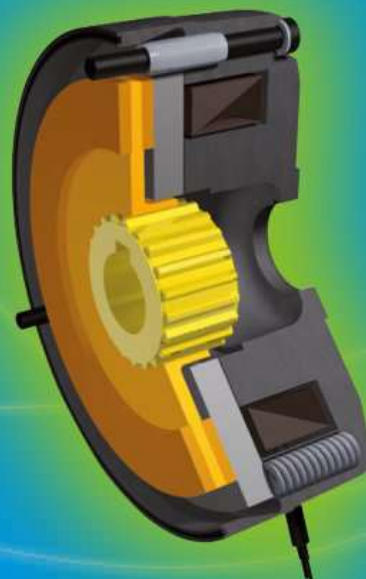




your reliable partner

ROBA-stop®-M CCV

Cold Climate safety brake
GL-certified up to -40 °C



P.891400.V00.EN

www.mayr.com

Cold Climate safety brakes for wind power plants



mayr®-wind power brakes in pitch drives

Operational safety around the clock

The profitability of wind power plants, above all when operating in difficult conditions such as offshore or cold climate, is determined firstly according to the wind conditions and then to a large extent according to the operational safety and the resulting downtime.

These can be minimised substantially through the selection of qualified drive components.

Achieve minimum downtime even at minus 40 °C through maximum failure safety with our Cold Climate version of the ROBA-stop®-M safety brakes for pitch and yaw drives!

For high operational safety, both good dimensioning and the use of high-quality, long-lived products are essential. These products should have been tested in detail under authentic worst case conditions and have already proven their worth multiple times in such applications.

The requirements placed upon a "CCV brake" have not been universally defined. Only certification through a public, recognised testing institute – such as Germanic Lloyd - provides you with the security that all relevant material and product characteristics have been tested and approved under real-life conditions.

Our high-quality, certified Cold Climate safety brakes and our years of experience in wind power, which we have gathered together with renowned drive manufacturers, play a major role in ensuring high system availability even under the most difficult climatic conditions.

Cold Climate safety brakes for wind power plants

The **Cold Climate Version** of our **ROBA-stop®-M safety brake** sets new standards for low temperature applications of pitch and yaw brakes. It is the **only electromagnetic safety brake** for applications up to **-40 °C certified by Germanic Lloyd (GL)**.

The **certification provides** you with the **security** that all relevant material and product properties have been examined and released under real-life conditions.

The certified **pitch and yaw safety brakes** work reliably even in the most challenging climatic conditions – even at temperatures of minus 40 °C – ensuring that your systems function correctly.



Statement of Compliance

GL

19th March 2013
page 1/1

Address:

GL Renewables Statement No: DAA-GL-007-2013

Characteristic Data

Main Data

Type: Electromagnetic spring loaded safety brake (Motor brake)
Make: ROBA-stop®-M Bremse
Design: Type 891.4 ...
One brake disc with two counter-flanges

Max. brake torque (Depends on size and type): 7 ... 200 Nm
Max. speed (Depends on size): 1.500 ... 3.500 [min⁻¹]
Ambient temperature: -40 °C to +40 °C

Statement of Compliance

GL

GL Renewables Statement No: DAA-GL-007-2013

This Statement of Compliance is for the A-Design Assessment of the Wind Turbine safety brake:

ROBA-stop®-M Bremse Type 891.4 ...

Is issued to: Chr. Mayr GmbH + Co. KG
Eichenstr. 1
87665 Mauerstetten
Germany

This statement attests the compliance with normative references stated below concerning the design. The A-Design Assessment is based on the calculations and fabrication drawings listed in the relevant Certification Report referenced below and the characteristic data given in the attached Annex.

Certification Report number and title:

74842 dated 15.03.2013 ROBA-stop®-M Bremse Type 891.4 ...

Normative references:

"Guideline for the Certification of Wind Turbines", Edition 2010,
GL Wind-Technical Note 007, Certification of Wind Turbines for Extreme Temperatures, Revision 4, dated 01.10.2011

Changes in design are to be approved by Germanischer Lloyd otherwise this statement loses its validity.

Hamburg, 19th March 2013
MDr

Germanischer Lloyd Industrial Services GmbH

[Signature: Mike Wiedemann]

[Signature: V. J. J. J. J.]

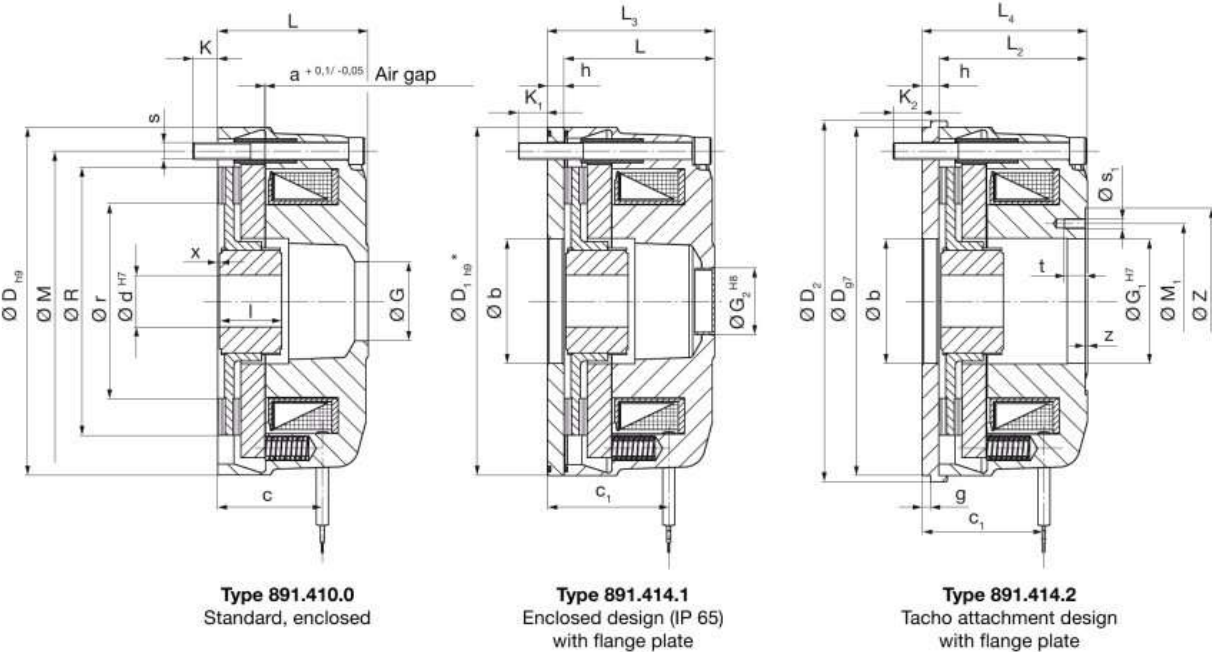
DAKKS
Accreditation
No. 001
01.10.2011

Germanischer Lloyd Industrial Services GmbH
Renewables Certification
Department 19
2007 Hamburg Germany

Notation: All of the "General Terms and Conditions of Germanischer Lloyd Industrial Services GmbH" is applicable, otherwise the applicable

ROBA-stop®-M Cold Climate Version

Type 891.4 _ _ _ Sizes 16 to 150



* Flange plate outer diameter: -0,2

Dimensions [mm]	16	32	60	100	150
a	0,2	0,2	0,25	0,3	0,3
b	42	52	60	78	84
c	35,5	39,2	50,5	54	59
c ₁	42,5	47,2	58,5	64	71
D	128	148	168	200	221
D ₁	130	148	168	200	221
D ₂	134	154	174	206	227

Dimensions [mm]	16	32	60	100	150
G	33	36	38	48	55
G ₁	40,5	52,5	60	75,5	82,5
G ₂ ^{HB}	22	28	32	42	48
g	4	4	4	5	6
h	7	8	8	10	12
K	12,3	8,3	12	12	20
K ₁	10,3	10,3	14	12	18
K ₂	10,3	10,3	14	12	18
L	55,7	61,7	72,5	84	97
L ₂	54,7	60,7	71,5	83	96
L ₃	62,7	69,7	80,5	94	109
L ₄	61,7	68,7	79,5	93	108
l	20	25	30	30	35
M	112	132	145	170	196
M ₁	52	61	75	88	100
R	101	121	129,5	154	178
r	71	84	95	106	122
s	3 x M6	3 x M6	3 x M8	3 x M8	3 x M8
s ₁	3 x M4	3 x M5	3 x M5	3 x M5	3 x M6
t	10	10	10	10	10
x	0 - 0,5	0 - 0,5	0 - 2	0 - 3	0 - 3
Z	65	75	90	100	115
z	1	1	1	1	1

Standard voltages 24; 104; 180; 207 V.
Permitted voltage tolerance acc. DIN IEC 60038 (±10 %).

We reserve the right to make dimensional and constructional alterations.

Technical Data					Size				
					16	32	60	100	150
Nominal braking torque	Standard	Type 891.41_.._..	M _{nom}	[Nm]	20	40	75	130	200
Braking torque adjustment	Reduced	Type 891.42_.._..		[Nm]	17	34	63	110	160
		Type 891.43_.._..		[Nm]	14	27	51	90	130
		Type 891.44_.._..		[Nm]	10	20	38	65	100
		Type 891.45_.._..		[Nm]	7	13,5	26	45	65
	Increased	Type 891.47_.._..		[Nm]	23	46	86	145	-
		Type 891.48_.._..		[Nm]	26	50	100	160	-
Electrical power			P _{nom}	[W]	38	46	69	88	98
Maximum speed			n _{max}	[rpm]	3500	3000	3000	2500	1500
Weight		Standard brake Type 891.41_.._..	m	[kg]	3,4	4,5	7,4	13,6	19,2

Permitted Hub Bores						Size				
						16	32	60	100	150
Ø d ^{H7}	Type 891.41_.. to Type 891.45_..	Keyway JS9	6885/1	min.	[mm]	14	19	22	29	38
				max.		23	28,5	31	41,5	44
			6885/3	min.	[mm]	17,5	21,5	26	-	-
				max.		24	30	33	-	-
	Type 891.47_.. Type 891.48_..	Keyway JS9	6885/1	min.	[mm]	14,5	23	23	35,5	-
				max.		21,5	29	29	39	-
			6885/3	min.	[mm]	17,5	22,5	30,5	-	-
				max.		22,5	29,5	-	-	-

We reserve the right to make dimensional and constructional alterations.

Order Number									
Nominal braking torque, standard				1	0	Without additional parts			
Braking torque adjustment, reduced ¹⁾				2	4	Flange plate			
Braking torque adjustment, reduced ¹⁾				3					
Braking torque adjustment, reduced ¹⁾				4					
Braking torque adjustment, reduced ¹⁾				5					
Braking torque adjustment, increased ¹⁾				7					
Braking torque adjustment, increased ¹⁾				8					
▽ ▽									
— / 8 9 1 . — — . — / — / — / —									
△	△			△		△	△	△	△
Sizes 16 to 150	Low-temperature brake CCV 4 Standard			4	Standard Enclosed design IP65 Tacho design	0 1 2	Coil voltage [VDC] 24 104 180 207	Hub bore Ø d ^{H7}	Keyway acc. DIN 6885/1 or DIN 6885/3

Example: 16 / 891.430.0 / 24 / 16 / 6885/1

1) See Technical Data.

Cold Climate safety brakes for wind power plants and other low temperature applications

Reliable and versatile in use up to - 40 °C

- ☐ Pitch drives
- ☐ Yaw drives
- ☐ Service elevators
- ☐ Maintenance platforms
- ☐ Winches
- ☐ Cranes



The perfect safety brakes for offshore applications





Offshore – our know-how

mayr® power transmission has been supplying the seawater brake ROBA-stop®-S, which was especially developed for these ambient conditions, in maritime applications such as ship winches and harbour cranes for 20 years. The gathered know-how and the experience thus gained have flowed into our ROBA-stop®-M pitch and azimuth brakes for offshore wind power plants, which, in addition to having a high corrosion protection, can also be designed to achieve high protection classes such as IP 65.

100 % quality assurance

On all brakes, a comprehensive 100 % initial inspection of the technical characteristics such as spring force, air gap, tightening and drop-out voltage are undertaken in order to guarantee the immediate, reliable use of all brakes on delivery.

Short-term availability

The standard design of the wind power brake is available at short-term notice, and ensures you competitive advantages on time-critical projects as well as for spare parts deliveries.



Pitch drive with
mayr® wind power brake



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You can find the complete address for the representative responsible for your area under www.mayr.com in the internet.