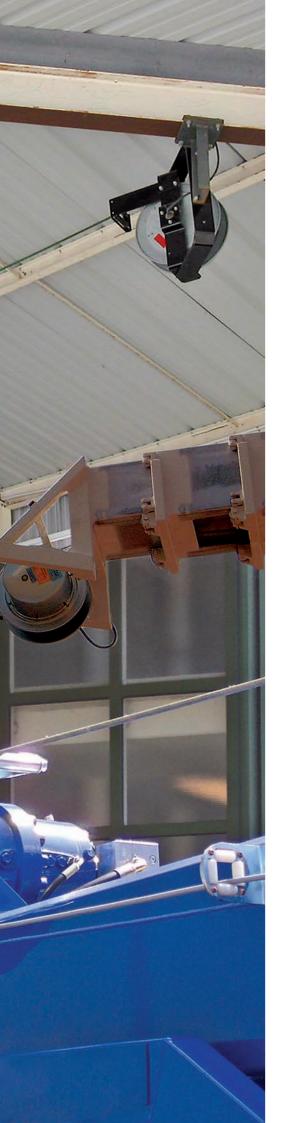
Spring Cable Reels **EXEL**









Automatic Spring Reels EXEL

☑ RELIABLE

The rugged, all-steel construction, effective corrosion protection, sealed for life, lubricated for life bearings, and high-performance springs made from textured steel, **provide exceptionally long life**.

100,000 spring movements - Guaranteed!

☑ SPECIFIC DESIGNS

Our modular design, wide variety of options and accessories, and selection of specific cables, enable us to build cable reels which **meet the exact specifications of each application.**

Many alternatives available!

☑ REACTIVE

The reels are selected using in-house software and assembled from stocked components to **guarantee you rapid delivery.**

Fast delivery!

☑ SIMPLE

Easy-to-access slip rings and connections, and brackets designed for easy installation **reduce the mounting and maintenance time.**

Quick installation, low maintenance!

☑ SAFE

IP55 protected, rolled edges on the spool, safe springs (the first wrap is riveted), spring-motor contained within the drum - all these characteristics mean that these reels **meet your requirements for safety during use and also during maintenance.**



Application Areas

- Power and control of mobile industrial machinery, such as overhead bridge cranes, gantries, mobile tables, aerial ladders and lifts, elevators, elevated work platforms, electromagnets, etc.
- Speed up to 80 m/min (cable retrieve application).
- Acceleration up to 0.3 m/s².
- The reels accept power and control cables with conductor cross-sections from 0.75 to 50 mm²
- Installations are possible with the reel winding and unwinding the cable vertically, or to a fixed point horizontally (with cable either supported or unsupported) or vertically.
- Primarily linear runs.
- Indoor or outdoor use with temperature ranging from -15°C to +40°C.









Applicable standards

EXEL reels are built in accordance with low voltage directive 73/23/CEE (19-02-1973) and machinery directive 98/37/CE (22-06-1998).

EXEL reels are usually intended to be integrated into the design of a machine. A declaration of the incorporation of the **CE** mark is supplied with the operation manual.

If the reel is equipped with a pre-wired cable and ratchet system, **CE** certificate can be supplied upon request at time of order.

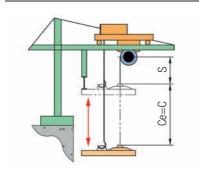
Applications where the reels must conform to industry standards, or made by an ISO 9001:2000 registered company.

Along with the reels presented in this catalogue, we can also provide the following:

- Automatic hose reels for compressed air, liquids, and gases;
- Automatic reels adapted to particular special environments such as nuclear, chemical, etc.

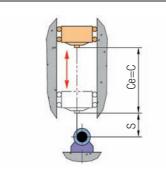
Types of Applications

Lift



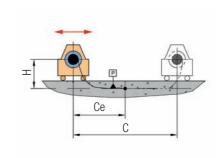
- Reel mounted stationary.
- Reel located at the top.

Vertical Retrieve



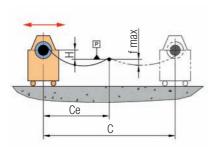
- Reel mounted stationary.
- Reel located at the bottom.

Retrieve



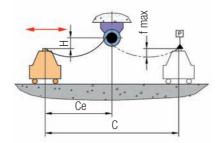
- Cable laying on the ground.
- Reel installed on the mobile machine.

Stretch



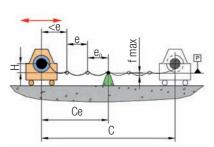
- Reel mounted on the machine.
- Unsupported cable.
- Only for short span runs.
- Cable sag 'f max' must be less than 10% of the travel length 'Ce'.
- Extra length of cable is required to compensate for cable sag 'f max ' (approximately 10% of 'Ce').

Stretch



- Reel mounted stationary.
- Unsupported cable.
- Only for short span runs.
- Cable sag 'f max' must be less than 10% of the travel length 'Ce'.
- Extra length of cable is required to compensate for cable sag 'f max ' (approximately 10% of 'Ce').

Supported Stretch



- Reel mounted on the machine.
- Cable supported with rollers.
- Extra length of cable is required to compensate for cable sag 'f max' (approximately 10% of 'Ce').

P: position that cable lays on the ground

H : height of the centerline of the reel above P

C: active travel length of the mobile machine

Ce: travel length to consider to calculate the reel

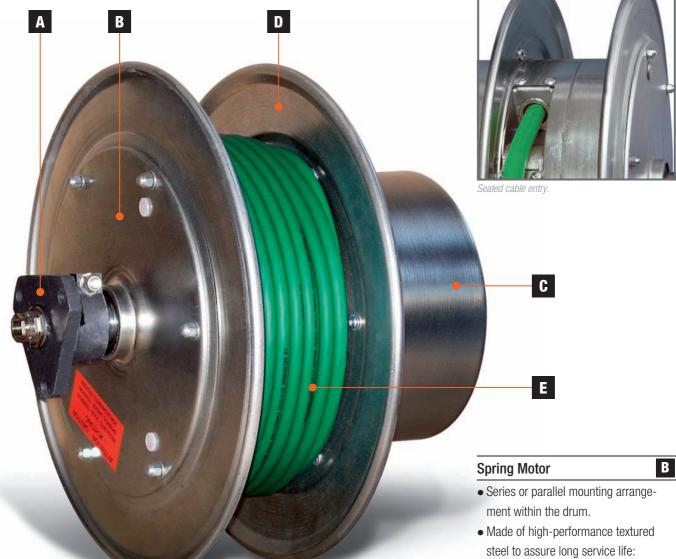
f max: maximum allowable sag of cable

e0 : distance to the first support

e : distance between supports

S: length of permanently paid out cable

Module Assembly





Mounting Flange

- Designed for easy and quick installation
- Designed to accommodate optional brackets and accessories.
- Made from cast iron or cast aluminum alloy coated with black epoxy paint.

- Made of high-performance textured steel to assure long service life:
 50,000 cycles (100,000 spring movements) .
- Coil springs lubricated with a corrosion resistant grease.
- Safe during replacement as the first wrap is riveted.



Slip Ring Assemblies

C

- Designed to transfer power and control signals from the fixed part to the rotating part of the cable reel.
- Easy access to the slip ring terminals.
- Max. Voltage: 500 V AC/DC.
- AC cycles: 50, 60, or 400 Hz.
- Steel housing equipped with a breather to prevent condensation.
- Brass cable glands IP66 to ensure dust and moisture tightness of the housing.
- Construction and ring sizes designed to transfer currents from 50 mA up to 180A at an ambient temperature of +30°C.

Drums

D

- Drum diameters ranging from 180 to 480 mm.
- Steel sheet construction protected by zinc electroplating and coated with a corrosion resistant finishing varnish.
- Rolled edges of the flanges optimizing cable arrangement and providing safety to users.
- Sealed for life, lubricated for life ball bearings.
- Assembled with zinc plated screws and lock washers.

Cables

E

Conductix - Wampfler supplies a wide range of special cables designed to be used on reeling drums:

- Small outside diameter.
- Small bending radii.
- High resistance to mechanical stress from reeling applications (traction, deflection, twisting).
- Class 5 core assembly.
- Polypropylene or reticulate elastomer inner sheath .
- Polyurethane outer sheath.

Slip Ring Technical Data

Туре	Amps (A)	Brushes		Rings		
		No (B)	Material	No	Material	
C8	20A	2	Copper graphite	2 to 11 + T	Brass	
C080	20A	2 or 4	Copper graphite	2 to 41 + T	Brass	
P050	40A	2	Copper graphite	2 to 4 + T	Brass	
P080	70A	2	Copper graphite	2 to 6 + T	Bronze	
P120	120A	2	Copper graphite	2 to 6 + T	Bronze	
P180	180A	2	Copper graphite	2 to 6 + T	Bronze	

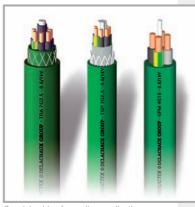
(A) : admissible permanent current @ +30°C. (B): number of brushes per ring.



Slip ring assembly 4TP050.



Self-regulated heating strip.



Special cables for reeling applications

Available upon request

Consult factory.

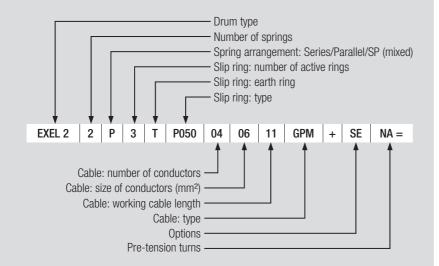
- Fixed cable tail fitted in the factory.
- Power slip ring assemblies (>20 A) with more than 6 active rings (phase) + E.
- Stainless steel screws.
- 5-year guaranteed special paint for sea coast applications.
- Protection degree IP66 for mechanical and electrical parts, or just the electrical part.
- Construction suited to low temperature applications down to – 40°C.

Accessories & Options

- Fixed brackets, cable guide arms and swivel brackets.
- Spring shock absorbers and cable grips.
- Roller guides and roller boxes.
- Cable entries and anchor drums.
- Ratchet to convert an automatic reel to an extension reel (mainly for use to tidy cables in the workshop).
- Nickel-plate brass and plastic cable glands.
- Two or four contact end limit switches.
- Self-regulated heating strip, 50W-230V single phase, within the slip ring housing. Required in humid conditions or where ambient temperatures vary widely.

Technical Description

Model Number Code



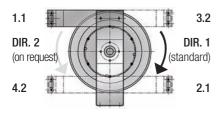
Cable Length

- Length of cable installed = working length + \triangle L
- △ L = one safety wrap on the drum + length needed to connect to slip ring.

Drum type	△ L (m)
EXEL 1	2
EXEL 2	2
EXEL 3	3
EXEL 4	4
EXEL 5	4
EXEL 6	5

Winding Direction Roller Guide Arm Positions

Unless otherwise indicated on the order, EXEL reels are built as per **Direction 1** and optional roller guide arm is located at **Pos 1.1.**

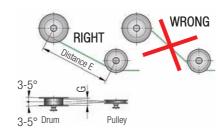


Reels not equipped with roller guide arm are delivered without any pre-tension set-

up turns. Before operation, the spring motor must be pre-tensioned with the appropriate number of pre-tension set-up turns 'NA' (see page 9), as indicated on the drum flange label.

Use of Roller Guides

When a roller guide (pulley / sheave) is used, it is necessary to increase spring motor torque and to maintain dimensions 'E' and 'G' as noted in the table below.

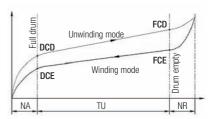


G (mm)	E (mm)		
	angle 3°	angle 5°	
260	2 500	1 500	
200	1 900	1 150	
180	1 700	1 050	
150	1 450	850	
130	1 250	750	
115	1 100	650	
105	1 000	600	

Spring Diagram

With coil springs, the tensile pull on the cable varies depending on the length of unwound cable and whether the reel is in the winding or unwinding mode.

When calculating tensile pull, it is necessary to consider the diameter and number of cable wraps. According to these parameters, the amount of tensile pull exerted by the spring motor will vary.



NA: number of pre-tension set-up turns

TU: number of useable turns

NR: number of reserve turns

DCD: tensile pull at start of payout (unwinding mode)

FCD: tensile pull at end of payout (unwinding mode)

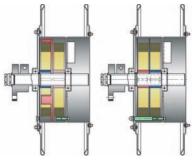
FCE: tensile pull at start of retraction (winding mode)

DCE: tensile pull at end of retraction (winding mode)

Spring Motor Arrangements

In comparison with a single-spring motor:

- A motor with two identical springs in series allows twice the number of useable turns.
- A motor with two identical springs in parallel generates twice the tensile pull.



Series arrangement

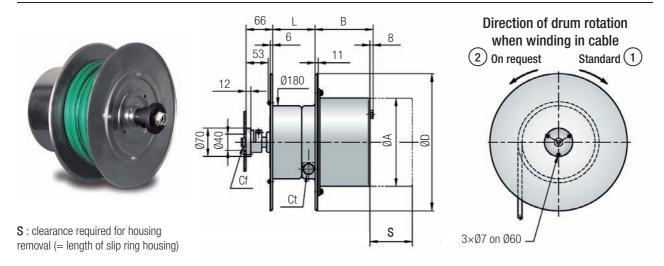
Parallel arrangement

Spring Motor Data

Drum type	No of springs	Arrangement	NA mini	No of useable turns	Tensile pull Min. (kg)	Tensile pull Max. (kg)	Spring Part number
EXEL 1/1B/1BE -1S	1	series	2	14	2,50	6,00	4 3 R45015
EXEL 1/1B - 2S	2	series	4	28	2,00	6,00	4 3 R45015
EXEL 1/1B - 2P	2	parallel	2	14	4,50	11,50	4 3 R45015
EXEL 1/1B - 1SL	1	series	2	22	2,00	5,00	4 3 R45028
EXEL 2/2B - 1S	1	series	2	20	1,50	4,25	4 3 R45017
EXEL 2/2B - 2S	2	series	4	42	1,75	4,25	4 3 R45017
EXEL 2/2B - 1SR	1	series	2	14	1,75	6,00	4 3 R45025
EXEL 2/2B - 2SR	2	series	4	31	1,75	6,00	4 3 R45025
EXEL 2/2B - 2P	2	parallel	2	20	3,00	8,50	4 3 R45017
EXEL 2/2B - 2PR	2	parallel	2	14	3,00	12,00	4 3 R45025
EXEL 3/3B - 1S	1	series	2	23	3,00	6,20	4 3 R45018
EXEL 3/3B/3L - 2S	2	series	4	46	1,00	6,20	4 3 R45018
EXEL 3L - 3S	3	series	6	70	0,75	6,20	4 3 R45018
EXEL 3/3B - 1SR	1	series	2	17	3,00	10,75	4 3 R45026
EXEL 3/3B/3L - 2SR	2	series	4	34	3,00	10,75	4 3 R45026
EXEL 3L - 3SR	3	series	6	52	3,00	10,75	4 3 R45026
EXEL 3/3B/3L - 2P	2	parallel	2	23	3,00	12,00	4 3 R45018
EXEL 3/3B/3L - 2PR	2	parallel	2	17	6,00	21,50	4 3 R45026
EXEL 3L - 3P	3	parallel	2	23	4,50	18,00	4 3 R45018
EXEL 3L - 3PR	3	parallel	2	17	8,00	32,25	4 3 R45026
EXEL 4 - 1S	1	series	2	22	3,50	12,00	4 3 R45019
EXEL 4/4L - 2S	2	series	4	44	3,50	12,00	4 3 R45019
EXEL 4L - 3S	3	series	6	66	3,50	12,00	4 3 R45019
EXEL 4 - 1SR	1	series	2	18	4,00	17,30	4 3 R45084
EXEL 4/4L - 2SR	2	series	4	36	4,00	17,30	4 3 R45084
EXEL 4L - 3SR	3	series	6	54	4,00	17,30	4 3 R45084
EXEL 4/4L- 2P	2	parallel	2	22	7,00	24,00	4 3 R45019
EXEL 4L - 3P	3	parallel	2	22	8,00	36,00	4 3 R45019
EXEL 4/4L - 2PR	2	parallel	2	18	8,00	34,60	4 3 R45084
EXEL 4L - 3PR	3	parallel	2	18	12,00	51,90	4 3 R45084
EXEL 5 - 1S	1	series	2	21	4,00	17,00	4 3 R45020
EXEL 5/5L - 2S	2	series	4	42	4,00	17,00	4 3 R45020
EXEL 5/5L - 3S	3	series	6	63	3,50	17,00	4 3 R45020
EXEL 5L - 4S	4	series	8	84	4,00	17,00	4 3 R45020
EXEL 5/5L - 2P	2	parallel	2	21	9,00	34,00	4 3 R45020
EXEL 5/5L - 3P	3	parallel	2	21	14,00	51,00	4 3 R45020
EXEL 5L - 4P	4	parallel	2	21	17,00	68,00	4 3 R45020
EXEL 5L - 4SP	4	series / parallel	4	42	8,00	34,00	4 3 R45020
EXEL 6 - 1S	1	series	2	21	4,00	17,00	4 3 R45021
EXEL 6 - 2S	2	series	4	42	4,00	17,00	4 3 R45021
EXEL 6 - 3S	3	series	6	64	4,00	17,00	4 3 R45021
EXEL 6 - 4S	4	series	8	86	4,00	17,00	4 3 R45021
EXEL 6 - 2P	2	parallel	2	21	8,00	34,00	4 3 R45021
EXEL 6 - 3P	3	parallel	2	21	13,00	51,00	4 3 R45021
EXEL 6 - 4P	4	parallel	2	21	17,00	69,00	4 3 R45021
EXEL 6 - 4SP	4	series / parallel	4	44	8,00	34,00	4 3 R45021

EXEL 1 - Flange Mounting

Weight: 6.5 up to 8.5 kg approx. (cable excluded)



Dimensions of the reel according to the drum type

Drum	EXEL 1	EXEL 1 B	EXEL 1 BE		
ØD (mm)	340	280	280		
L (mm)	105	105	66		
Fixed cable Cf (mm)	Ø17 max.				
Trailing cable Ct (mm)	Ø16.5 max.				

Slip ring type	C8					
Number of rings *	2T	3T	4T	6T	11T	
Max. amperage (A)	20					
ØA (mm)	234			220	220	
B (mm)	82 **			144	219	
S (mm)	71 **			125	200	

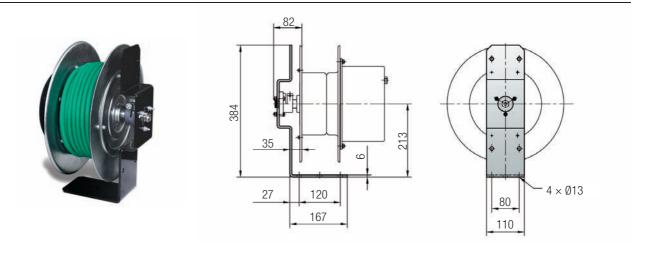
Slip ring type		P050		
Number of rings *	2T	3T	4T	
Max. amperage (A)	40			
ØA (mm)	220			
B (mm)	144			
S (mm)	125			

^{*} number of insulated rings, plus one uninsulated ring 'T' for earth.



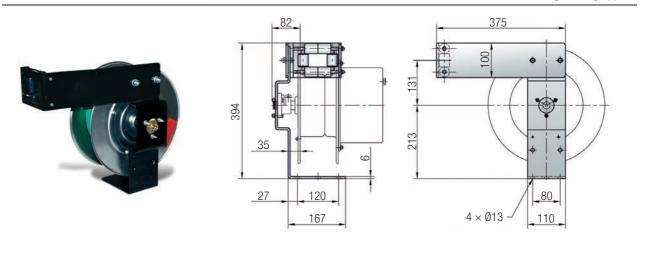
^{**} reel with plastic housing.

Bracket SE Weight: 3 kg approx.



Bracket and Roller Guide Arm SE/BR

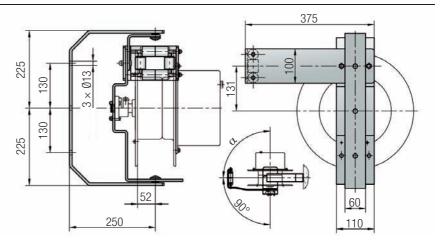
Weight: 5 kg approx.



Swivel Bracket SP Weight: 8.5 kg approx.

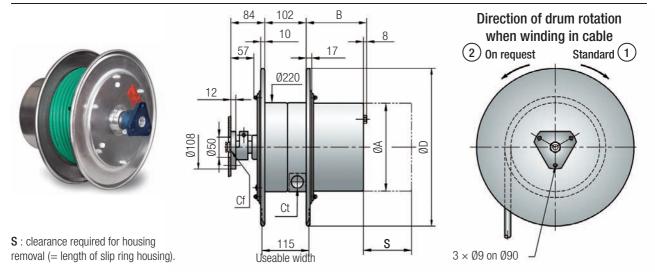


B ≤ 144	$\alpha = 90^{\circ}$
B = 219	$\alpha = 37^{\circ}$



EXEL 2 - Flange Mounting)

Weight: 8.5 up to 12 kg approx. (cable excluded)



Dimensions of the reel according to the drum type

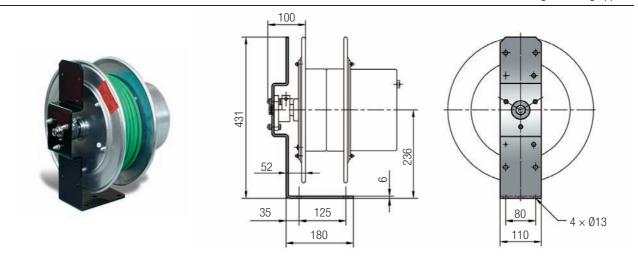
Drum	EXEL 2	EXEL 2 B		
ØD (mm)	390	360		
Fixed cable Cf (mm)	Ø17 max.			
Trailing cable Ct (mm)	Ø23 max.			

Slip ring type	C8					C080		
Number of rings *	2T	3T	4T	6T	11T	18T	19T	23T
Max. amperage (A)	20				20			
ØA (mm)	220					300		
B (mm)	150 225			225		325		
S (mm)	125			200		300		

Slip ring type		P080		
Number of rings *	2T	3T	4T	3T
Max. amperage (A)		70		
ØA (mm)		300		
B (mm)		250		
S (mm)		225		

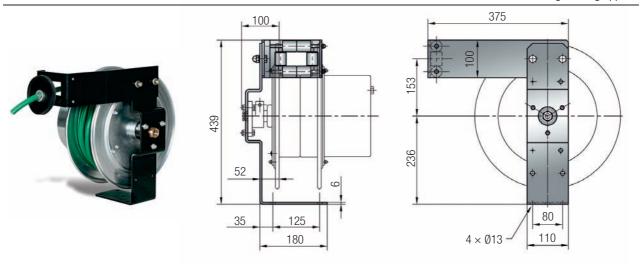
^{*} number of insulated rings, plus one uninsulated ring 'T' for earth.

Bracket SE Weight: 3.5 kg approx.

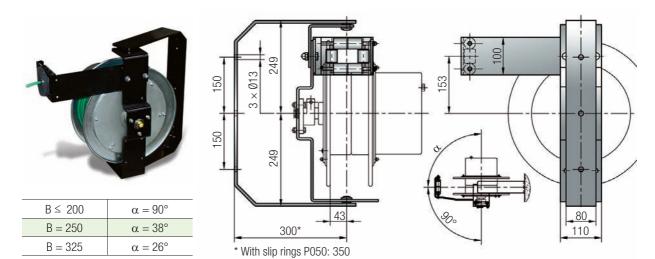


Bracket and Roller Guide Arm SE/BR

Weight: 6 kg approx.

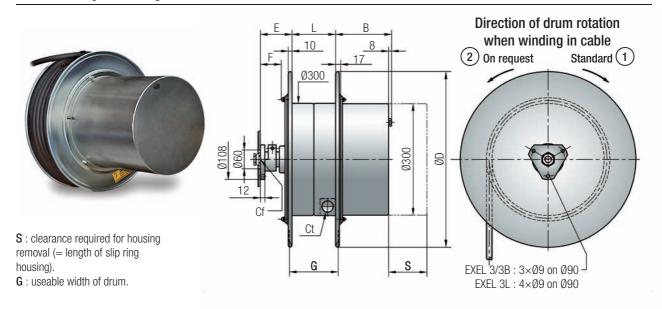


Swivel Bracket SP Weight: 10 kg approx.



EXEL 3 - Flange Mounting

Weight: 13 up to 25 kg approx. (cable excluded)



Dimensions of the reel according to the drum type

Drum	EXEL 3	EXEL 3 B	EXEL 3 L	
ØD (mm)	470	440	470	
E (mm)	85	85	79	
F (mm)	55	55	49	
G (mm)	130	130	180	
L (mm)	116	116	166	
Fixed cable Cf (mm)	Ø27 max.			
Trailing cable Ct (mm)		Ø28 max.		

Optional brackets SE/BR, SP, and optional ratchet K available for EXEL 3 and EXEL 3B drum types only.

Optional reinforced bracket SER available for EXEL 3 L drum type only.

Slip ring type	C8					C080				
Number of rings *	2T 3T 4T 6T				11T	18T 19T 23T 26T 27T				
Max. amperage (A)		20				20				
B (mm)		150				325				400
S (mm)		125					30	00		375

Slip ring type		P050		P0	P120
Number of rings *	2T	3T	4T	3T	3T
Max. amperage (A)		40		7	120
B (mm)	200			25	250
S (mm)	175			22	225

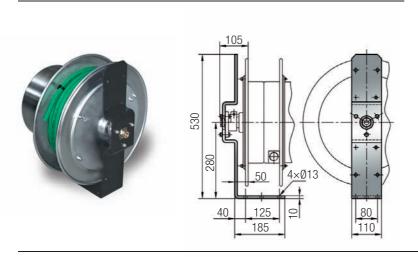
^{*} number of insulated rings, plus one uninsulated ring 'T' for earth.

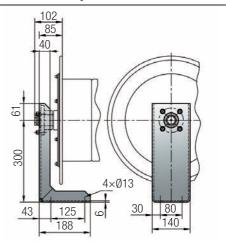
Bracket SE For EXEL 3 & 3B only

Weight: 5.5 kg approx.

Reinforced Bracket SER

For EXEL 3L only Weight: 6 kg approx.

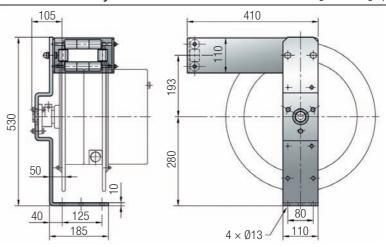




Bracket and Roller Guide Arm SE/BR - For EXEL 3 & 3B only

Weight: 8.5 kg approx.



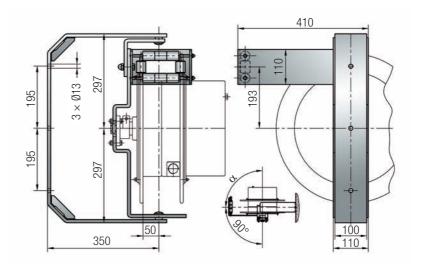


Swivel Bracket SP - For EXEL 3 & 3B only

Weight: 13 kg approx.

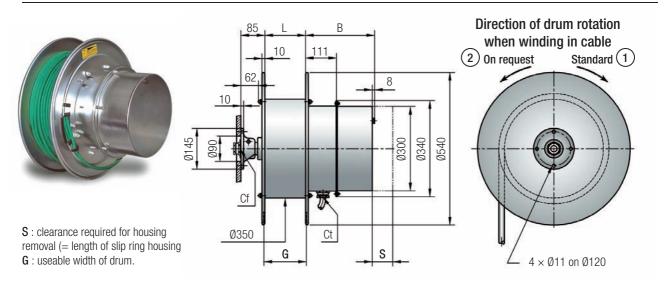


B ≤ 200	$\alpha = 90^{\circ}$
B = 250	$\alpha = 55^{\circ}$
B = 325	$\alpha = 34^{\circ}$
B = 400	$\alpha = 27^{\circ}$



EXEL 4 - Flange Mounting

Weight: 28 up to 52 kg approx. (cable excluded)



Dimensions of the reel according to the drum type

Drum	EXEL 4	EXEL 4 L		
G (mm)	150	200		
L (mm)	144	194		
Fixed cable Cf (mm)	Ø32	max.		
Trailing cable Ct (mm)	Ø32	max.		

Optional brackets SE/BR, SP, and optional ratchet K available for EXEL 4 drum type only.

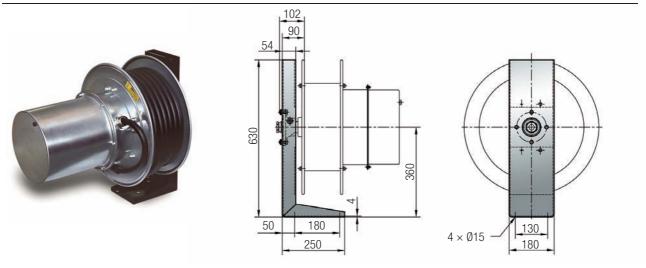
Slip ring type	C8								
Number of rings *	2T	11T							
Max. amperage (A)		20							
B (mm)		244 294							
S (mm)	125 175								

Slip ring type		C080								
Number of rings *	18T	8T 19T 23T 26T 27T 29T 36T 38T 41T.								
Max. amperage (A)		20								
B (mm)		419 494 544								
S (mm)		300 375 425						25		

Slip ring type	P050			P0	80	P120		
Number of rings *	2T 3T 4T		3T 4T		3T 4T			
Max. amperage (A)	40			7	0	120		
B (mm)		244			94	294		
S (mm)	125			17	75	175		

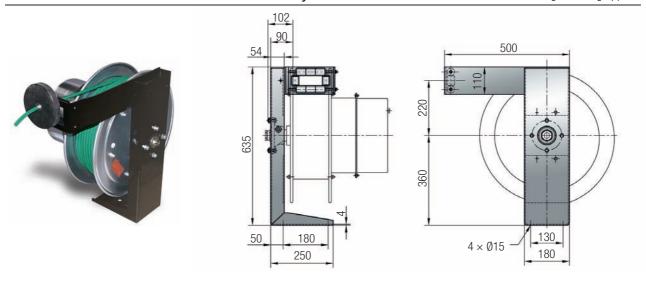
^{*} number of insulated rings, plus one uninsulated ring 'T' for earth.

Bracket SE Weight: 7 kg approx.



Bracket and Roller Guide Arm SE/BR - For EXEL 4 only

Weight: 10 kg approx.

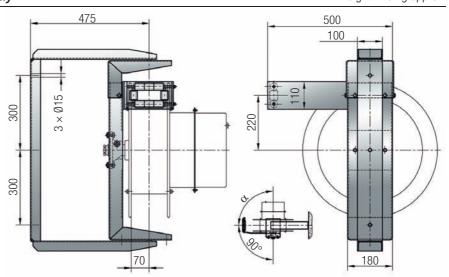


Swivel Bracket SP - For EXEL 4 only

Weight: 16 kg approx.



B ≤ 294	$\alpha = 90^{\circ}$
B = 419	$\alpha = 51^{\circ}$
B = 494	$\alpha = 40^{\circ}$
B = 544	$\alpha = 36^{\circ}$

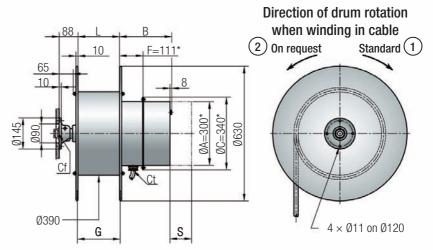


EXEL 5 - Flange Mounting

Weight: 35 up to 64 kg approx. (cable excluded)



 \boldsymbol{S} : clearance required for housing removal (= length of slip ring housing). \boldsymbol{G} : useable width of drum.



* With slip rings P180: $\emptyset A = 400 \text{ mm}$ / $\emptyset C = 442 \text{ mm}$ / F = 158 mm

Dimensions of the reel according to the drum type

Drum	EXEL 5	EXEL 5 L		
G (mm)	200	265		
L (mm)	194	259		
Fixed cable Cf (mm)	Ø32	max.		
Trailing cable Ct (mm)	Ø34	max.		

Optional brackets SE/BR, and optional ratchet K available for EXEL 5 drum type only.

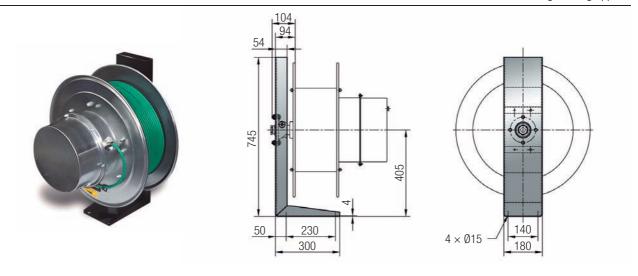
Slip ring type		C8								
Number of rings **	2T	11T								
Max. amperage (A)		20								
B (mm)		244 294								
S (mm)		125 175								

Slip ring type		C080							
Number of rings **	18T	8T 19T 23T 26T 27T 29T 36T 38T 41T							
Max. amperage (A)		20							
B (mm)		419 494 544							44
S (mm)		300 375 425						25	

Slip ring type	P050		P080		P120		P180	
Number of rings **	2T 3T 4T		3T	4T	3T 4T		3T	4T
Max. amperage (A)	40		70		120		180	
B (mm)	244		294		294		391	
S (mm)	125		175		175		225	

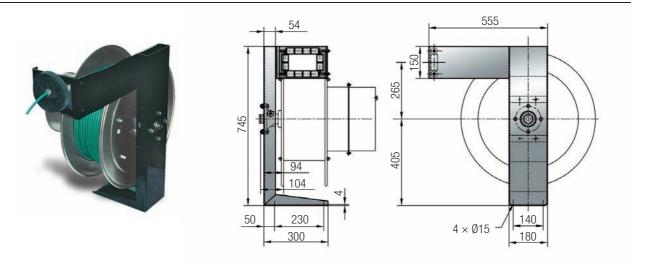
 $^{^{\}star\star}$ number of insulated rings, plus one uninsulated ring 'T' for earth.

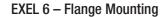
Bracket SEWeight: 8 kg approx.



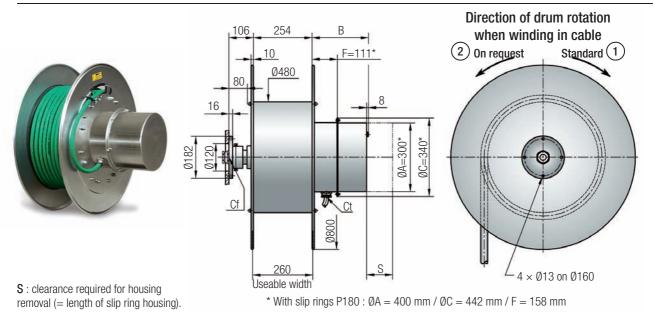
Bracket and Roller Guide Arm SE/BR - For EXEL 5 only

Weight: 12 kg approx.





Weight: 55 up to 120 kg approx. (cable excluded)



Dimensions of the reel according to the drum type

Drum	EXEL 6
Fixed cable Cf (mm)	Ø42 max.
Trailing cable Ct (mm)	Ø42 max.

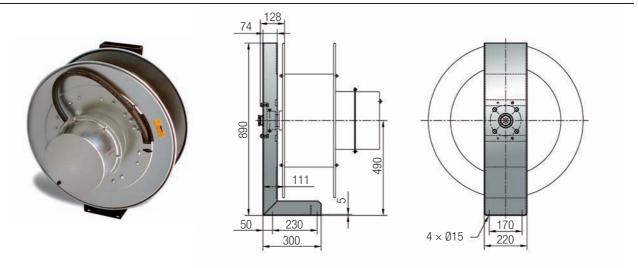
Slip ring type	C8								
Number of rings **	2T	2T 3T 4T 6T							
Max. amperage (A)		20							
B (mm)	244 294								
S (mm)		125							

Slip ring type	C080								
Number of rings **	18T	19T	23T	26T	27T	29T	36T	38T	41T
Max. amperage (A)		20							
B (mm)	419 494 544						14		
S (mm)		300						42	25

Slip ring type	P050		P050 P080 P120		20	P18	80 *		
Number of rings **	2T	3T	4T	3T	4T	3T	4T	3T	4T
Max. amperage (A)	40		7	0	12	20	18	80	
B (mm)	244		29	94	29	94	3	91	
S (mm)		125		17	75	17	75	2:	25

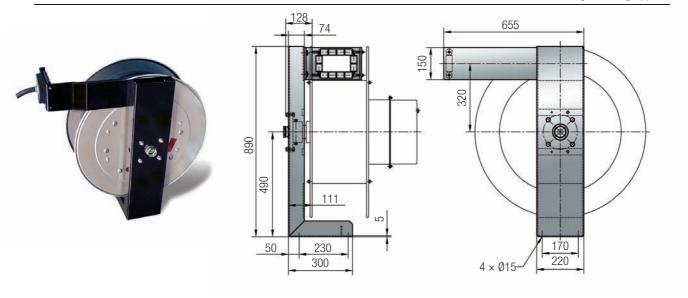
^{**} number of insulated rings, plus one uninsulated ring 'T' for earth.

Bracket SE Weight: 10 kg approx.



Bracket and Roller Guide Arm SE/BR

Weight: 15 kg approx.



Accessories

Cable Grips and Spring Shock Absorbers

A Single Eye Cable Grip SB - Light duty applications

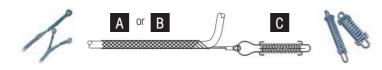
Cable OD	Standard		Lacquered	
ranges	type	code	type	code
Ø5 to 8 mm	SB 5	0300774	SBLA 5	0400791
Ø8 to 13 mm	SB 8	0300777	SBLA 8	0400793
Ø13 to 18 mm	SB 13	0300783	SBLA 13	0400794
Ø18 to 25 mm	SB 18	0400784	SBLA 18	0400817
Ø25 to 38 mm	SB 25	0400785	SBLA 25	0400819
Ø38 to 50 mm	SB 38	0400786	SBLA 38	0400820

B Double Eye Cable Grip DB - Lift applications, normal duty

Cable OD	Standard		Lacquered		
ranges	type code		type	code	
Ø8 to 15 mm	DB 8	0400747	DBLA 8	0400753	
Ø15 to 25 mm	DB 15	0400748	DBLA 15	0400755	
Ø25 to 45 mm	DB 25	0400749	DBLA 25	0400756	

C Spring Shock Absorbers

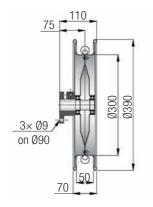
Туре	Cadmium plated	Stainless steel
	code	code
20 kg	0300713	440077
40 kg	0300714	440104
80 kg	0400715	440105
150 kg	0400716	440106



Roller Guides

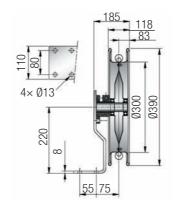
■ Ø300/390 with flange

Cable OD	code
Ø18 max.	392P002



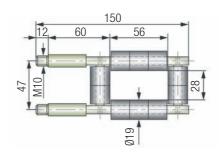
■ Ø300/390 with bracket

Cable OD	code
Ø18 maxi	392P003



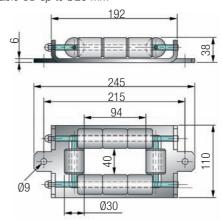
Roller Boxes

■ To fit EXEL 1 and EXEL 2 Cable OD up to Ø23 mm

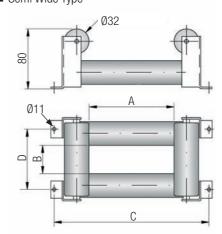


■ To fit EXEL 3

Cable OD up to Ø28 mm



■ Semi Wide Type



Cable OD	Α	В	С	D
Ø10 to 30 mm	150	45	257	90
Ø10 to 30 mm	200	45	307	90
Ø31 to 50 mm	150	65	257	110
Ø31 to 50 mm	200	65	307	110

Other Spring Reels





■ EXEL Monospiral Reels



■ EXEL Hose Reels

■ Special Features





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