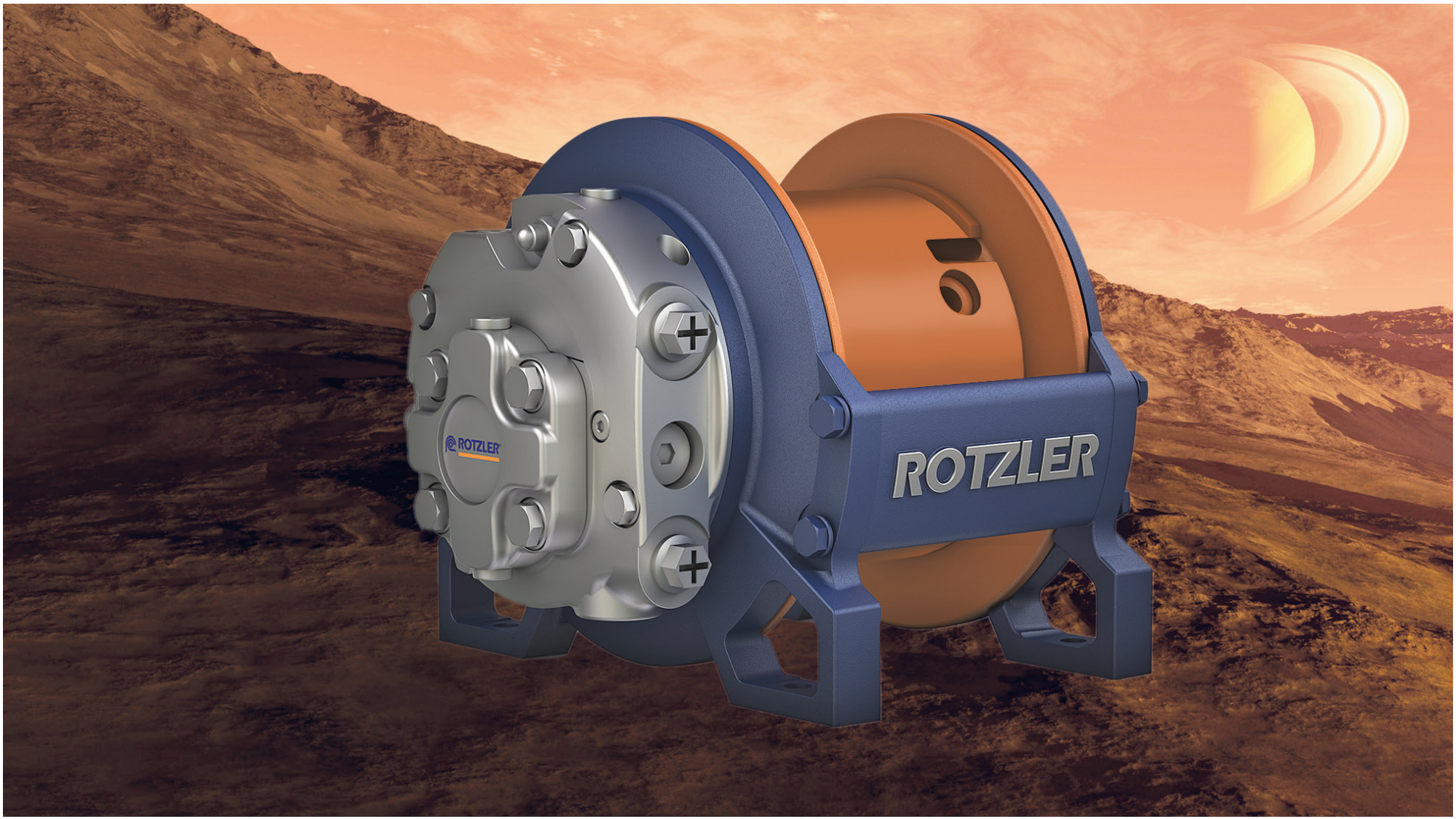
ROTZLER TITAN TI 1

max. hoisting force 2850 lbf



Hydraulic hoisting winch technical product information - AMERICAS

1. Basic Winch

1.1 Basic winch dimensions

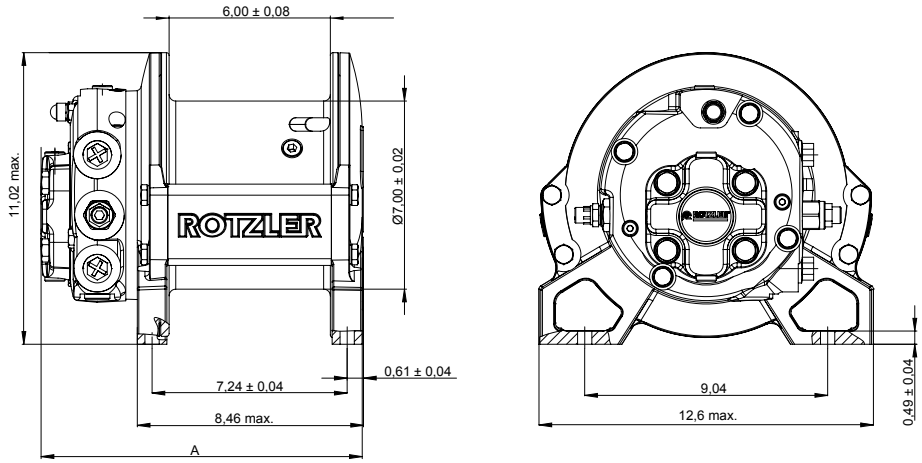


Fig.1 dimensions of basic winch [inch]

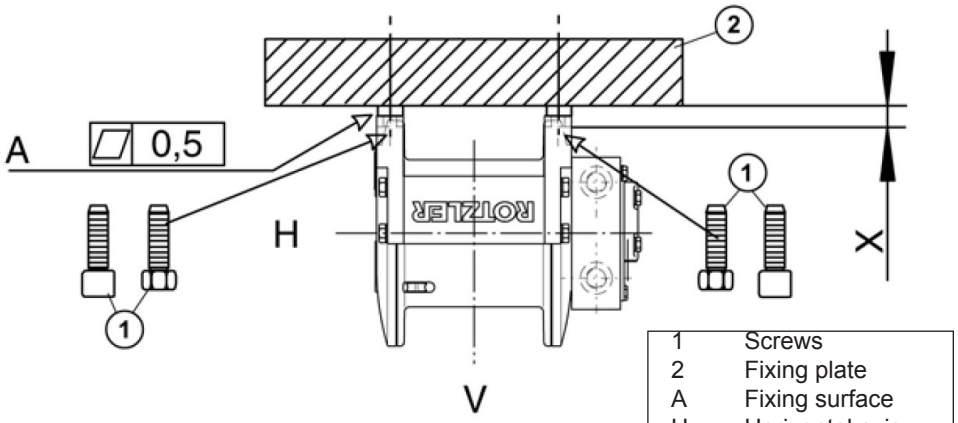
1.2 Basic winch technical data

data based on basic winch without options				
motor type	GM016		GM021	
motor displacement [cm³]	16		21	
required max. pressure ΔP at motor [PSI]	3100		2400	
max. return flow pressure [PSI]	300		300	
max. back pressure [PSI]	75		75	
max. case drain pressure [PSI]	300		300	
max. oil flow [GPM]	11		15	
weight approx. [lb]	108		110	
dimension A max. [inch]	12,2		12,4	
data per rope layer	1st	2nd	3rd	4th
max. hoisting force [lbf]	2850	2650	2450	2200
max. rope speed [ft/min]	138	152	165	179
max. accumulated rope storage [ft], rope Ø 3/8“	29	61	95	132
a case drain line is recommended when return line back pressure exceeds 300 PSI.				

Tab.1 technical data of basic winch [data can vary according to options]

2. Interfaces

2.1 Mechanical interface



1	Screws
2	Fixing plate
A	Fixing surface
H	Horizontal axis
V	Vertical axis
X	Flatness

Fig.2 winch mounted on fixing plate

mounting fasteners	quantity	size	quality	tightening torque	measure X
standard fasteners	4	M12	8.8	52 lbf-ft	0,49 inch
stainless steel fasteners	4	M12	A4-80	66 lbf/ft	0,49 inch

Tab.2 technical data of recommended fasteners

2.2 Hydraulic interface

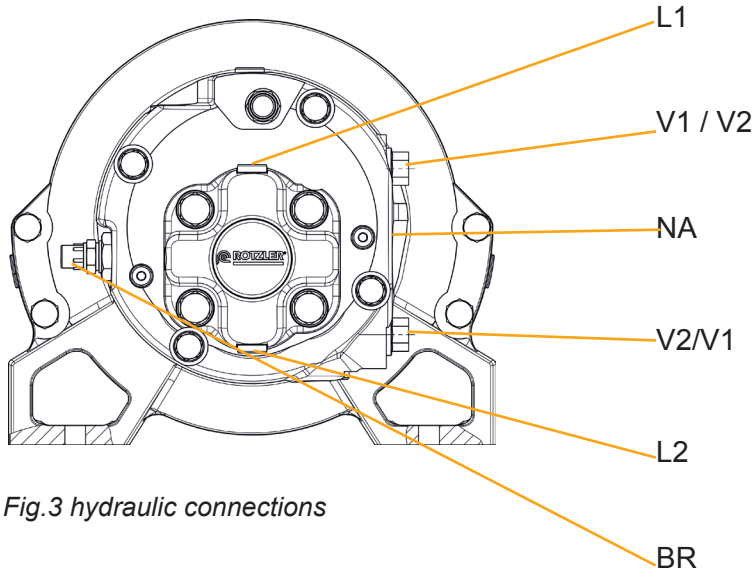


Fig.3 hydraulic connections

V1	return oil connection for direction „ROPE IN“
V2	pressure oil connection for direction „ROPE IN“
L1 / L2	case drain connection
NA	external brake release port-
BR	counter balance valve*

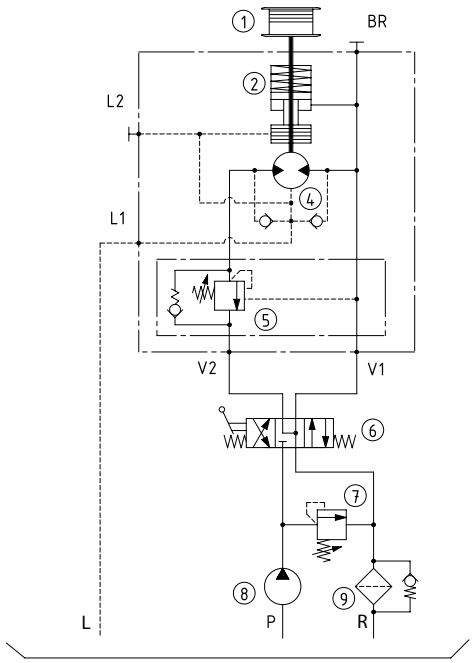
connection ports identical for both motors, GM016 and GM021				
V1	V2	L1	L2	BR
G1/2	G1/2	G1/4	G1/4	G1/4

Tab.3 hydraulic connection port sizes

* Integrated in the motor as a standard, the counterbalance valve offers an alternative lowering brake function designed to suit specific applications and hydraulic systems. The winch also features a failsafe operation of the spring applied, static disc brake.

- Optimized lowering speed in ‘low flow’ hydraulic systems.
- Optimized lowering performance in high pressure mobile hydraulic systems.

2.2 Hydraulic interface



(1) winch
(2) hydraulic brake (hydraulically released)
(4) hydraulic motor
(5) counter balance valve
(6) control valve*
(7) pressure relief valve*
(8) hydraulic pump*
(9) return filter*R return line to reservoir
P pressure line
L case drain line
BR brake relief port

* not supplied by ROTZLER

V1 return oil connection for direction „ROPE IN“
V2 pressure oil connection for direction „ROPE IN“
L1 / L2 case drain connection

Fig.4 hydraulic diagram

2.3 Electric interface

2.3.1 rope end switch:
Technical data: max. voltage 250 V / max. permanent current 10 A.

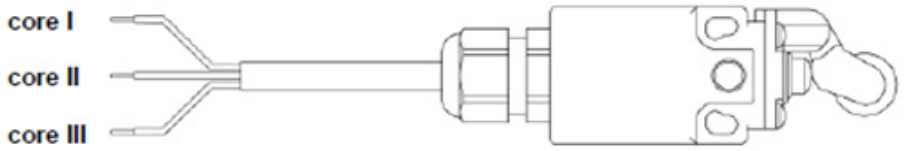


Fig.5 rope end sensor connection

3. Options

3.1 Pressure roller

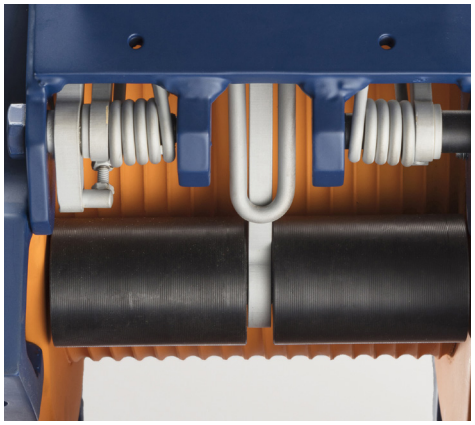


Fig.6 pressure roller, view from bottom

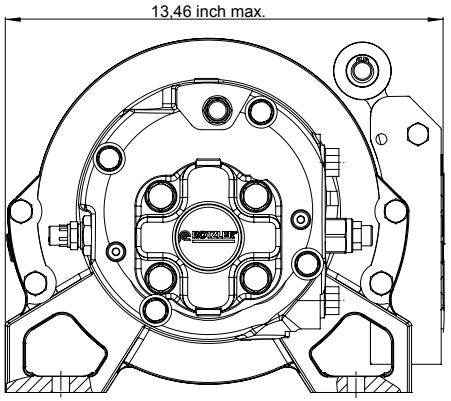


Fig.7 dimension with pressure roller

differing data from basic winch data based on smooth drum	gear motor GM016	gear motor GM021
weight pressure roller [lb]	approx. 4,9	

Tab. 4 data with pressure roller

Pressure roller:
The pressure roller supports proper spooling of the rope on the drum. It is mechanically fastened to the winch strut. Its position is always on the opposite site to the rope inlet.

Customer benefits:
The pressure roller improves the correct spooling of the rope. It reduces the slack and assists layering of the rope.

- increased the life time of the rope
- reduced down time of the winch
- higher operation time

3.2 Rope end switch

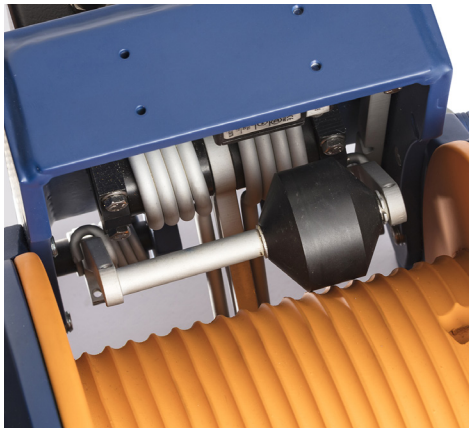


Fig.8 pressure roller incl. rope end switch, view from the top

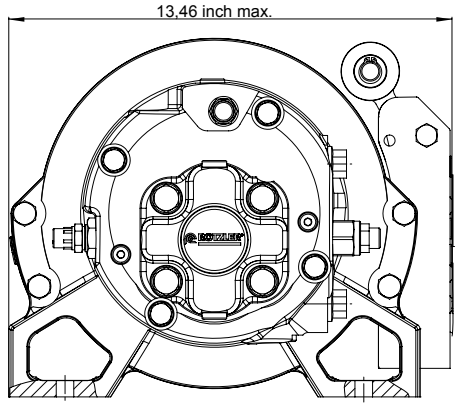


Fig.9 dimensions with pressure roller and rope end switch

differing date from basic winch data based on smooth drum	gear motor GM016	gear motor GM021
Weight pressure roller incl. rope end switch [lb]	approx. 6,0	

Tab. 5 data with pressure roller and rope end switch

Rope end switch:
The rope end switch is mechanically attached to pressure roller housing. The optional rope end switch is only available in combination with the pressure roller.
The threshold signal „rope end“ is emitted by an electric switch.

Customer benefits:
Awareness and control of rope end at either:

- 3 rope windings or
- 5 rope windings

It reduces overstressing the rope link between rope end and rope drum (rope pocket/rope wedge) and prevents rope winding in wrong direction caused by reeled off rope.

3.3 External brake release

The external brake release option allows releasing the brake and lowering the load with an auxiliary hydraulic supply. In case of failure of the main hydraulic system, it allows to lower a suspended load safely.

Customer benefits:
In an emergency situation operator can easily unload the crane to secure the system and to prevent bigger damages.

External brake release interface:
The external brake release valve is mechanical screwed in the hydraulic motor housing. The shuttle valve is directly impinged by the manual external 4/2 way control valve.

connection port	
NA	1/4“

Tab.6 hydraulic connection port size with external brake release

differing data from basic winch data based on smooth drum	gear motor GM016	gear motor GM021
weight shuttle valve plus external brake release [lb]	approx. 0,7	

Tab. 7 data with optional external brake release

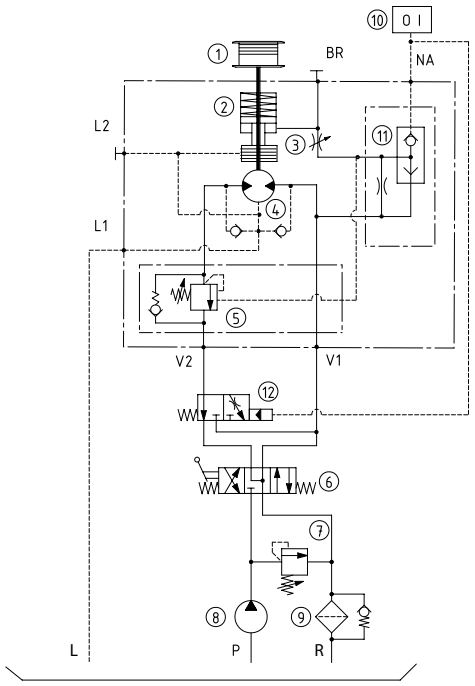


Fig. 10 hydraulic diagram for external brake release

(1) winch
(2) hydraulic brake (hydraulically released)
(3) throttle valve (brake test) - optional
(4) hydraulic motor
(5) counter balance valve
(6) control valve*
(7) pressure relief valve*
(8) hydraulic pump*
(9) return filter*
(10) auxiliary hydraulic system*
(11) shuttle valve - optional (if external brake release is used)
R return line to reservoir
P pressure line
L case drain line
NA external brake release port
OI external brake release kit* (10+11 option)
BR brake relief port

* not supplied by ROTZLER

V1 return oil connection for direction „ROPE IN“
V2 pressure oil connection for direction „ROPE IN“
L1 / L2 case drain connection
NA external brake release port

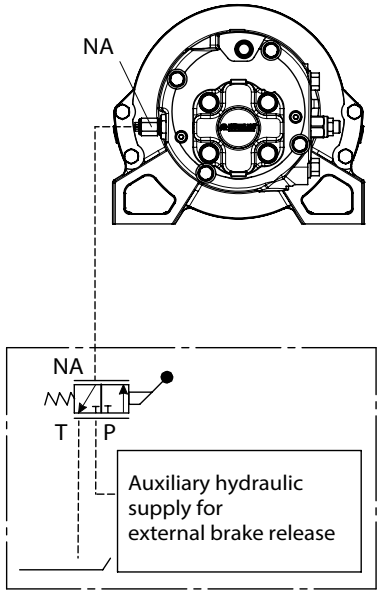


Fig. 11 auxiliary hydraulic supply for external brake release

3.4 Throttle Valve

The connection between winch motor and brake can be closed via the throttle valve. With this option, the winch is prepared for a brake test. By applying pressure to motor the functionality of the brake can be assessed.
This is allowing a winch brake test according API 2C specification. This test can only be performed by qualified persons.

For the hydraulic diagram please refer to fig. 10.

3.5 Ropes

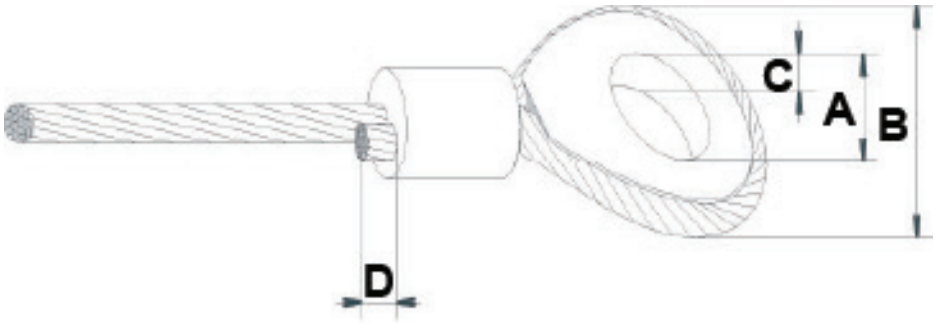


Fig. 12 drawing of rope

standard rope	
diameter [inch]	3/8
length [ft]	120
approx. weight [lb]	36
class of rope strength	2160
min. breaking strength [lbf]	19715
stranding factor	0,80
A [inch] +0,0059 / -0,0393	0,98
B [inch]	2,84
C [inch]	0,69
D max. [inch]	0,20

Tab. 8 data of standard rope

Why should customer use a rope from ROTZLER?
Rotzler‘s standard ropes are selected for their tensile strength and winding properties. All ropes for TITAN winches are non rotating ropes. Safe winch operation is guaranteed over a long life span.

Customer benefits:
Rotzler ropes can be easily ordered for each winch model and meet the highest safety standard for marine, loading and service cranes.

Rope interface:
Rotzler ropes are connected to the winch by a rope lock. Adding a rope end switch to the winch ensures that a minimum 3 or 5 wraps are always present.

Winches compliant for API 2C

The ROTZLER TITAN hoisting winches are suitable for cranes according the API 2C specification (American Petroleum Institute) when the following options are selected:
- pressure roller and rope end switch, activated with 5 wraps
- stainless steel fasteners
- external brake release
- throttle valve

If all those options are selected, we can equip the winch with a type plate indicating „winch suitable for API 2Ccertified cranes“.

4 TITAN order code

3.	TI.	01.	0.	00.	GM016.	1.	0.	00.	00.	00.	00.	DIG

Version of Code	3.
Construction	TI. = TITAN
Type	01. = TITAN 2850 lbf
Drum width	0. = 6 inch
Grooves	00. = No grooves
Motor displacement	GM016. = 16cc gear motor
	GM021. = 21cc gear motor
Rotation direction and general layout	For position of rotation direction/general layout see details on the right
Motor layout	For position of motor ports see details on the right
Pressure roller and rope end switch	00. = No pressure roller, no rope end switch
	10. = Pressure roller, no rope end switch
	13. = Pressure roller, rope end switch activated with 3 rope wraps
	15. = Pressure roller, rope end switch activated with 5 rope wraps
MCD type	00. = No MCD
Paint finish	00. = Primer
	01. = White
	02. = Black
	03. = White + extra coat
	04. = Black + extra coat
Rope	00. = No rope
	02. = Rope, 3/8 inch, 120 ft
Digital Code (DIG)	0. 7

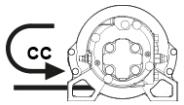
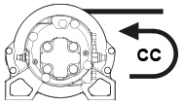
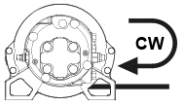
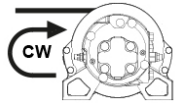
DIG – Parameters

1	0	Standard fasteners
	1	Stainless fasteners
2	0	Without external brake release
	1	With external brake release
4	0	Without throttle valve
	1	With throttle valve

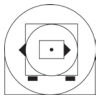
DIG – Code

0	1	2	3	4	5	6	7
000	100	010	110	001	101	011	111

Rotation direction (rope in) / general layout

1.	counter clock-wise, rope underwound	
2.	counter clock-wise, rope overwound	
3.	clockwise, rope underwound	
4.	clockwise, rope overwound	

Motor layout

motor port left side	motor port on top	motor port right side	motor port on bottom
			
0.	1.	2.	3.
■ motor ports		▲ case drain ports	

Suitability of TITAN for API2C certified devices

Suitability for API given, when winch is equipped with rope end switch activated with 5 wraps, stainless steel fasteners, external brake release and throttle valve.
Type plate incl. API suitability statement available.

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