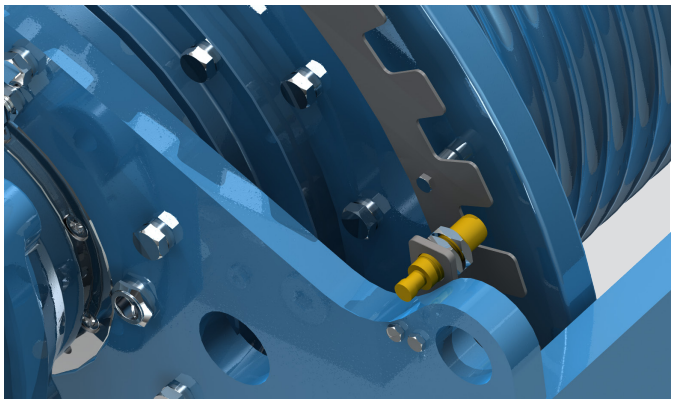


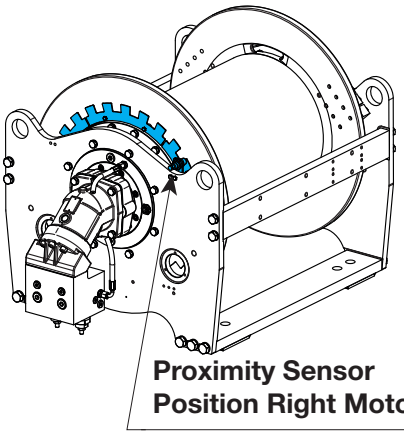


[1] Any specific request in terms of switch precision must be specified during quotation phase

SPEED SENSOR

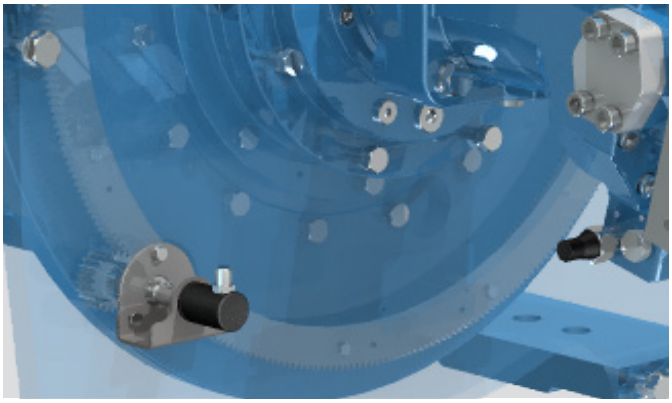
E1 Proximity Speed Sensor

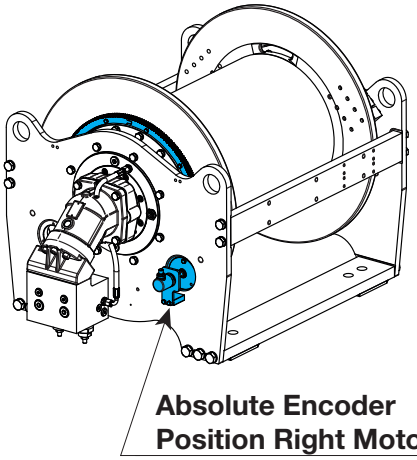




Our stainless-steel Proximity sensor (E1) is used to read the rotational speed of the drum, providing the user an information of the rote speed. Using two sensors is also possible to define the sense of rotation of the drum, giving information about lifting or lowering of the load.

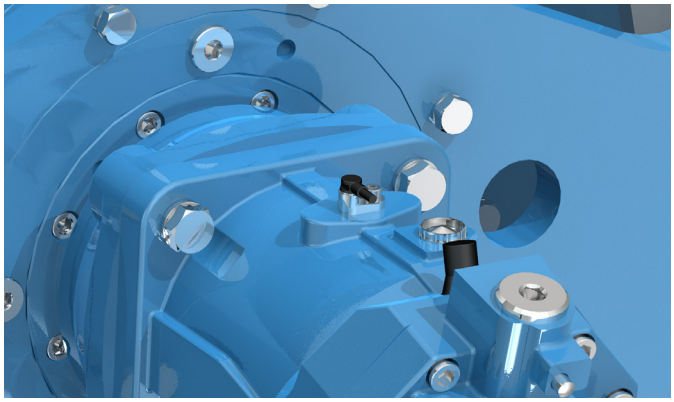
E2 Encoder



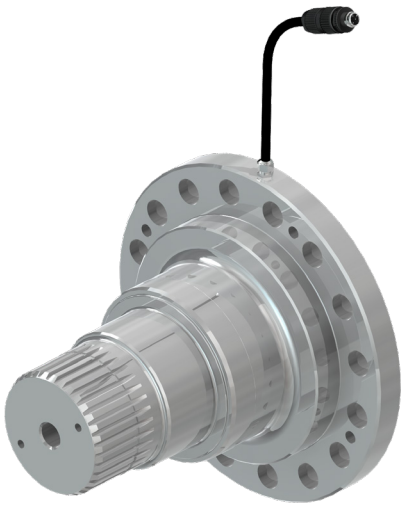


The Encoder reads the speed of the drum and the rotation direction, providing information on the speed of the rope. Using an absolute encoder is also possible to collect information about the length of the rope still on the drum or unwounded. It is also possible to have the rotative speed sensor on the Hydraulic Motor.

E3 Hall Effect Speed Sensor



TORQUE SENSOR

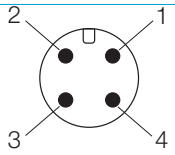


This sensor embedded in the winch is able to measure the torque applied to the drum at any time, during winch operation.

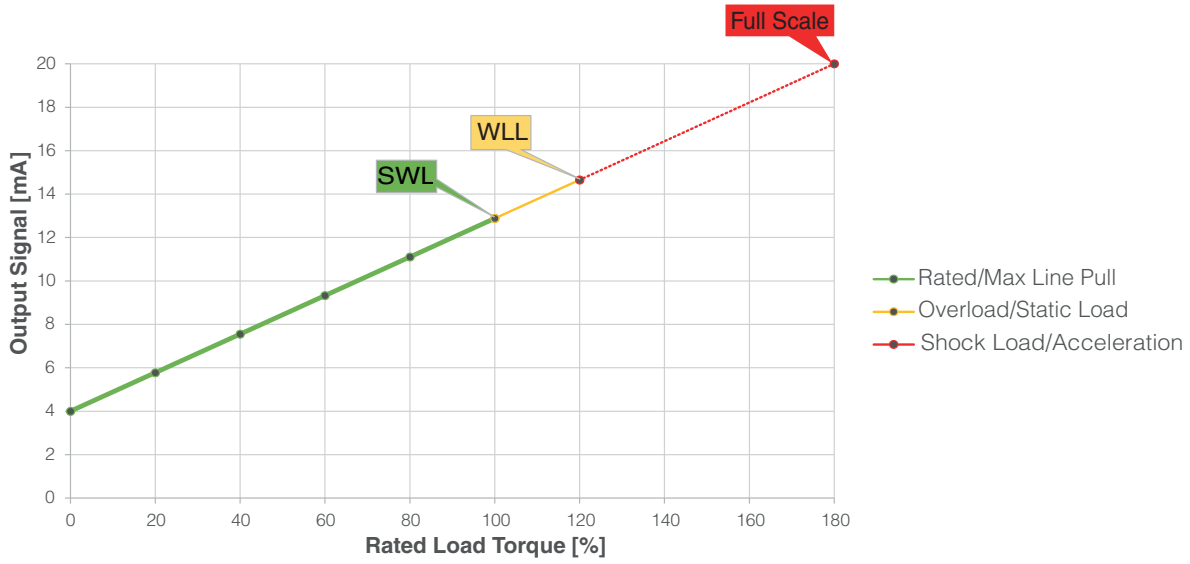
The unique design and electronic features are made to provide high precision and reliability.

Fully tested.

Technical Data	
Available Winch Size [1]	BWE015 - BWE025 - BWE035 - BWE055 - BWE070 BWE085 - BWE105 - BWE125 - BWE160
Output signal	4 ÷ 20 [mA]
Full Scale [2]	180% of max Line pull
Operating Temperature	-20° ÷ 40° [°C] / -4° ÷ 104° [°F]
Functional Safety [3]	Available with or without redundancy
International Protection	IP67 (electronic device)
Integrated signal converter	
Cable length 0.15 m [0.49 ft]	
Connector M12x1 - 4 pin	

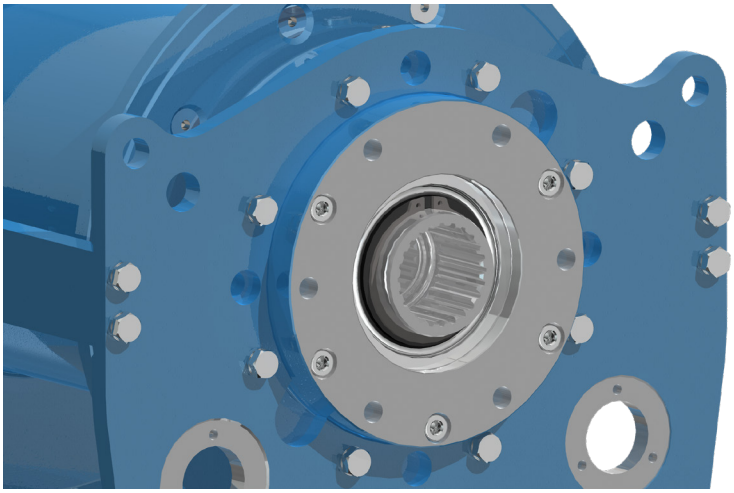


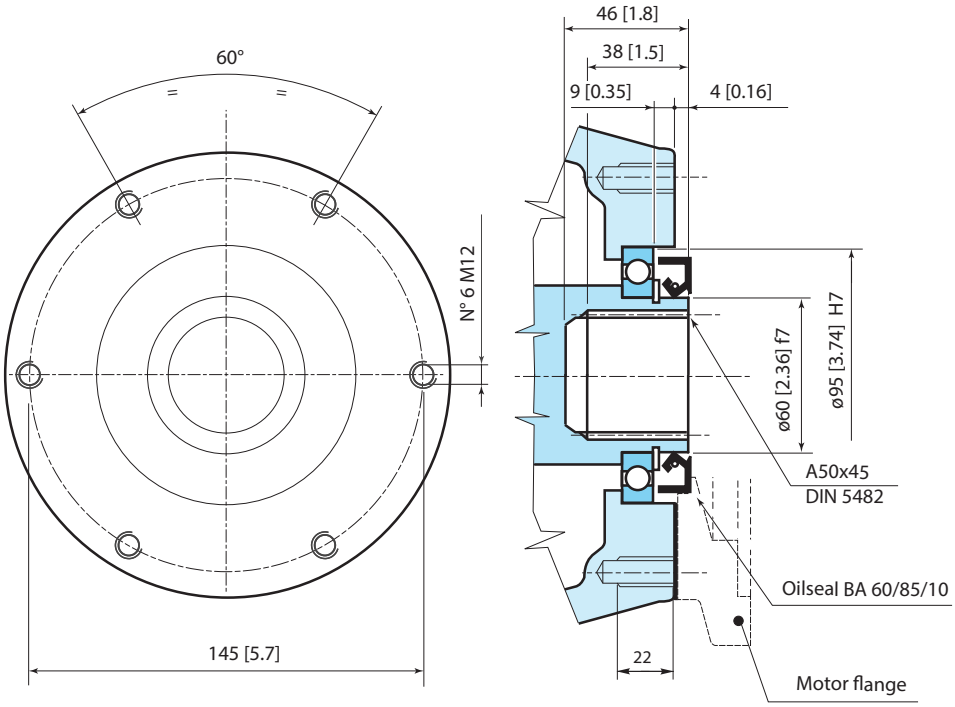
Pin number	Connections
1	+ Supply
2	- Supply
3	OUT 1
4	OUT 2



[1] Not available for lifting of personnel application
[2] 180% has to be considered as Full Scale of the Sensor ONLY, this setting shall not be used as winch overload indicator, shall not be considered as working load limit (WLL) or as the max performance of the winch
[3] The redundant version can be used to build a system that achieves PLd (according to EN 13849-1), if the system is able to reach PLd (or higher) overall

The universal input enables the coupling of many types of motorizations by means of a special flange and adapter coupling.

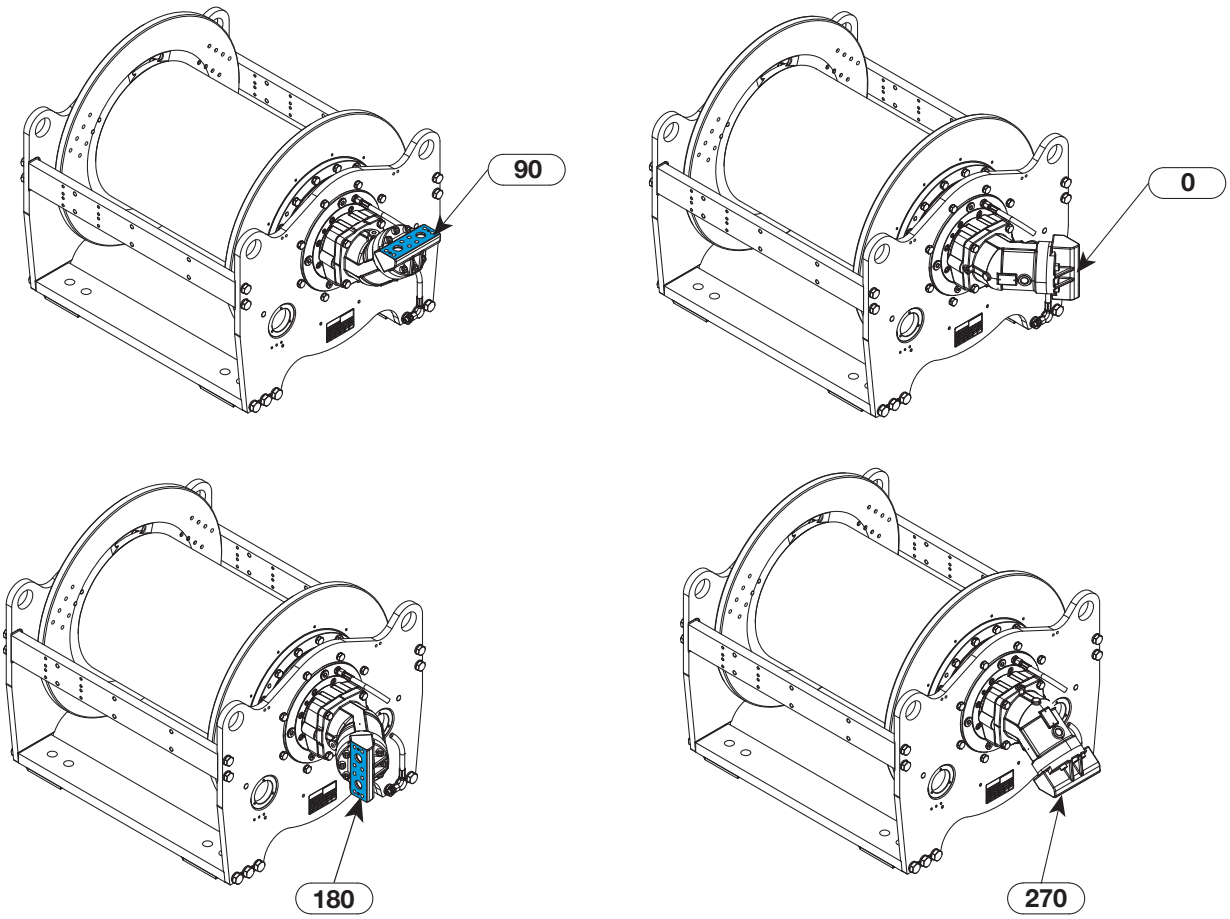




HYDRAULIC MOTOR MOUNTING POSITIONS

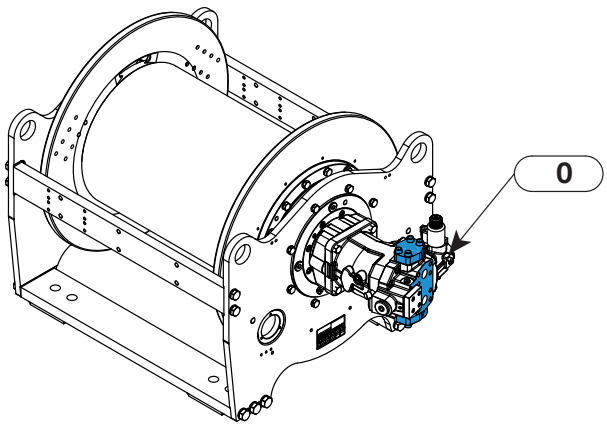
INLET PORT ORIENTATION

Define the motor position based on the input ports of the motors
Position of motor inlet port and control valve may influence the position of the accessories (i.e. encoder).
Different motor position and brake valve may affect the accessories position

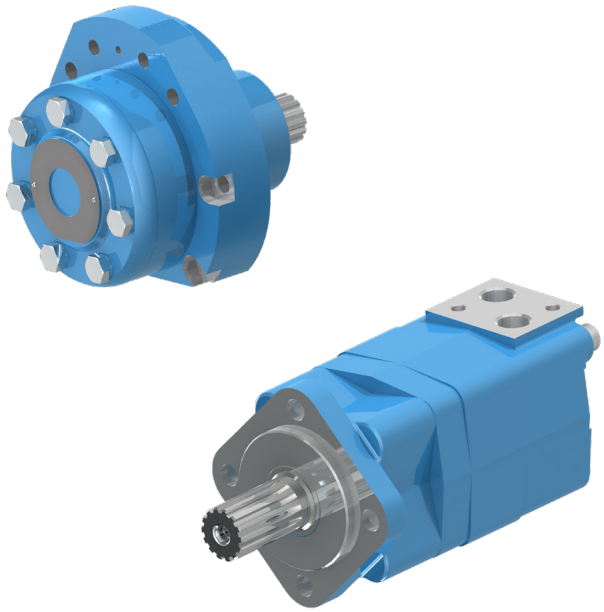


Motor with Lateral Inlet Ports

Even in presence of motor with lateral inlet ports, you have to consider the orientation of main body.



Orbital Motor Fixed Displacement



Our range of Orbital motor is the perfect fit for all the winch application where high torque and low speed are required.

The BRZV range able to reach peak pressure of 225 bar, can offer different displacement between 50 cc and 400 cc, compact and reliable, is recommended when compactness is a plus.

The HR range able to reach peak pressure of 315 bar, can offer different displacement between 80 cc and 400 cc, robust and versatile, is recommended when efficiency is a plus.

All the motors are avilable with brake control valve, single or double-overcenter.

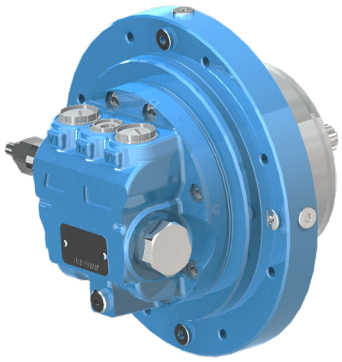
BRZV Orbital Motors Working Conditions

Technical Data									
Size				**80**	**100**	**130**	**160**	**200**	**250**
Displacement		Vg_{max}	cm^3/rev [in^3/rev]	80.4 [4.9]	100 [6.1]	125.7 [7.66]	160 [9.76]	200 [12.2]	250 [15.2]
Max pressure	Cont.	p_{nom}	bar [psi]	175 [2537]	175 [2537]	175 [2537]	175 [2537]	175 [2537]	175 [2537]
	Peak	p_{max}	bar [psi]	225 [3262]	225 [3262]	225 [3262]	225 [3262]	225 [3262]	225 [3262]
Max speed		n_{0max}	rpm	746	600	477	375	300	240
Max flow		q_{max}	l/min [gpm]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]	60 [15.9]
Drain ports		DR	ISO	Not Available					
Valve ports		V1	ISO	3/8 G					
		V2							

HR Orbital Motors Working Conditions

Technical Data								
Size				**80**	**100**	**130**	**160**	**200**
Displacement		Vg_{max}	cm^3/rev [in^3/rev]	80.4 [4.9]	100 [6.1]	125.7 [7.66]	160 [9.76]	200 [12.2]
Max pressure	Cont.	p_{nom}	bar [psi]	210 [3045]	210 [3045]	210 [3045]	210 [3045]	210 [3045]
	Peak	p_{max}	bar [psi]	310 [4495]	310 [4495]	310 [4495]	310 [4495]	310 [4495]
Max speed		n_{0max}	rpm	932	750	596	468	375
Max flow		q_{max}	l/min [gpm]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]	75 [19.8]
Drain ports		DR	ISO	Not Available				
Valve ports		V1	ISO	3/4 G				
		V2						

B5VA Integrated Axial Piston Motor Fixed displacement



The B5VA is the unique solution that Dana offer to have the best compromise between compactness and performances.

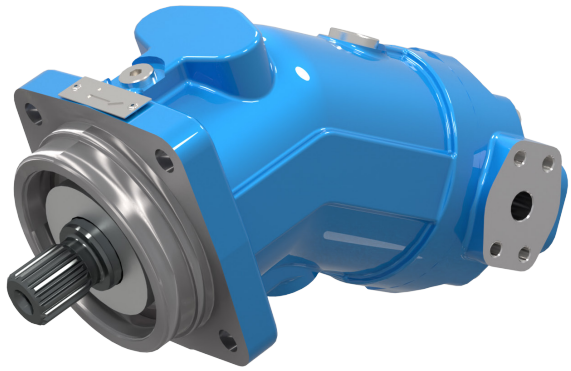
Able to reach a peak pressure of 350 bar, available in three different sizes, is recommended for all the application where speed, torque and efficiency are required.

The integrated brake control valve, with single or double overcenter, is the perfect blend of functionality and compactness.

B5VA Integrated Axial Piston Motors Working Conditions

Technical Data						
Size				**21**	**37**	**68**
Displacement		Vg_{max}	cm^3/rev [in^3/rev]	21.00 [1.28]	37.04 [2.26]	68 [4.15]
Max pressure	Cont.	p_{nom}	bar [psi]	300 [4351]	300 [4351]	300 [4351]
	Peak	p_{max}	bar [psi]	350 [5076]	350 [5076]	350 [5076]
Max speed		n_{0max}	rpm	2857	2430	2205
Max flow		q_{max}	l/min [gpm]	60 [15.8]	90 [23.77]	150 [39.6]
Drain ports		DR	ISO	1/4 G	3/8 G	1/2 G
Valve ports		V1	ISO	1/2 G	1/2 G	3/4 G
		V2				

SH11C Axial Piston Motor Fixed Displacement



SH11C is a fixed displacement motor family, with bent axis piston design for operation in both open and closed circuit.

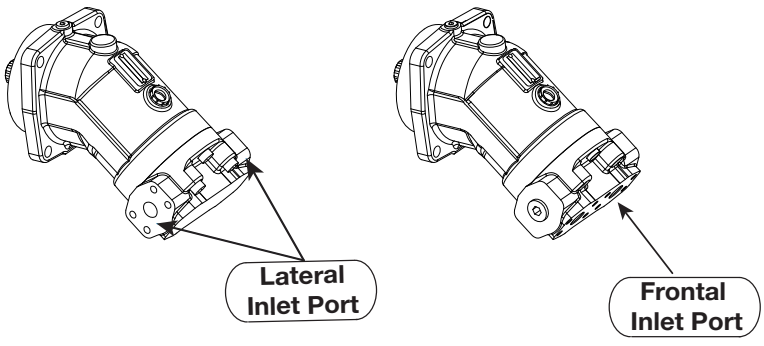
The proven design incorporating the lens shape valve plate, the high quality components and manufacturing techniques make the SH11C motors able to provide up to 430 bar [6235 psi] continuous and 480 bar [6960 psi] peak performance.

Fully laboratory tested and field proven, these units provide maximum efficiency and long life. Heavy duty bearings permit high radial and axial loads. Versatile design includes a variety of port plates, shaft ends and valves package that will fit the SH11C motors to any application both industrial and mobile. SH11C motors are available in both ISO and SAE version.

SH11C Axial Piston Motors Working Conditions

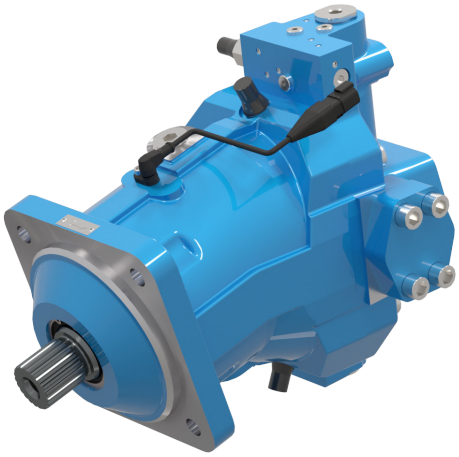
Technical Data							
Size				**075**	**090**	**125**	**160**
Displacement		Vg_{max}	cm^3/rev [in^3/rev]	77.82 [4.747]	86.23 [5.26]	124.8 [7.613]	163.9 [9.998]
Max pressure	Cont.	p_{nom}	bar [psi]	430 [6235]	430 [6235]	430 [6235]	430 [6235]
	Peak	p_{max}	bar [psi]	480 [6960]	480 [6960]	480 [6960]	480 [6960]
Max speed		n_{0max}	rpm	4500	4500	4000	3600
Max flow		q_{max}	l/min [gpm]	350 [92.4]	388 [102.5]	500 [132]	590 [155.76]
Drain ports		DR	ISO	1/2 G			
			SAE	1” 1/16 - 12 UNF 2B			
Valve ports		V1	ISO	1” SAE6000			1” 1/4 SAE6000
		V2					

SH11C - Lateral or Frontal Inlet Ports



Note:
The information stated in this page are only for reference, for detailed information see the dedicated catalog on official site Dana-Industrial.com

SH9V Axial Piston Motor Variable Displacement



SH9V series are a family of variable displacement motors, bent axis piston design for operation in both open and closed circuit.

The proven design incorporating the lens shape valve plate, the high quality components and manufacturing techniques make the SH9V series motors able to provide up to 430 bar [6235 psi] continuous and 480 bar [6960 psi] peak performance.

Long life heavy duty bearings permit high radial and axial loads.
Versatile design includes a variety of control and shaft ends that will adapt the SH9V series motors to any application both industrial and mobile.

SH9V Axial Piston Motors Working Conditions

Technical Data						
Size				**085**	**115**	**165**
Displacement		Vg_{max}	cm^3/rev [in^3/rev]	85.3 [5.203]	115.7 [7.05]	166.2 [10.13]
	Standard	Vg_{min}	cm^3/rev [in^3/rev]	40 [2.44]	56 [3.416]	80 [4.88]
	Minimum possible	Vg_{min}	cm^3/rev [in^3/rev]	17 [1.03]	23 [1.403]	33 [2.01]
Max pressure	Cont.	p_{nom}	bar [psi]	430 [6235]	430 [6235]	430 [6235]
	Peak	p_{max}	bar [psi]	480 [6960]	480 [6960]	480 [6960]
Max flow		q_{max}	l/min [gpm]	341 [90.02]	411 [108.5]	515 [135.96]
Drain ports		DR	ISO	1/2 G		3/4 G
			SAE	1” 1/16 - 12 UNF 2B		
Valve ports		V1	ISO	1” SAE6000		1” 1/4 SAE6000
		V2				

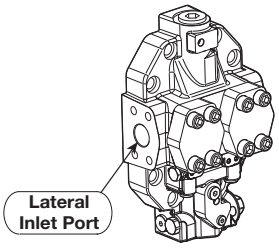
Controls and Accessories suggested

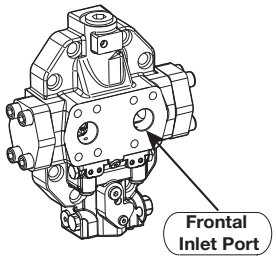
Electric two position Control 2EE
The 2EE Control Version with the pressure override allows the motor to swivel to Vg_{max} when the pressure setting is reached. The motor displacement is adjusted to Vg_{min} when the solenoid valve is switched on and if the operating pressure rises beyond the pressure setting, the pressure limiting device overrides the electric two positions control and the motor swivels out to Vg_{max}. Swivel range is from Vg_{min} to Vg_{max}.

Hall Effect Speed Sensor

TW and TZ sensors are available on all the Motor Displacement, see the dedicated catalogue.

SH9V - Lateral or Frontal Inlet Ports





Note:
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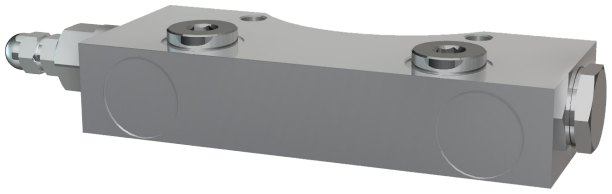
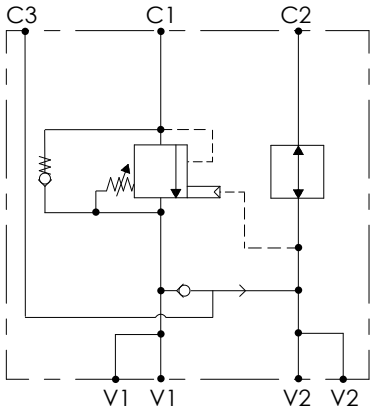
Brake Control Valve specifically designed for winch operation.

These valves fit perfectly with our hydraulic motor BRZV and HR Series, able to maximize the winch performances.

For BWE015, BWE025, BWE035, BWE055 and BWE070 Single Overcenter Valve as a standard and Double Overcenter Valve as option.

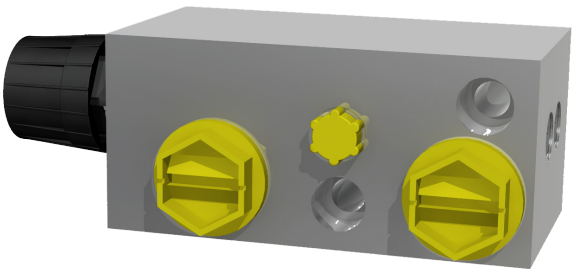
Single Overcenter Valve for BRZV Motor

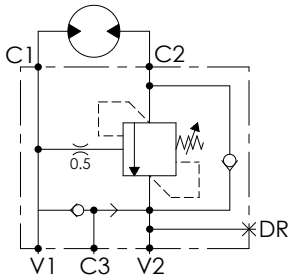




Technical Data		
Max operation pressure		420 [bar] / 6091 [psi]
Max Oil Flow		60 [l/min] / 15.8 [gpm]
Pilot Ratio		4.3:1 [i]
Valve ports	V1	3/8 G
	V2	

Single Overcenter Valve for HR Motor





Technical Data		
Max operation pressure		350 [bar] / 5076 [psi]
Max Oil Flow		150 [l/min] / 40.0 [gpm]
Pilot Ratio		4:1 [i]
Valve ports	V1	3/4 G
	V2	

CONTROL VALVE

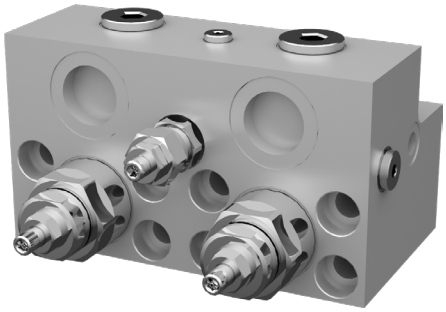
Brake Control Valve specifically designed for winch operation.

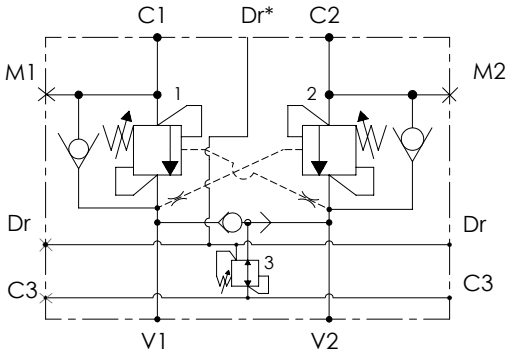
These valves fit perfectly with our hydraulic motors SH11C, SH11CR, SH7V, and SH9V series, able to maximize the winch performances. It also incorporates a pressure reducer cartridge on the brake line.

For BWE015, BWE025, BWE035, BWE055 and BWE070 Single Overcenter Valve as a standard and Double Overcenter Valve as option.

For BWE085, BWE105, BWE125 and BWE160, Double Overcenter Valve as a standard and Single Overcenter Valve as option.

Double Overcenter Valve for SH11C and SH11CR series (VM inlet port configuration)

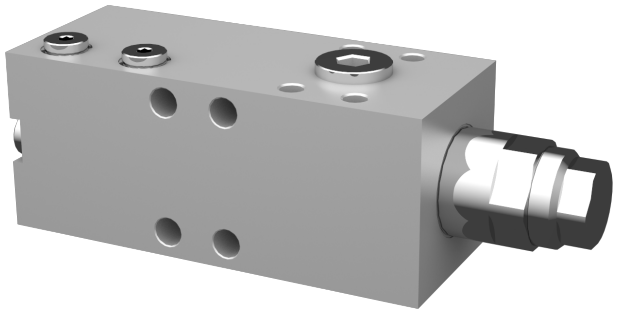


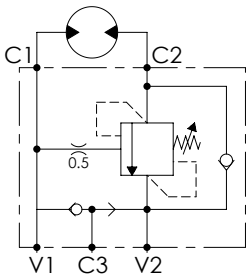


Technical Data	
Max operation pressure	400 [bar] / 5750 [psi]
Max Oil Flow	320 [l/min] / 85.3 [gpm]
Pilot Ratio	6:1 [i]
Max operation brake pressure	70 [bar] / 1000 [psi]

		SH11C 075 SH11CR 075	SH11C 090 SH11CR 090	SH11C 125 SH11CR 125	SH11C160 SH11CR 160
Valve ports	V1	1” SAE6000			1” 1/4 SAE6000
	V2				

Single Overcenter Valve for SH11C, SH9V and SH7V series (LM inlet port configuration)





Technical Data	
Max operation pressure	500 [bar] / 7190 [psi]
Max Oil Flow	350 [l/min] / 85.3 [gpm]
Pilot Ratio	6:1 [i]

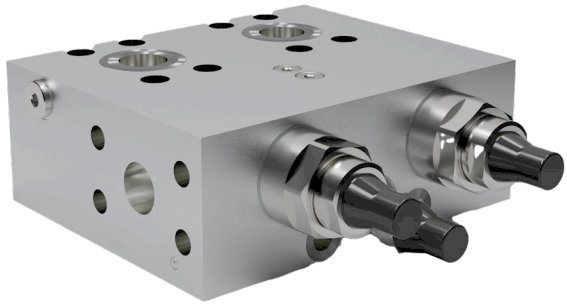
		SH11C 075 SH9V 085	SH11C 090 SH9V 115	SH11C 125 SH9V 165	SH11C 160
Valve ports	V1	1” SAE6000			1” 1/4 SAE6000
	V2				

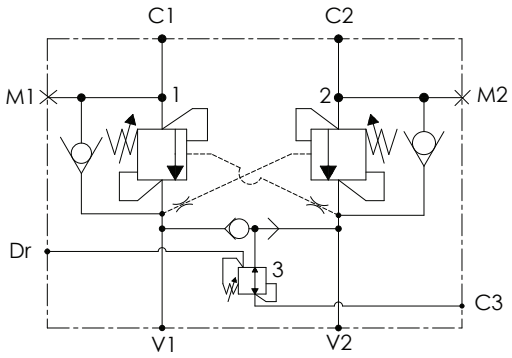
Brake Control Valve specifically designed for winch operation.

This valve fit perfectly with our hydraulic motors SH9V and SH7V Series, able to maximize the winch performances. It also incorporates a pressure reducer cartridge on the brake line.

For BWE085, BWE105, BWE125 and BWE160, Double Overcenter Valve as a standard and Single Overcenter Valve as option.

Double Overcenter Valve for SH9V and SH7V Series (FM inlet port configuration)

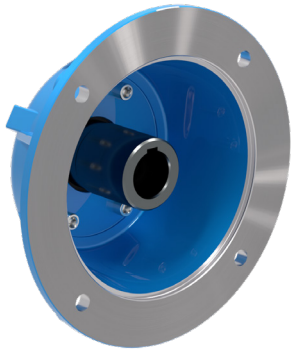




Technical Data	
Max operation pressure	400 [bar] / 5750 [psi]
Max Oil Flow	320 [l/min] / 85.3 [gpm]
Pilot Ratio	6:1 [i]
Max operation brake pressure	70 [bar] / 1000 [psi]

		SH9V 085	**SH9V 115**	**SH9V 165**
Valve ports	V1	1” SAE6000		1” 1/4 SAE6000
	V2			

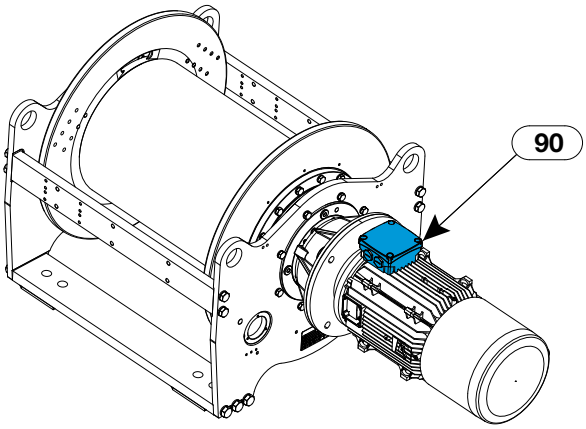
ELECTRICAL MOTOR FLANGE

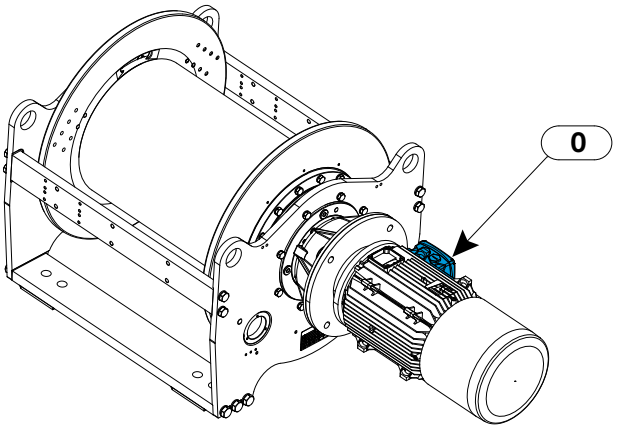


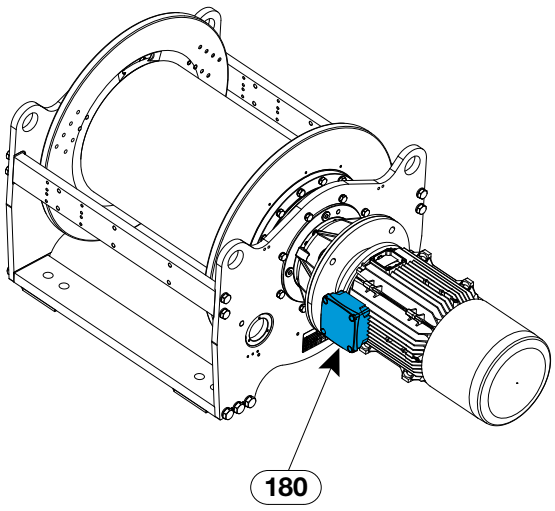
We are able to provide adaptor motor flange and shaft for the majority of the electric motors available in the market.

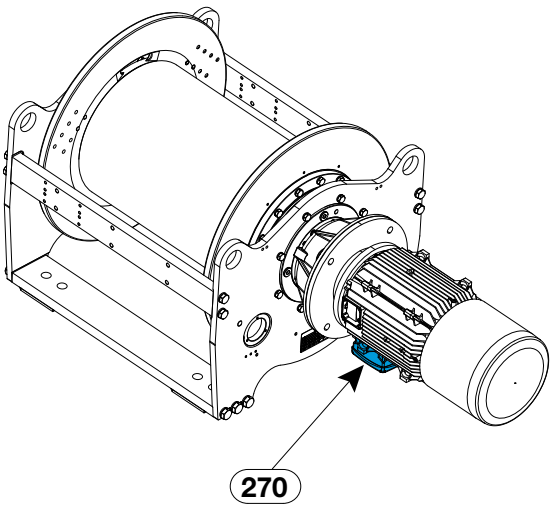
IEC and NEMA as standard, we can also supply special adaptors upon request.

ELECTRIC BOX ORIENTATION

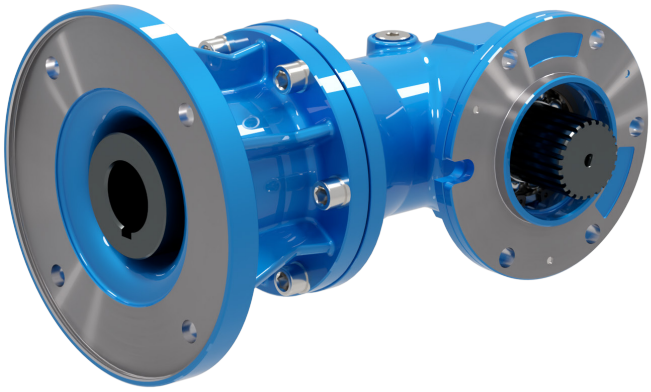








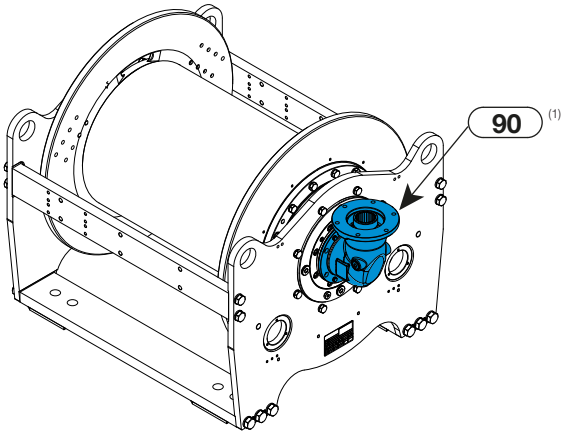
Depending on electric motor weight the flange assembly could not be enough, and additional support may need. Contact Dana Sales for approval

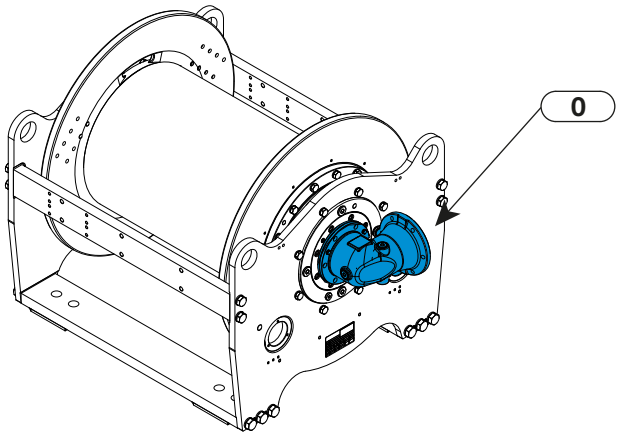


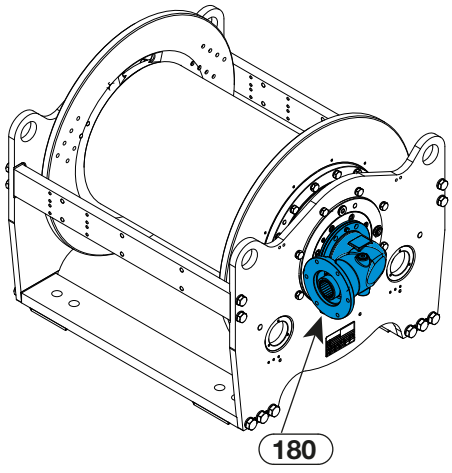
We are able to provide bevel input for all of the BWE winches.

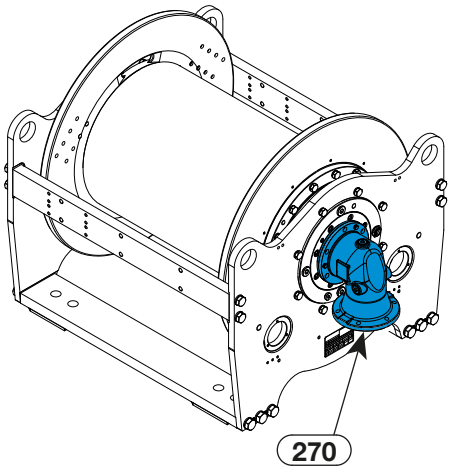
The bevel input helps when there are space constraints and to facilitate motor assembly and connection.

INPUT FLANGE ORIENTATION







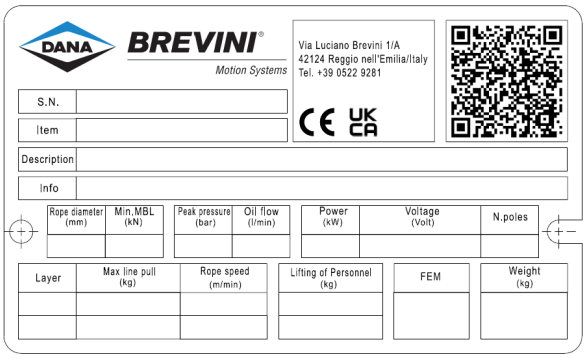


(1) To ensure proper lubrication, the bevel gear at position 90 must be equipped with either a lubrication tank kit or a fittings kit.

CERTIFICATIONS AND PRODUCT DOCUMENTATION

New BWE Winch Series is designed to meet the majority of global Marine and Offshore Standards.
The winches configurations shown in this catalog are already Type Approved from DNV and ABS, and already compliant to API-2c.
Other configurations and certifications have to be requested and evaluated case-by-case.

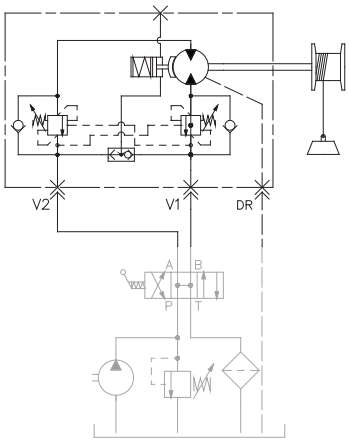
Every BWE unit comes with a nameplate featuring a QR code for instant access to essential documentation. By simply scanning the code, users can quickly download the installation and maintenance manuals



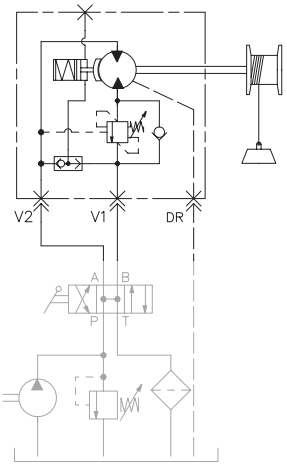
The winch support frame must be fixed securely to a good level surface of adequate thickness. Use quality and grade fixing nuts and bolts with correct torque setting according to dimensional drawings.

A and B ports of the proportional directional valve must be open to tank while the control valve is in neutral position. This prevents any build up of hydraulic pressure which could cause the negative brake to accidentally open.

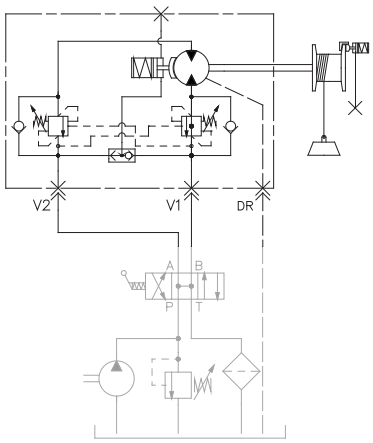
with Double Overcenter Valve



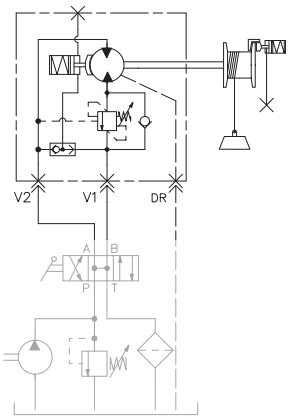
with Single Overcenter Valve



Lifting of Personnel
with Double Overcenter Valve



Lifting of Personnel
with Single Overcenter Valve



The supply, return and drain hoses must all be of adequate internal dimensions to support the maximum working and drainage flow rates. Draining hoses must always flow directly to the oil reservoir.

Standard hoisting direction is “01 – clockwise”. For “02 – counterclockwise” hoisting direction, please specify when ordering.

The Brevini® winches are designed to hold 5 layers of cable of which 3 windings always present at the 1st layer.
Carefully follow the cable manufacturers instructions and respect all guidelines and rules ordering.

For Hydraulic oil use mineral oils with wear resistant additives, type HLP (DIN51524) or HM (ISO 6743/4) and viscosity according to ISO VG46. Recommended filtration 10µm absolute or ß10-75.

For the Brevini® motorized winches, use gear mineral oil with E.P. characteristics according to ISO VG150 or SAE 80W/90. For applications exposed to extreme temperature changes, use a synthetic oil with E.P. properties, with minimum viscosity of ISO VG150 or SAE 80W/90.
For the Brevini® motorized winches, equipped with sprag clutches, use gear mineral oil ISO VG150 with NO E.P. characteristics.

It is recommended to turn on the machinery without load for 5÷10 minutes at start-up.

Foundamental characteristics of the oils

The important parameters to consider when choosing the type of oil are:
- viscosity at nominal operating conditions
- additives

The same oil must lubricate the bearings, the gears and the brake.
All these components work inside the same box, in different operating conditions.

Viscosity

Nominal viscosity refers to a temperature of 40°C, but rapidly decreases as the temperature increases.
If the gear unit operating temperature is between 50°C and 70°C, a nominal viscosity can be chosen according to the following guide table, choosing the highest viscosity if the highest operating temperature is foreseen.

Additives

In addition to the normal anti-foaming and antioxidant additives, it is important to use lubricating oils with additives that provide EP (extreme pressure) and antiwear properties, according to ISO 6743-6 L-CKC or DIN 51517-3 CLP. The lower the gear unit output speed is the more marked the EP characteristics of the products have to be. It should be remembered that the chemical compounds replacing hydrodynamic lubrication are formed to the detriment of the original EP load.
Therefore, with very low speeds and high loads it is important to respect the maintenance intervals so as not to excessively diminish the lubricating characteristics of the oil.

Types of oils

The oils available generally belong to three large families.

- Mineral oils
- Polyalphaolefin (PAO) synthetic oils
- Polyalkylene glycol (PAG) synthetic oils

The most suitable choice is generally tied to the conditions of use.
Gear units that are not particularly loaded and with a discontinuous operating cycle, without considerable temperature ranges, can be lubricated with mineral oil.

In cases of heavy use, when the gear units are very loaded and in a continuous way, with resultant temperature increase, it is best to use polyalphaolefin synthetic lubricants.

The use of polyalkylene glycol oils is not allowed as they are not compatible with other oils and are often completely mixable with water: this phenomenon is particularly dangerous because it is not noticed, but rapidly diminishes the lubricating properties of the oil. Moreover, these lubricants can be chemically active against the oil seals and paint inside the gear unit.

In addition to the above, there are also hydraulic oils and oils for the food industry.

The former are used for the command of negative brakes.
The latter have a specific use in the food industry since they are special products that are not harmful to health.
Given below is table of lubricants, proposed by the best-known producers, with characteristics suitable for the lubrication of Brevini® gear units.

In case the winch is provided with sprag clutch, the oil must not contain EP additives based on graphite or molybdenum sulfide.

If the motor is included into supply, Brevini® BWE winches are provided with lubricant mineral oil ISO VG150 (standard). Different oil from standard are available on demand. Please contact Dana Salese for further information.
If the motor is not included into supply, Brevini® BWE winches are delivered withoil oil

For detail instructions about installation and maintenance refers to Dana IMM that you can find in website Dana-Industrial.com

Contamination

During normal operation, due to running-in of the surfaces, metallic micro-particles will inevitably form in the oil.
This contamination can shorten the life of the bearings, resulting in early breakdown of the gear unit.
To limit and control this phenomenon, without resorting to frequent and costly oil changes, a suitable auxiliary oil circulation system with filtering and cooling of the oil must be provided.
This system offers the dual advantage of controlling the level of contamination through the use of special filters and stabilizing the operating temperature at a level more suitable for ensuring the required viscosity.
For lubrication problems with gear units intended for particular uses, regarding the construction type and operating parameters, it is advisable to contact the Dana Sales Dept.

Manufacturer	Mineral oils			Poly-Alpha-Olefin synthetic oils (PAO)		
	ISO VG 150	ISO VG 220	ISO VG 320	ISO VG 150	ISO VG 220	ISO VG 320
ADDINOL	Eco Gear 150 M	Eco Gear 220 M	Eco Gear 320 M	Eco Gear 150 S	Eco Gear 220 S	Eco Gear 320 S
ARAL	Degol BG 50 Plus	Degol BG 220 Plus	Degol BG 320 Plus	Degol PAS 150	Degol PAS 220	Degol PAS 320
BP	Energol GR-XP 150	Energol GR-XP 220	Energol GR-XP 320	Enersyn EPX 150	Enersyn EPX 220	Enersyn EPX 320
CASTROL	Alpha SP 150	Alpha SP 220	Alpha SP 320	Alphasyn EP 150	Alphasyn EP 220	Alphasyn EP 320
CEPSA	Engranajes XMP 150	Engranajes XMP 220	Engranajes XMP 320	-	Aerogear Synt 220	Aerogear Synt 320
CHEVRON	-	-	-	Tegra Synthetic Gear 150	Tegra Synthetic Gear 220	Tegra Synthetic Gear 320
ENI	Blasia 150	Blasia 220	Blasia 320	Blasia SX 150	Blasia SX 220	Blasia SX 320
FUCHS	Renolin CLP Gear Oil 150	Renolin CLP Gear Oil 220	Renolin CLP Gear Oil 320	Renolin Unisyn CLP 150	Renolin Unisyn CLP 220	Renolin Unisyn CLP 320
KLÜBER	Klüberoil GEM 1-150 N	Klüberoil GEM 1-220 N	Klüberoil GEM 1-320 N	Klübersynth GEM 4-150 N	Klübersynth GEM 4-220 N	Klübersynth GEM 4-320 N
LUBRITECH	Gearmaster CLP 150	Gearmaster CLP 220	Gearmaster CLP 320	Gearmaster SYN 150	Gearmaster SYN 220	Gearmaster SYN 320
MOBIL	Mobilgear XMP 150	Mobilgear XMP 220	Mobilgear XMP 320	Mobil SHC Gear 150	Mobil SHC Gear 220	Mobil SHC Gear 320
MOBIL	-	-	-	SHC 629	SHC 630	SHC 632
MOLIKOTE	L-0115	L-0122	L-0132	L-2115	L-2122	L-2132
NILS	Ripress EP 150	Ripress EP 220	Ripress EP 320	Atoil Synth PAO 150	-	Atol Synth PAO 320
PANOLIN	-	-	-	EP Gear Synth 150	EP Gear Synth 150	EP Gear Synth 150
Q8	Goya NT 150	Goya NT 220	Goya NT 320	El Greco 150	El Greco 220	El Greco 320
REPSOL	Super Tauro 150	Super Tauro 220	Super Tauro 320	Super Tauro Sintetico 150	Super Tauro Sintetico 220	Super Tauro Sintetico 320
SHELL	Omala S2 G 150	Omala S2 G 220	Omala S2 320	Omala S4 GX 150	Omala S4 GX 220	Omala S4 GX 320
SHELL	-	-	-	Morlina S4 B 150	Morlina S4 B 220	Morlina S4 B 320
SUNOCO	Sun EP 150	Sun EP 220	Sun EP 320	-	-	-
TEXACO	Meropa 150	Meropa 220	Meropa 320	Pinnacle EP 150	Pinnacle EP 220	Pinnacle EP 320
TOTAL	Carter EP 150	Carter EP 220	Carter EP 320	Carter SH 150	Carter SH 220	Carter SH 320
TRIBOL	1100/150	1100/220	1100/320	-	-	1510/320

SELECTION WINCH TECHNICAL SHEET

DANA BREVINI Motion Systems

Date	Sales Rep.
SAC	Requested lead time for quotation

Customer*	Customer Type [OEM; End User;...]
Contact person*	Market Sector
Product* to be replaced ◯ or new application ◯	Machine Type*
Winches q.ty / batch	Winches q.ty/year
Requested Lead Time Prototype	Requested Lead time Serie
Target Price Prototype	Target Price Series
Description of the application	

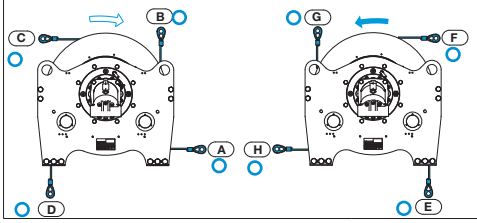
Winch charateristics

Winch Type* Lifting ◯ Pulling ◯ Lifting person ◯ Lifting person + cargo ◯

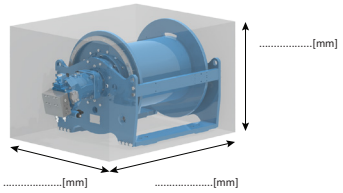
Drum* Smooth ◯ Grooved ◯ Helical left ◯ Helical right ◯ Lebus style left ◯ Lebus style right ◯

Req. Line pull on drum [kg]*: At layer*:	Rope diameter [mm]*:
	Storage Rope Lenght[m]
Req. Speed on drum [m/min]*: At layer*:	Working Rope Length [m]*:
FEM class or Duty cycle:	Certifications required:
	Standards to be compliant:
Ambient Temperature [°C]:	Operating temperature [°C]:

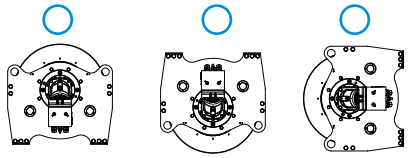
Exit of the rope



Maximum dimension or other limitations



Mounting position



Motor power supply

Motor not included into supply* ◯ Electric* ◯ Hydraulic* ◯

Model (1)	Manufacturer (1)
Flange type (1)	Shaft type (1)
Electric	**Hydraulic**
Supply Frequency [Hz]	Max pressure available at the motor [bar]
Supply Voltage [V]	Working pressure [bar]
N. of Poles (1)	Displacement [cc/rev] (1) min: max:
	Max oil flow available at the motor [l/min]

Accessories (2)

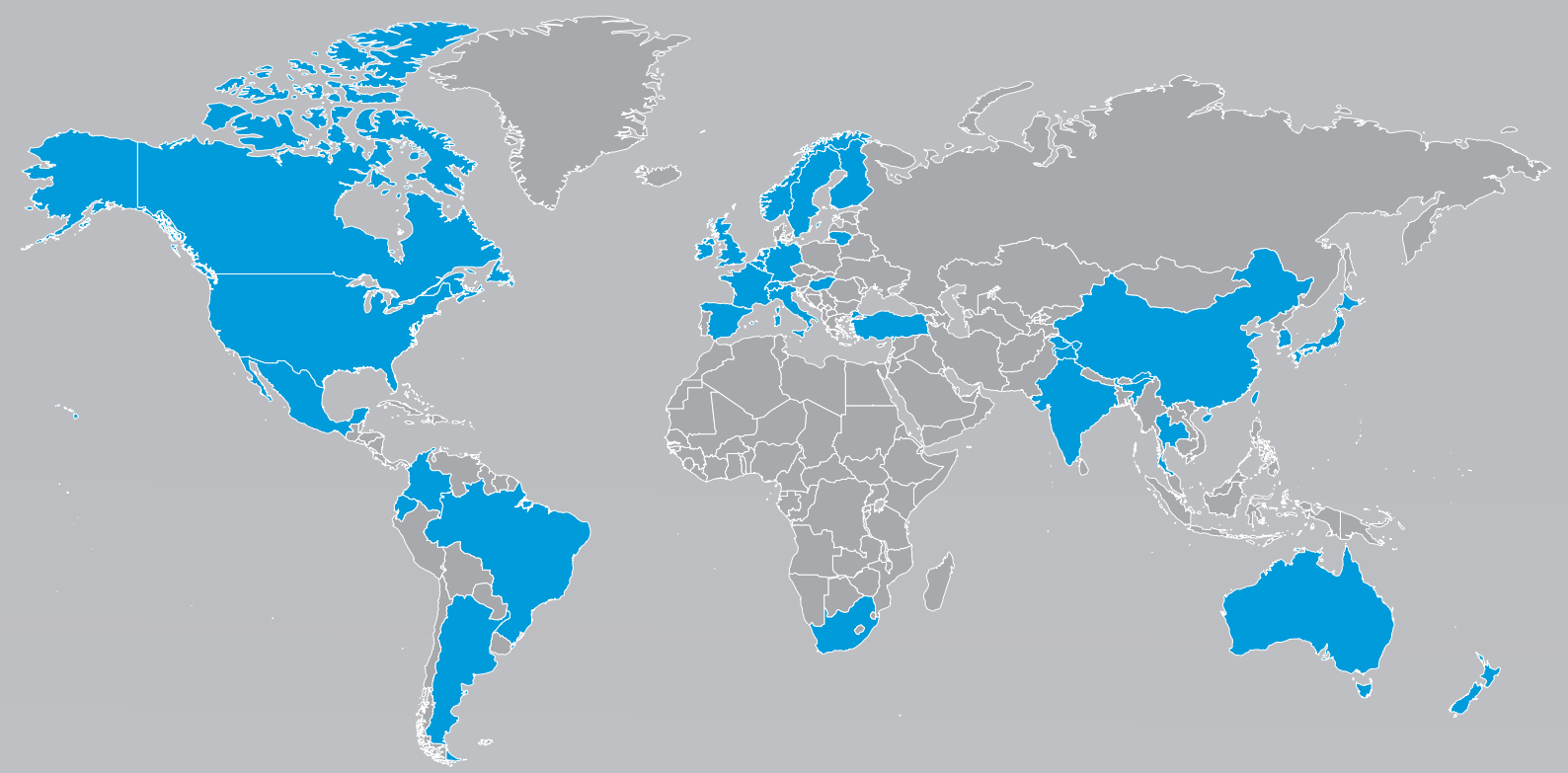
Pressure Roller	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Hydraulic Limit Switch	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Electric Limit Switch	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Rope	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Shakle	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Hook	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Encoder	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Hydraulic Rotative Limit Switch	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Electric Rotative Limit Switch	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Torque limiter	Included ◯	Not Included ◯	Catalogue Standard ◯	Not Standard (3) ◯
Others (3):				
Painting (Cycle/RAL/gloss):				

Notes/Other requests

Attachments: Yes ◯ No ◯

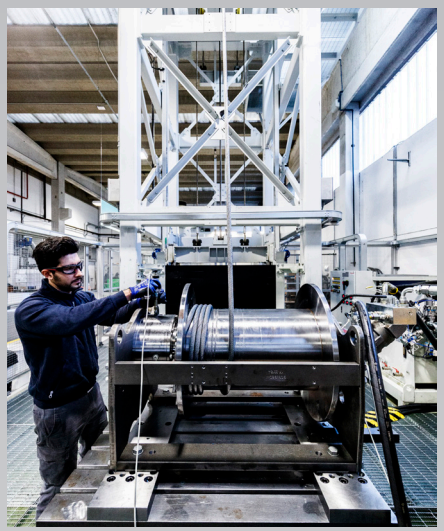
*** Required information for preliminary selection and quotation. For final selection and quotation all fields are required**
(1) Fill up only if the motor is not included into supply
(2) If the customer has special requirements about accessories please add the specification as attachment
(3) Provide Specification

NOTES



Technologies Customized to **Every Part of the Globe**

With a presence in 31 countries, Dana Incorporated boasts more than 150 engineering, manufacturing, and distribution facilities. Our worldwide network of local service centers provides assurance that each customer will benefit from the local proximity and responsiveness.



About Dana Incorporated

Dana is a leader in the design and manufacture of highly efficient propulsion and energy-management solutions that power vehicles and machines in all mobility markets across the globe. The company is shaping sustainable progress through its conventional and clean-energy solutions that support nearly every vehicle manufacturer with drive and motion systems; electrodynamic technologies, including software and controls; and thermal, sealing, and digital solutions. Founded in 1904, we employ thousands of people across six continents.

About Dana Off-Highway Drive and Motion Systems

Dana delivers fully optimized Spicer® drivetrain and Brevini® motion systems to customers in construction, agriculture, material-handling, mining, and industrial markets. We bring our global expertise to the local level with technologies customized to individual requirements through a network of strategically located technology centers, manufacturing locations, and distribution facilities.

Learn more about Dana's drivetrain and motion systems at **dana.com/offhighway**.

Dana-Industrial.com

Application Policy
Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

DANA

BREVINI® Motion Systems